



# Fish Passage Center

## Weekly Report #16–22

August 12, 2016

### Summary of Events

#### Water Supply

Precipitation throughout the Columbia Basin has varied between 29% and 172% of average at individual sub-basins over early August. Precipitation above The Dalles has been 66% of average over early August. Over the 2016 water year, precipitation has ranged between 83% and 106% of average.

**Table 1.** Summary of August precipitation and cumulative October through August 11<sup>th</sup> precipitation with respect to average (1981–2010), at select locations within the Columbia and Snake River Basins.

| Location                                  | Water Year 2016   |           | Water Year 2016                    |           |
|---|-------------------|-----------|------------------------------------|-----------|
|   | August 1–11, 2016 |           | October 1, 2015 to August 11, 2016 |           |
|   | Observed (inches) | % Average | Observed (inches)                  | % Average |
| Columbia above Coulee                     | 0.65              | 98        | 34.2                               | 99        |
| S Snake River above Ice Harbor            | 0.08              | 29        | 19.3                               | 91        |
| Columbia above The Dalles                 | 0.26              | 66        | 24.8                               | 97        |
| Kootenai                                  | 0.81              | 116       | 33.9                               | 98        |
| Clark Fork                                | 0.38              | 70        | 22.0                               | 86        |
| Flathead                                  | 0.99              | 172       | 35.3                               | 106       |
| Pend Oreille River Basin above Waneta Dam | 0.58              | 108       | 29.5                               | 97        |
| Salmon River Basin                        | 0.11              | 29        | 24.3                               | 89        |
| Upper Snake Tributaries                   | 0.17              | 37        | 20.3                               | 83        |
| Clearwater                                | 0.20              | 42        | 37.4                               | 97        |
| Willamette River above Portland           | 0.10              | 30        | 66.9                               | 105       |

Table 2 displays the August 11<sup>th</sup> ESP runoff volume forecasts for multiple reservoirs along with the June COE forecasts at Libby and Dworshak. The August 11<sup>th</sup> ESP forecast at The Dalles between April and August is 81.567 Kaf (90% of average).

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

| Location                               | August 11, 2016       |                     |
|--|-----------------------|---------------------|
|  | % Average (1981–2010) | Runoff Volume (Kaf) |
| The Dalles (Apr–Aug)                   | 90                    | 81,567              |
| Grand Coulee (Apr–Aug)                 | 93                    | 52,636              |
| Libby Res. Inflow, MT (Apr–Aug)        | 93<br>110*            | 5,545<br>6,445*     |
| Hungry Horse Res. Inflow, MT (Apr–Aug) | 86                    | 1,657               |
| Lower Granite Res. Inflow (Apr–July)   | 81                    | 17,824              |
| Brownlee Res. Inflow (Apr–July)        | 74                    | 5,451               |
| Dworshak Res. Inflow (Apr–July)        | 84<br>86*             | 2,057<br>2,083*     |

\* Denotes COE June Forecast

Grand Coulee Reservoir is at 1,284.7 feet (8-11-16) and drafted 1.3 feet over the last week. Outflows at Grand Coulee have ranged between 80.4 and 105.3 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2,447.47 feet (8-11-16) and has refilled 0.27 feet over the previous week. Daily average outflows at Libby Dam have been 7.0 Kcfs over the last week.

Hungry Horse is currently at an elevation of 3,556.82 feet (8-11-16) and has drafted 0.88 feet over the last week. Outflows at Hungry Horse have been 2.0 Kcfs over the last week.

Dworshak is currently at an elevation of 1,555.5 feet (8-11-16) and has drafted 8.5 feet over the last week. Dworshak outflows over the last week ranged from 9.9 Kcfs to 10.1 Kcfs.

The Brownlee Reservoir was at an elevation of 2,058.6

feet on August 11<sup>th</sup>, 2016, and has drafted 2.1 ft. over the last week. Outflows at Hells Canyon have ranged between 7.3 and 13.4 Kcfs over the last week.

The Summer Biological Opinion flow period began on June 21<sup>st</sup> with a flow objective of 50.4 Kcfs at Lower Granite. Over the Summer Flow Period, flows at Lower Granite Dam have averaged 33.8 Kcfs and 26.4 Kcfs over the last week.

The Summer Biological Opinion Flow Objectives will be 200 Kcfs at McNary Dam (began July 1<sup>st</sup>). Over the Summer Flow Period, flows at McNary have averaged 157.2 Kcfs and 142.2 Kcfs last week.

### Spill and River Temperature

No spill has occurred at Dworshak Dam over the past week.

Summer spill for juvenile fish passage began on June 21<sup>st</sup> and will continue through August 31<sup>st</sup>. Summer spill for fish passage at the Snake River projects is to occur at the following amounts described in the 2016 Fish Operations Plan (FOP).

| Project          | Spill Level Day/Night              |
|------------------|------------------------------------|
| Lower Granite    | 18 Kcfs/18 Kcfs                    |
| Little Goose     | 30%/30%                            |
| Lower Monumental | 17 Kcfs/17 Kcfs                    |
| Ice Harbor       | July 13-August 31: 45 Kcfs/Gas Cap |

At Lower Granite Dam the removable spillway weir was closed on June 29<sup>th</sup> to reduce the amount of surface warm water transferred from the forebay to the tailrace. The spill pattern was changed from a “bulk” spill pattern to a “uniform” spill pattern. Over the past week spill occurred as all flow in excess of that needed for the operation of one turbine unit and ranged from a daily average of 14.0 to 16.4 Kcfs. At Little Goose Dam spill was changed on July 6<sup>th</sup> from spilling 30% of instantaneous flow, to a fixed volume spill operation to maintain compatibility with Lower Granite and Lower Monumental operations. Presently, spill is a fixed volume of 8.9 Kcfs. At Lower Monumental Dam spill is supposed to equal 17 Kcfs, but with the low flows in the Snake it is occurring as all flow in excess of that

needed to operate one turbine unit. Total daily spill over the past week ranged from 10.4 Kcfs to 14.1 Kcfs. At Ice Harbor Dam spill has also occurred as all flow in excess of that needed for the operation of one turbine unit. Spill has ranged from a daily average of 14.3 to 17.7 Kcfs.

Summer spill for fish passage began on June 16<sup>th</sup> at the middle Columbia River projects. Spill for fish passage at the middle Columbia River projects is to occur at the following amounts described in the 2016 FOP.

| Project    | Spill Level Day/Night      |
|------------|----------------------------|
| McNary     | June 16-Aug 31: 50%/50%    |
| John Day   | July 20-August 31: 30%/30% |
| The Dalles | 40%/40%                    |
| Bonneville | 95 Kcfs/95 Kcfs            |

This past week all Middle Columbia River projects (McNary, John Day and The Dalles dams) have spilled at the 2016 FOP levels. Spill at Bonneville Dam has been changed to 95 Kcfs to address erosion concerns below the project. During some periods spill was less than the 95 Kcfs, but was equal to all flow in excess of powerhouse minimums.

All sites were within TDG criteria over the past week.

**Note:** The State of Oregon TDG waiver requires compliance only with 120% TDG in the tailrace, while the State of Washington requires compliance with both a 115% TDG forebay requirement and a 120% tailrace TDG requirement. The State of Oregon and the State of Washington also use different methodologies to estimate the 12-hour average TDG. For Oregon, the 12-hour average is based on the 12 highest hourly TDG measurements in a single calendar day (not necessarily consecutive). For Washington, the 12-hour average is based on 12-hour rolling averages. The highest of the rolling averages is what is reported as the 12-hour average for a given day. The location of a TDG monitor will dictate which of these methodologies is used for compliance monitoring. The Washington methodology will apply to all the lower Snake River projects, as well as the middle Columbia River forebay monitors. On any given day the compliance of the tailrace monitors at the middle Columbia River projects will be determined

using either the Washington or Oregon methodology, whichever is the most restrictive, and spill will be decreased if needed.

Low fish numbers has precluded sampling for GBT at the Snake and Upper Columbia SMP sites. Attempts were made to monitor for signs of gas bubble trauma (GBT) at McNary and Bonneville dams this past week. However, sample size criteria could not be met at these projects. Consequently, monitoring for GBT has concluded for the season.

**Temperature:** At present, water temperatures are above the 68°F temperature standard at the forebays of Bonneville, McNary and Ice Harbor dams. The forebay temperatures at Lower Granite Dam are cooler than last week. The daily average temperature in the Lower Granite forebay for August 11<sup>th</sup> was 64.7° F. It is above 70°F (70.3°F) downstream at the forebay of Ice Harbor Dam, where the temperature is about the same as last week. At McNary and Bonneville dams the forebay temperatures were 69.2°F and 69.98°F, respectively on August 11<sup>th</sup>. These forebay temperatures are about equal to the ten year averages observed at these projects.

### **Smolt Monitoring**

Smolt Monitoring Program (SMP) sampling was ongoing at all SMP bypass facilities this week. High temperature sampling protocols remained in effect at Bonneville, John Day, and McNary dams this week. Subyearling Chinook dominated this week's samples at all of the SMP bypass facilities. When compared to the previous week, subyearling Chinook passage decreased at the Upper and Middle Columbia bypass facilities. Subyearling Chinook passage increased at Lower Granite but decreased slightly at Little Goose and Lower Monumental dams. Finally, passage of spring migrants (i.e., yearling Chinook, steelhead, coho, and sockeye) was extremely low at all SMP bypass facilities.

The high temperature sampling protocol remained in effect at Bonneville Dam (BON) this week. Under this sampling protocol, sampling at BON occurs every-other-day (24-hour sample), with a target sample size of 100 fish. This sampling protocol will remain in place until temperatures in the Bonneville Forebay drop below 69.5°F. Samples at BON continued to be dominated by subyearling Chinook this week. This week's daily average passage index for subyearling

Chinook at BON was approximately 500 per day, which is a large decrease from last week's daily average passage index of nearly 2,900 per day. No spring migrants were encountered in this week's samples at BON. Furthermore, the only lamprey juveniles that were encountered at BON this week were Pacific macrophthalmia, which were only encountered one day this week (August 8<sup>th</sup>).

The high temperature sampling protocol remained in effect at John Day Dam (JDA) this week. Under this protocol, sampling at JDA occurs twice per week (6-hour sample) for condition only. These condition monitoring samples will occur on Mondays and Thursdays, with FPC receiving the data on Tuesdays and Fridays. The high temperature protocol will remain in place until temperatures in the John Day Forebay drop below 69.5°F. Because the high temperature protocol at JDA calls for a partial sample (i.e., 6-hour sample), it is not appropriate to use the passage index as a measure of magnitude of juvenile passage. Subyearling Chinook dominated the collections at JDA this week. In fact, subyearling Chinook were the only target species encountered this week's two condition samples at JDA.

The high temperature sampling protocol remained in effect at McNary Dam (MCN) this week. Under this sampling protocol, sampling at MCN remains every-other-day (24-hour sample), with a reduced target sample size of 100 fish. This sampling protocol will remain in place until temperatures in the McNary Forebay drop below 69.5°F. This week's samples at MCN were dominated by subyearling Chinook, with a daily average passage index of about 160 per day. This is a decrease over last week's daily average passage index of about 600 subyearling Chinook per day. No spring migrants were encountered in this week's samples. Pacific lamprey macrophthalmia were encountered in all four of this week's samples. Collection estimates for Pacific macrophthalmia this week ranged from 4-12 fish per day.

This week's samples at Lower Granite Dam (LGR) were again dominated by subyearling Chinook, with a daily average passage index of approximately 1,820 per day. This is an increase over last week's daily average passage index of about 1,230 subyearling Chinook per day. Passage of spring migrants remained extremely low this week. Among the spring migrants that were encountered this week were yearling Chinook and steelhead. Finally, Pacific lamprey ammocoetes were

encountered in three of this week's samples. No Pacific lamprey macrophthalmia were encountered in this week's samples at LGR.

Sampling at Little Goose Dam (LGS) was limited to a 24-hour sample every-other-day until transportation began, at which time sampling switched to daily. Subyearling Chinook dominated this week's collections at LGS. This week's daily average passage index for subyearling Chinook at LGS was about 775 per day, which is very similar to last week's daily passage index of about 800. The only spring migrants that were encountered in this week's samples were steelhead, but in very low numbers. Finally, Pacific lamprey ammocoetes were encountered in one of this week's samples (August 9<sup>th</sup>) while Pacific macrophthalmia were encountered nearly every day this week (except August 10<sup>th</sup>). This week's daily average collection for Pacific macrophthalmia at LGS was nearly five fish per day.

Sampling at Lower Monumental Dam (LMN) was limited to a 24-hour sample every-third-day through the April 14<sup>th</sup> every-other-day from April 16<sup>th</sup> to April 30<sup>th</sup>, and every day with the initiation of transportation. This week's samples at LMN were again dominated by subyearling Chinook, with a daily average passage index of only about 40 per day. This is slightly below last week's daily average passage index of about 50 subyearling Chinook per day. No spring migrants were encountered in this week's samples at LMN. Finally, Pacific lamprey macrophthalmia were encountered in two of this week's samples (August 6<sup>th</sup> and 10<sup>th</sup>).

Subyearling Chinook continued to dominate the samples at Rock Island Dam (RIS) this week. This week's daily average passage index for subyearling Chinook at RIS was about 10 per day, which is lower than last week's daily average passage index of about 50 per day. The only spring migrants that were encountered in this week's samples were sockeye, which were encountered on August 7<sup>th</sup>. Finally, no lamprey juveniles were encountered in this week's samples.

## 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. No new releases were scheduled for this zone this week. Furthermore, no releases are scheduled for this zone over the next two weeks.

**Mid-Columbia Zone:** The Mid-Columbia Zone encompasses the area of the Columbia River and its tributaries from McNary Dam to Chief Joseph Dam. No new releases were scheduled for this zone this week and no new releases are scheduled over the next two weeks.

**Lower Columbia Zone:** The Lower Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to McNary Dam. No new releases were scheduled for this zone this week and no new releases are scheduled over the next two weeks.

## Adult Passage

Fall Chinook began to pass Bonneville Dam on August 1st. Daily adult fall Chinook passage numbers at Bonneville Dam ranged between 652 and 1,659 last week. The adult fall Chinook count of 9,593 has 2,212 fewer fish than the 2015 count of 11,805 and has 3,491 more fish than the 10-year average count of 6,102. The 2016 Bonneville Dam fall Chinook jack count of 1,050 has 7 more fish than the 2015 count of 1,043 and 195 fewer fish than the 10-year average count of 1,245. The 2016 adult summer Chinook count of 11,349 at Lower Granite Dam in the Snake River is about 79.6% of the 2015 count and 70% of the 10-year average count. The 2016 Lower Granite summer Chinook jack count of 2,021 is about 49.3% of the 2015 count and about 30.5% of the 10-year average count.

The 2016 Bonneville Dam adult steelhead count of 80,069 is about 63.7% of the 2015 count of 125,736 and about 50.2% of the 10-year average count of 159,443. The 2016 Bonneville Dam adult wild steelhead count of 29,302 is about 50.6% of the 2015 count of 57,554 and 44.1% of the 10-year average count of 66,410. Daily adult steelhead counts at Lower Granite Dam ranged from 56 to 138 adults per day last week. This year's Lower Granite steelhead count of 9,033 is about 86.1% of the 2015 count of 10,490 and 61.2% of the 10-year average count of 14,764. The 2016 Lower

Granite Dam adult wild steelhead count of 4,856 is 93.3% of the 2015 count of 5,202 and is about 83.8% of the 10-year average count of 5,795. At Willamette Falls, the 2016 count for steelhead was 25,725 as of August 10th. This year's steelhead count is about 3.7 times greater than the 2015 count of 6,982 and about 1.2 times greater than the 10-year average count of 21,819.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 32 and 78 last week. The 2016 adult sockeye count at Bonneville Dam of 342,312 is about 67.1% of the 2015 count and 1.2 times greater than the 10-year average count. The 2016 adult sockeye count at McNary Dam of 261,468 is about 94.5% of the 2015 count, while being about 1.3 times greater than the 10-year average count. The Lower Granite Dam 2016 adult sockeye count of 803 has 401 more fish than the 2015 count of 402 and 171 fewer fish than the 10-year average count. As of August 11th at Bonneville Dam, the adult coho count was 12 and the shad count was 1,768,219. This year's shad count is about 97.4% of the 2015 count of 1,814,353 and 78% of the 10-year average count of 2,264,336.

## Hatchery Releases Last Two Weeks

### Hatchery Release Summary

From: 7/30/2016 to 08/12/16

| Agency                | Hatchery | Species | Race | MigYr | NumRel | RelStart | RelEnd | RelSite | RelRiver |
|-----------------------|----------|---------|------|-------|--------|----------|--------|---------|----------|
| No Releases Scheduled |          |         |      |       |        |          |        |         |          |

## Hatchery Releases Next Two Weeks

### Hatchery Release Summary

From: 8/13/2016 to 8/26/2016

| Agency                | Hatchery | Species | Race | MigYr | NumRel | RelStart | RelEnd | RelSite | RelRiver |
|-----------------------|----------|---------|------|-------|--------|----------|--------|---------|----------|
| No Releases Scheduled |          |         |      |       |        |          |        |         |          |

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

| Date       | Grand Coulee |       | Chief Joseph |       | Wells |       | Rocky Reach |       | Rock Island |       | Wanapum |       | Priest Rapids |       |
|------------|--------------|-------|--------------|-------|-------|-------|-------------|-------|-------------|-------|---------|-------|---------------|-------|
|            | Flow         | Spill | Flow         | Spill | Flow  | Spill | Flow        | Spill | Flow        | Spill | Flow    | Spill | Flow          | Spill |
| 07/29/2016 | 113.4        | 0.2   | 115.3        | 0.0   | 123.3 | 9.3   | 124.2       | 10.5  | 127.9       | 22.8  | 133.9   | 19.9  | 131.9         | 28.7  |
| 07/30/2016 | 101.1        | 0.1   | 100.1        | 0.0   | 107.0 | 8.5   | 110.8       | 10.6  | 116.1       | 22.3  | 115.9   | 20.2  | 110.2         | 29.1  |
| 07/31/2016 | 95.1         | 0.1   | 95.9         | 0.0   | 101.4 | 7.9   | 100.9       | 8.7   | 103.3       | 20.0  | 113.7   | 19.5  | 113.6         | 28.4  |
| 08/01/2016 | 105.9        | 0.1   | 107.8        | 0.0   | 109.9 | 8.0   | 108.5       | 10.8  | 109.7       | 24.1  | 132.5   | 18.5  | 133.7         | 25.1  |
| 08/02/2016 | 94.6         | 0.1   | 93.1         | 0.0   | 100.6 | 8.6   | 98.2        | 10.1  | 101.6       | 22.8  | 101.0   | 19.0  | 97.0          | 25.4  |
| 08/03/2016 | 106.9        | 0.1   | 105.1        | 0.0   | 109.3 | 9.0   | 108.7       | 10.0  | 112.3       | 23.0  | 114.4   | 19.6  | 107.2         | 26.0  |
| 08/04/2016 | 115.5        | 0.1   | 112.6        | 0.0   | 114.8 | 9.6   | 111.4       | 10.4  | 112.9       | 22.2  | 116.6   | 19.3  | 113.4         | 26.7  |
| 08/05/2016 | 105.3        | 0.1   | 104.6        | 0.0   | 108.6 | 8.3   | 113.4       | 9.1   | 118.4       | 20.1  | 114.6   | 19.9  | 109.4         | 27.9  |
| 08/06/2016 | 97.5         | 0.1   | 102.1        | 0.0   | 104.1 | 8.0   | 104.1       | 8.4   | 106.4       | 18.3  | 110.2   | 20.1  | 104.8         | 28.4  |
| 08/07/2016 | 80.4         | 0.1   | 84.0         | 0.0   | 85.0  | 6.2   | 85.3        | 8.4   | 87.5        | 18.0  | 95.7    | 20.3  | 94.9          | 28.8  |
| 08/08/2016 | 97.6         | 0.1   | 96.6         | 0.0   | 97.7  | 6.8   | 98.4        | 9.0   | 101.4       | 20.1  | 102.7   | 19.9  | 98.2          | 27.6  |
| 08/09/2016 | 91.7         | 0.1   | 91.4         | 0.0   | 93.4  | 6.8   | 95.5        | 8.9   | 97.0        | 20.7  | 108.5   | 19.8  | 106.7         | 27.5  |
| 08/10/2016 | 96.7         | 0.1   | 93.2         | 0.0   | 102.1 | 8.0   | 99.9        | 9.2   | 101.6       | 19.8  | 119.3   | 19.2  | 117.6         | 24.9  |
| 08/11/2016 | 98.6         | 0.1   | 99.2         | 0.0   | 107.0 | 8.5   | 105.6       | 10.0  | 107.5       | 21.1  | 117.6   | 18.2  | 115.5         | 24.4  |

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

| Date       | Dworshak |       | Brownlee Inflow | Hells Canyon | Lower Granite |       | Little Goose |       | Lower Monumental |       | Ice Harbor |       |
|------------|----------|-------|-----------------|--------------|---------------|-------|--------------|-------|------------------|-------|------------|-------|
|            | Flow     | Spill |                 | Outflow      | Flow          | Spill | Flow         | Spill | Flow             | Spill | Flow       | Spill |
| 07/29/2016 | 12.0     | 2.2   | ---             | 9.3          | 30.7          | 17.9  | 28.2         | 10.5  | 28.0             | 17.0  | 28.8       | 17.8  |
| 07/30/2016 | 11.9     | 2.1   | ---             | 9.2          | 30.7          | 17.8  | 26.9         | 10.5  | 25.8             | 14.5  | 28.7       | 17.6  |
| 07/31/2016 | 12.0     | 2.1   | ---             | 8.9          | 28.1          | 15.3  | 27.0         | 8.9   | 26.2             | 15.2  | 29.5       | 18.6  |
| 08/01/2016 | 9.9      | 0.0   | ---             | 9.1          | 27.7          | 14.9  | 25.3         | 8.9   | 24.1             | 13.2  | 27.3       | 16.4  |
| 08/02/2016 | 9.8      | 0.0   | ---             | 10.6         | 27.0          | 14.2  | 25.5         | 8.9   | 24.1             | 13.4  | 26.8       | 15.9  |
| 08/03/2016 | 9.9      | 0.0   | ---             | 8.3          | 27.3          | 14.7  | 25.1         | 8.9   | 24.2             | 13.5  | 27.9       | 17.1  |
| 08/04/2016 | 9.9      | 0.0   | ---             | 11.4         | 26.1          | 13.4  | 24.6         | 8.9   | 23.2             | 12.6  | 26.6       | 15.8  |
| 08/05/2016 | 9.9      | 0.0   | ---             | 10.0         | 29.1          | 16.4  | 26.1         | 8.8   | 25.3             | 14.1  | 27.5       | 16.6  |
| 08/06/2016 | 9.9      | 0.0   | ---             | 9.8          | 26.8          | 14.0  | 26.1         | 8.9   | 24.5             | 12.2  | 28.7       | 17.7  |
| 08/07/2016 | 9.9      | 0.0   | ---             | 8.5          | 27.5          | 14.9  | 25.2         | 8.9   | 23.8             | 11.7  | 26.5       | 15.7  |
| 08/08/2016 | 9.9      | 0.0   | ---             | 9.2          | 25.6          | 16.1  | 24.6         | 8.9   | 23.7             | 11.3  | 27.6       | 16.7  |
| 08/09/2016 | 10.0     | 0.0   | ---             | 7.7          | 26.2          | 15.8  | 25.1         | 8.9   | 23.0             | 10.7  | 26.6       | 15.8  |
| 08/10/2016 | 10.0     | 0.0   | ---             | 8.6          | 25.1          | 15.1  | 24.8         | 9.0   | 22.5             | 10.4  | 25.1       | 14.3  |
| 08/11/2016 | 10.1     | 0.0   | ---             | 9.1          | 25.1          | 15.1  | 24.5         | 8.9   | 23.6             | 11.2  | 27.1       | 16.1  |

**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       | PH1  | PH2  |
| 07/29/2016 | 169.2  | 84.9  | 160.3    | 48.1  | 146.8      | 58.6  | 157.1      | 94.5 | 49.3 |
| 07/30/2016 | 157.2  | 78.9  | 139.3    | 41.7  | 126.6      | 50.8  | 139.2      | 94.5 | 31.4 |
| 07/31/2016 | 160.7  | 80.6  | 154.0    | 46.3  | 140.4      | 56.1  | 152.2      | 94.9 | 44.0 |
| 08/01/2016 | 173.6  | 87.1  | 171.5    | 51.6  | 157.7      | 63.5  | 164.4      | 94.7 | 56.3 |
| 08/02/2016 | 141.5  | 70.9  | 128.8    | 38.9  | 114.7      | 46.0  | 146.9      | 94.5 | 39.1 |
| 08/03/2016 | 131.5  | 65.9  | 128.2    | 38.4  | 117.0      | 47.0  | 133.0      | 89.2 | 30.5 |
| 08/04/2016 | 150.7  | 75.5  | 144.9    | 43.3  | 132.7      | 53.2  | 129.4      | 85.5 | 30.4 |
| 08/05/2016 | 151.6  | 76.0  | 139.4    | 41.8  | 124.8      | 49.8  | 137.8      | 89.9 | 34.6 |
| 08/06/2016 | 137.0  | 68.8  | 128.3    | 38.7  | 116.5      | 46.5  | 133.1      | 89.7 | 30.0 |
| 08/07/2016 | 134.7  | 67.5  | 122.8    | 37.0  | 111.6      | 44.6  | 138.6      | 94.3 | 31.0 |
| 08/08/2016 | 135.2  | 67.7  | 131.9    | 39.7  | 118.3      | 47.4  | 136.8      | 92.4 | 31.1 |
| 08/09/2016 | 138.8  | 69.6  | 131.1    | 39.2  | 119.2      | 47.8  | 130.7      | 87.5 | 29.8 |
| 08/10/2016 | 142.3  | 71.3  | 134.6    | 40.3  | 122.5      | 48.9  | 131.4      | 88.0 | 30.1 |
| 08/11/2016 | 156.0  | 78.2  | 148.0    | 44.6  | 134.6      | 53.7  | 141.8      | 93.9 | 34.6 |



## Gas Bubble Trauma Monitoring Results from Representative Sites on the Snake River and Columbia River

| Site                        | Date & Species               | Number of Fish | Number w/ GBT signs | Number w/ Fin Signs | % Fin GBT | % Severe Fin GBT | Number of Fish with Fin GBT Listed by Highest Rank |        |        |        |
|-----------------------------|------------------------------|----------------|---------------------|---------------------|-----------|------------------|--|--------|--------|--------|
|                             |                              |                |                     |                     |           |                  | Rank 1   | Rank 2 | Rank 3 | Rank 4 |
| <b>Lower Granite Dam</b>    |                              |                |                     |                     |           |                  |  |        |        |        |
| <b>Little Goose Dam</b>     |                              |                |                     |                     |           |                  |  |        |        |        |
| <b>Lower Monumental Dam</b> |                              |                |                     |                     |           |                  |  |        |        |        |
| <b>McNary Dam</b>           |                              |                |                     |                     |           |                  |  |        |        |        |
|                             | 07/31/16 Chinook + Steelhead | 27*            | 0                   | 0                   |           |                  | 0  | 0      | 0      | 0      |
|                             | 08/08/16 Chinook + Steelhead | 15*            | 0                   | 0                   |           |                  | 0  | 0      | 0      | 0      |
| <b>Bonneville Dam</b>       |                              |                |                     |                     |           |                  |  |        |        |        |
|                             | 07/30/16 Chinook + Steelhead | 22*            | 0                   | 0                   |           |                  | 0  | 0      | 0      | 0      |
|                             | 08/01/16 Chinook + Steelhead | 100            | 0                   | 0                   | 0.00%     | 0.00%            | 0  | 0      | 0      | 0      |
|                             | 08/07/16 Chinook + Steelhead | 16*            | 0                   | 0                   |           |                  | 0  | 0      | 0      | 0      |
| <b>Rock Island Dam</b>      |                              |                |                     |                     |           |                  |  |        |        |        |

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

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

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

| Date | <u>Hungry H. Dnst</u> |             |             | <u>Boundary</u> |             |            | <u>Grand Coulee</u> |             |            | <u>Grand C. Tlwr</u> |             |           | <u>Chief Joseph</u> |             |             |             |             |            |             |           |
|------|-----------------------|-------------|-------------|-----------------|-------------|------------|---------------------|-------------|------------|----------------------|-------------|-----------|---------------------|-------------|-------------|-------------|-------------|------------|-------------|-----------|
|      | <u>24 h</u>           | <u>12 h</u> | <u>#</u>    | <u>24 h</u>     | <u>12 h</u> | <u>#</u>   | <u>24 h</u>         | <u>12 h</u> | <u>#</u>   | <u>24 h</u>          | <u>12 h</u> | <u>#</u>  | <u>24 h</u>         | <u>12 h</u> | <u>#</u>    | <u>24 h</u> | <u>12 h</u> | <u>#</u>   |             |           |
|      | <u>Avg</u>            | <u>Avg</u>  | <u>High</u> | <u>hr</u>       | <u>Avg</u>  | <u>Avg</u> | <u>High</u>         | <u>hr</u>   | <u>Avg</u> | <u>Avg</u>           | <u>High</u> | <u>hr</u> | <u>Avg</u>          | <u>Avg</u>  | <u>High</u> | <u>hr</u>   | <u>Avg</u>  | <u>Avg</u> | <u>High</u> | <u>hr</u> |
| 7/29 | 105.2                 | 105.8       | 106.3       | 24              | ---         | ---        | ---                 | 0           | 104.6      | 104.9                | 105.3       | 24        | 103.0               | 103.7       | 104.1       | 24          | 104.3       | 104.9      | 105.2       | 24        |
| 7/30 | 115.7                 | 117.8       | 117.9       | 24              | ---         | ---        | ---                 | 0           | 105.0      | 105.2                | 105.3       | 24        | 103.4               | 104.0       | 104.4       | 24          | 104.9       | 105.2      | 105.6       | 24        |
| 7/31 | 117.7                 | 117.7       | 117.9       | 10              | ---         | ---        | ---                 | 0           | 104.2      | 104.5                | 105.0       | 24        | 102.8               | 103.1       | 103.4       | 24          | 104.0       | 104.3      | 104.5       | 24        |
| 8/1  | 117.5                 | 117.6       | 117.6       | 16              | ---         | ---        | ---                 | 0           | 103.8      | 104.1                | 104.4       | 24        | 102.4               | 102.8       | 103.0       | 24          | 103.5       | 103.8      | 104.0       | 24        |
| 8/2  | 117.5                 | 117.6       | 117.7       | 24              | ---         | ---        | ---                 | 0           | 103.9      | 104.2                | 104.6       | 24        | 102.3               | 103.0       | 103.6       | 24          | 103.5       | 103.7      | 104.1       | 24        |
| 8/3  | 117.4                 | 117.5       | 117.6       | 24              | ---         | ---        | ---                 | 0           | 103.1      | 103.3                | 103.4       | 24        | 101.4               | 101.9       | 102.2       | 24          | 103.1       | 103.3      | 103.7       | 24        |
| 8/4  | 117.4                 | 117.5       | 117.6       | 24              | ---         | ---        | ---                 | 0           | 103.6      | 103.9                | 104.1       | 24        | 101.9               | 102.6       | 102.9       | 24          | 103.2       | 103.7      | 104.0       | 24        |
| 8/5  | 117.5                 | 117.6       | 117.7       | 24              | ---         | ---        | ---                 | 0           | 104.5      | 104.7                | 104.9       | 24        | 102.6               | 103.3       | 103.8       | 24          | 103.9       | 104.3      | 104.6       | 24        |
| 8/6  | 111.4                 | 117.6       | 117.8       | 24              | ---         | ---        | ---                 | 0           | 104.5      | 104.7                | 105.1       | 24        | 102.4               | 102.9       | 103.3       | 24          | 103.8       | 104.1      | 104.4       | 24        |
| 8/7  | 104.8                 | 105.4       | 106.1       | 24              | ---         | ---        | ---                 | 0           | 105.1      | 105.3                | 105.7       | 24        | 102.3               | 103.0       | 103.7       | 24          | 103.5       | 103.8      | 104.1       | 24        |
| 8/8  | 104.9                 | 105.2       | 106.0       | 19              | ---         | ---        | ---                 | 0           | 104.6      | 105.0                | 105.9       | 24        | 102.0               | 102.4       | 103.0       | 24          | 103.2       | 103.4      | 103.5       | 24        |
| 8/9  | 104.8                 | 105.0       | 105.6       | 20              | ---         | ---        | ---                 | 0           | 104.3      | 104.6                | 105.4       | 24        | 101.9               | 102.3       | 102.9       | 24          | 102.9       | 103.1      | 103.3       | 24        |
| 8/10 | 103.8                 | 104.4       | 104.7       | 22              | ---         | ---        | ---                 | 0           | 103.7      | 104.0                | 104.8       | 24        | 102.2               | 102.5       | 103.1       | 24          | 102.7       | 103.0      | 103.3       | 24        |
| 8/11 | 102.6                 | 103.1       | 103.4       | 22              | ---         | ---        | ---                 | 0           | 104.0      | 104.2                | 104.5       | 23        | 102.0               | 102.5       | 103.0       | 23          | 102.3       | 102.5      | 102.7       | 23        |

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

| Date | <u>Chief J. Dnst</u> |             |             | <u>Wells</u> |             |            | <u>Wells Dwnstrm</u> |             |            | <u>Rocky Reach</u> |             |           | <u>Rocky R. Tlwr</u> |             |             |             |             |            |             |           |
|------|----------------------|-------------|-------------|--------------|-------------|------------|----------------------|-------------|------------|--------------------|-------------|-----------|----------------------|-------------|-------------|-------------|-------------|------------|-------------|-----------|
|      | <u>24 h</u>          | <u>12 h</u> | <u>#</u>    | <u>24 h</u>  | <u>12 h</u> | <u>#</u>   | <u>24 h</u>          | <u>12 h</u> | <u>#</u>   | <u>24 h</u>        | <u>12 h</u> | <u>#</u>  | <u>24 h</u>          | <u>12 h</u> | <u>#</u>    | <u>24 h</u> | <u>12 h</u> | <u>#</u>   |             |           |
|      | <u>Avg</u>           | <u>Avg</u>  | <u>High</u> | <u>hr</u>    | <u>Avg</u>  | <u>Avg</u> | <u>High</u>          | <u>hr</u>   | <u>Avg</u> | <u>Avg</u>         | <u>High</u> | <u>hr</u> | <u>Avg</u>           | <u>Avg</u>  | <u>High</u> | <u>hr</u>   | <u>Avg</u>  | <u>Avg</u> | <u>High</u> | <u>hr</u> |
| 7/29 | 104.3                | 104.7       | 104.9       | 24           | 105.3       | 105.9      | 106.4                | 24          | 107.6      | 108.3              | 108.9       | 24        | 108.4                | 108.9       | 109.5       | 24          | 113.5       | 114.6      | 115.1       | 24        |
| 7/30 | 104.8                | 105.1       | 105.4       | 24           | 105.4       | 105.9      | 106.3                | 24          | 107.3      | 108.0              | 108.7       | 24        | 108.2                | 108.4       | 108.7       | 24          | 113.3       | 114.0      | 114.9       | 24        |
| 7/31 | 103.9                | 104.3       | 105.0       | 24           | 104.4       | 104.8      | 105.3                | 24          | 106.3      | 107.0              | 107.6       | 24        | 106.7                | 106.9       | 107.2       | 24          | 111.5       | 112.6      | 113.2       | 24        |
| 8/1  | 103.3                | 103.5       | 103.6       | 24           | 104.2       | 105.0      | 105.6                | 23          | 106.2      | 107.2              | 107.9       | 23        | 105.7                | 106.2       | 106.6       | 24          | 112.2       | 113.3      | 114.1       | 24        |
| 8/2  | 103.6                | 104.0       | 104.5       | 24           | 104.0       | 104.5      | 104.9                | 24          | 106.1      | 106.4              | 106.8       | 24        | 105.8                | 106.1       | 106.1       | 24          | 111.4       | 112.1      | 112.6       | 24        |
| 8/3  | 103.0                | 103.2       | 103.5       | 24           | 102.9       | 103.5      | 104.1                | 23          | 105.0      | 105.6              | 106.1       | 23        | 105.0                | 105.2       | 105.5       | 24          | 111.1       | 112.3      | 112.9       | 24        |
| 8/4  | 103.0                | 103.2       | 103.4       | 24           | 103.9       | 104.7      | 105.3                | 22          | 106.1      | 107.0              | 107.6       | 22        | 105.3                | 105.8       | 106.1       | 24          | 111.7       | 112.7      | 113.0       | 24        |
| 8/5  | 103.8                | 104.0       | 104.5       | 24           | 104.7       | 105.4      | 105.6                | 23          | 106.8      | 107.5              | 108.1       | 23        | 106.5                | 106.9       | 107.2       | 24          | 111.9       | 112.9      | 113.6       | 24        |
| 8/6  | 103.6                | 103.8       | 104.4       | 24           | 104.3       | 104.5      | 105.6                | 14          | 106.1      | 106.3              | 107.7       | 14        | 106.8                | 106.9       | 107.2       | 24          | 111.4       | 112.7      | 113.2       | 24        |
| 8/7  | 103.5                | 103.9       | 104.5       | 24           | 104.3       | 104.7      | 105.6                | 19          | 106.0      | 106.6              | 107.3       | 19        | 106.5                | 106.7       | 107.1       | 24          | 110.4       | 111.5      | 112.8       | 24        |
| 8/8  | 103.0                | 103.3       | 103.6       | 24           | 103.1       | 103.2      | 103.7                | 18          | 105.0      | 105.3              | 106.0       | 18        | 105.3                | 105.5       | 105.7       | 24          | 110.8       | 112.1      | 112.4       | 24        |
| 8/9  | 103.2                | 103.5       | 103.9       | 24           | 102.8       | 103.1      | 103.8                | 17          | 104.5      | 104.8              | 105.4       | 17        | 105.0                | 105.2       | 105.6       | 24          | 110.3       | 111.6      | 112.6       | 24        |
| 8/10 | 103.0                | 103.2       | 103.5       | 24           | 103.1       | 103.4      | 104.4                | 16          | 105.0      | 105.4              | 106.3       | 16        | 104.4                | 104.5       | 104.6       | 24          | 110.2       | 111.4      | 112.0       | 24        |
| 8/11 | 102.5                | 102.8       | 103.1       | 23           | 103.2       | 103.4      | 104.3                | 14          | 105.1      | 105.4              | 106.2       | 14        | 104.2                | 104.5       | 104.9       | 23          | 110.6       | 112.0      | 112.3       | 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>    | <u>24 h</u> | <u>12 h</u> | <u>#</u>   |             |           |
|      | <u>Avg</u>         | <u>Avg</u>  | <u>High</u> | <u>hr</u>           | <u>Avg</u>  | <u>Avg</u> | <u>High</u>    | <u>hr</u>   | <u>Avg</u> | <u>Avg</u>          | <u>High</u> | <u>hr</u> | <u>Avg</u>           | <u>Avg</u>  | <u>High</u> | <u>hr</u>   | <u>Avg</u>  | <u>Avg</u> | <u>High</u> | <u>hr</u> |
| 7/29 | 108.7              | 109.7       | 110.7       | 24                  | 113.3       | 114.7      | 115.3          | 24          | 110.1      | 111.3               | 112.3       | 24        | 112.2                | 112.6       | 113.7       | 24          | 112.8       | 113.1      | 114.3       | 24        |
| 7/30 | 108.8              | 109.1       | 110.0       | 24                  | 113.8       | 114.7      | 115.3          | 24          | 108.0      | 108.4               | 109.6       | 24        | 111.8                | 112.3       | 112.7       | 24          | 111.9       | 112.4      | 112.9       | 24        |
| 7/31 | 107.2              | 107.6       | 108.4       | 24                  | 112.1       | 112.7      | 114.6          | 24          | 105.8      | 106.5               | 107.2       | 24        | 110.3                | 110.7       | 111.5       | 24          | 109.7       | 109.9      | 110.5       | 24        |
| 8/1  | 106.6              | 107.5       | 108.7       | 24                  | 112.6       | 114.0      | 114.8          | 24          | 106.5      | 108.1               | 109.6       | 24        | 109.9                | 110.5       | 111.6       | 24          | 109.2       | 109.4      | 109.8       | 24        |
| 8/2  | 106.1              | 106.6       | 108.1       | 24                  | 112.4       | 113.5      | 114.5          | 24          | 105.5      | 106.5               | 106.9       | 24        | 110.6                | 111.8       | 114.4       | 24          | 109.0       | 109.3      | 109.5       | 24        |
| 8/3  | 106.1              | 106.7       | 107.2       | 24                  | 112.0       | 113.0      | 113.5          | 23          | 103.3      | 104.4               | 105.0       | 24        | 109.4                | 110.6       | 113.2       | 24          | 108.2       | 108.4      | 108.6       | 24        |
| 8/4  | 106.6              | 107.2       | 108.0       | 24                  | 112.5       | 113.4      | 114.2          | 24          | 106.9      | 108.6               | 110.0       | 24        | 110.4                | 111.0       | 112.1       | 24          | 109.0       | 109.4      | 110.0       | 24        |
| 8/5  | 107.3              | 107.9       | 108.4       | 24                  | 111.9       | 112.7      | 113.5          | 24          | 109.0      | 109.7               | 110.9       | 24        | 111.8                | 112.3       | 113.5       | 24          | 110.6       | 110.9      | 111.1       | 24        |
| 8/6  | 107.1              | 107.8       | 108.4       | 24                  | 112.1       | 113.1      | 113.8          | 24          | 106.7      | 107.7               | 108.0       | 24        | 111.0                | 111.7       | 113.6       | 24          | 110.0       | 110.3      | 110.6       | 24        |
| 8/7  | 106.9              | 107.2       | 108.1       | 24                  | 112.6       | 113.5      | 114.2          | 24          | 106.3      | 107.2               | 107.6       | 24        | 111.7                | 112.4       | 113.9       | 24          | 109.8       | 110.0      | 110.1       | 24        |
| 8/8  | 106.1              | 106.6       | 107.1       | 24                  | 111.7       | 112.6      | 114.5          | 24          | 105.2      | 105.6               | 106.7       | 24        | 110.6                | 111.1       | 112.3       | 24          | 109.3       | 109.3      | 109.4       | 24        |
| 8/9  | 105.9              | 106.2       | 106.7       | 24                  | 111.6       | 112.5      | 113.4          | 23          | 104.3      | 105.9               | 107.0       | 24        | 110.4                | 111.0       | 111.9       | 24          | 109.1       | 109.3      | 109.4       | 24        |
| 8/10 | 105.7              | 106.2       | 106.6       | 24                  | 111.0       | 112.0      | 113.8          | 24          | 106.4      | 107.3               | 107.9       | 24        | 110.0                | 110.4       | 111.1       | 24          | 109.0       | 109.2      | 109.4       | 24        |
| 8/11 | 105.5              | 106.0       | 106.6       | 23                  | 110.8       | 111.6      | 112.0          | 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>Clrwtr-Peck</u> |             |           | <u>Anatone</u> |             |             | #  |           |            |            |    |
|------|-----------------------|-------------|-------------|--------------|-------------|-------------|-----------------|-----------|-------------|--------------------|-------------|-----------|----------------|-------------|-------------|----|-----------|------------|------------|----|
|      | <u>24 h</u>           | <u>12 h</u> | <u>High</u> | <u>#</u>     | <u>24 h</u> | <u>12 h</u> | <u>High</u>     | <u>#</u>  | <u>24 h</u> | <u>12 h</u>        | <u>High</u> | <u>#</u>  | <u>24 h</u>    | <u>12 h</u> | <u>High</u> |    |           |            |            |    |
|      | <u>Avg</u>            | <u>Avg</u>  |             | <u>hr</u>    | <u>Avg</u>  | <u>Avg</u>  |                 | <u>hr</u> | <u>Avg</u>  | <u>Avg</u>         |             | <u>hr</u> | <u>Avg</u>     | <u>Avg</u>  |             |    | <u>hr</u> | <u>Avg</u> | <u>Avg</u> |    |
| 7/29 | 113.6                 | 114.0       | 115.2       | 24           | ---         | ---         | ---             | 0         | 104.5       | 104.9              | 105.2       | 24        | 104.9          | 106.0       | 107.0       | 24 | 102.0     | 104.0      | 105.5      | 24 |
| 7/30 | 112.9                 | 113.3       | 113.6       | 24           | ---         | ---         | ---             | 0         | 104.6       | 104.9              | 105.4       | 24        | 104.8          | 106.0       | 107.1       | 24 | 102.0     | 103.6      | 105.1      | 24 |
| 7/31 | 111.2                 | 111.6       | 113.0       | 24           | ---         | ---         | ---             | 0         | 104.1       | 104.4              | 104.7       | 24        | 104.0          | 105.1       | 106.0       | 24 | 101.2     | 102.9      | 104.7      | 24 |
| 8/1  | 110.7                 | 111.2       | 111.4       | 24           | ---         | ---         | ---             | 0         | 99.8        | 100.2              | 100.5       | 24        | 100.6          | 101.8       | 102.4       | 24 | 101.3     | 103.3      | 105.1      | 24 |
| 8/2  | 112.3                 | 113.9       | 116.5       | 24           | ---         | ---         | ---             | 0         | 99.8        | 100.2              | 100.6       | 24        | 99.9           | 101.3       | 102.5       | 24 | 101.2     | 102.9      | 104.7      | 24 |
| 8/3  | 112.1                 | 113.8       | 116.5       | 24           | ---         | ---         | ---             | 0         | 99.1        | 99.4               | 99.7        | 24        | 99.2           | 100.5       | 101.6       | 24 | 100.9     | 103.1      | 105.1      | 24 |
| 8/4  | 112.1                 | 112.6       | 115.3       | 24           | ---         | ---         | ---             | 0         | 99.8        | 100.2              | 100.5       | 24        | 98.7           | 99.9        | 100.8       | 24 | 101.8     | 104.1      | 105.8      | 24 |
| 8/5  | 113.5                 | 114.2       | 116.5       | 24           | ---         | ---         | ---             | 0         | 100.4       | 100.8              | 101.2       | 24        | 99.1           | 100.4       | 101.6       | 24 | 102.6     | 103.5      | 105.4      | 17 |
| 8/6  | 112.6                 | 113.3       | 116.4       | 24           | ---         | ---         | ---             | 0         | 100.3       | 100.6              | 101.0       | 24        | 98.9           | 99.9        | 101.2       | 24 | 101.1     | 102.8      | 105.0      | 24 |
| 8/7  | 113.2                 | 114.3       | 117.4       | 24           | ---         | ---         | ---             | 0         | 100.2       | 100.3              | 100.7       | 24        | 98.2           | 98.8        | 99.9        | 24 | 99.4      | 100.3      | 102.3      | 24 |
| 8/8  | 112.1                 | 112.5       | 114.2       | 24           | ---         | ---         | ---             | 0         | 100.1       | 100.5              | 100.9       | 24        | 99.2           | 101.4       | 103.8       | 24 | 100.3     | 102.7      | 104.2      | 24 |
| 8/9  | 112.0                 | 112.4       | 113.4       | 24           | ---         | ---         | ---             | 0         | 99.8        | 100.0              | 100.3       | 24        | 101.1          | 102.0       | 102.9       | 24 | 100.7     | 101.1      | 102.3      | 19 |
| 8/10 | 111.2                 | 111.7       | 112.1       | 24           | ---         | ---         | ---             | 0         | 99.8        | 100.1              | 100.5       | 24        | 101.2          | 102.3       | 103.6       | 24 | 101.4     | 102.8      | 104.3      | 23 |
| 8/11 | ---                   | ---         | ---         | 0            | ---         | ---         | ---             | 0         | 99.6        | 99.9               | 100.2       | 23        | 101.3          | 102.4       | 103.5       | 23 | 101.9     | 103.2      | 104.5      | 23 |

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

| Date | <u>Clrwtr-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>High</u> | <u>#</u>             | <u>24 h</u> | <u>12 h</u> | <u>High</u>            | <u>#</u>  | <u>24 h</u> | <u>12 h</u>         | <u>High</u> | <u>#</u>  | <u>24 h</u>          | <u>12 h</u> | <u>High</u> |    |           |            |            |    |
|      | <u>Avg</u>             | <u>Avg</u>  |             | <u>hr</u>            | <u>Avg</u>  | <u>Avg</u>  |                        | <u>hr</u> | <u>Avg</u>  | <u>Avg</u>          |             | <u>hr</u> | <u>Avg</u>           | <u>Avg</u>  |             |    | <u>hr</u> | <u>Avg</u> | <u>Avg</u> |    |
| 7/29 | 105.3                  | 107.8       | 109.5       | 24                   | 102.9       | 103.2       | 103.6                  | 24        | 112.4       | 112.7               | 113.0       | 24        | 107.5                | 108.0       | 108.5       | 24 | 109.0     | 109.6      | 110.3      | 24 |
| 7/30 | 105.3                  | 107.7       | 109.5       | 24                   | 103.9       | 104.2       | 104.5                  | 24        | 112.2       | 112.6               | 113.1       | 24        | 108.7                | 109.2       | 109.4       | 24 | 108.6     | 109.0      | 109.5      | 24 |
| 7/31 | 104.5                  | 106.8       | 108.3       | 24                   | 103.6       | 103.8       | 104.2                  | 24        | 109.8       | 110.4               | 111.4       | 24        | 108.2                | 108.5       | 108.9       | 24 | 108.1     | 108.5      | 109.0      | 24 |
| 8/1  | 104.1                  | 106.2       | 107.8       | 24                   | 103.1       | 103.3       | 103.5                  | 24        | 109.3       | 109.8               | 110.5       | 24        | 107.6                | 108.0       | 108.5       | 24 | 108.3     | 109.0      | 109.4      | 24 |
| 8/2  | 103.3                  | 105.3       | 107.3       | 24                   | 103.1       | 103.3       | 103.4                  | 24        | 108.8       | 109.2               | 109.4       | 24        | 106.9                | 107.4       | 108.1       | 24 | 107.8     | 108.4      | 108.7      | 24 |
| 8/3  | 103.2                  | 105.6       | 107.2       | 24                   | 102.4       | 102.5       | 102.6                  | 24        | 109.6       | 110.9               | 111.6       | 24        | 106.0                | 106.5       | 107.1       | 24 | 109.0     | 109.3      | 109.6      | 24 |
| 8/4  | 103.7                  | 106.1       | 107.8       | 24                   | 101.9       | 102.1       | 102.4                  | 24        | 109.0       | 109.6               | 110.0       | 24        | 106.1                | 107.1       | 108.0       | 24 | 109.2     | 109.7      | 110.2      | 24 |
| 8/5  | 103.8                  | 106.2       | 107.7       | 24                   | 102.5       | 102.5       | 102.7                  | 24        | 110.3       | 111.9               | 112.5       | 24        | 105.9                | 106.1       | 107.0       | 24 | 109.1     | 109.5      | 110.0      | 24 |
| 8/6  | 103.5                  | 105.4       | 107.2       | 24                   | 101.9       | 102.1       | 102.4                  | 24        | 109.4       | 110.1               | 111.8       | 24        | 105.2                | 105.4       | 105.6       | 24 | 108.4     | 108.7      | 109.0      | 24 |
| 8/7  | 102.2                  | 103.6       | 105.2       | 24                   | 101.5       | 101.7       | 101.9                  | 24        | 109.5       | 110.6               | 111.2       | 24        | 104.8                | 105.1       | 105.3       | 24 | 108.3     | 108.5      | 108.8      | 24 |
| 8/8  | 103.1                  | 105.4       | 106.9       | 24                   | 101.5       | 101.8       | 102.0                  | 24        | 111.3       | 114.0               | 115.0       | 24        | 104.5                | 104.8       | 105.1       | 24 | 108.3     | 108.8      | 109.0      | 24 |
| 8/9  | 101.8                  | 102.9       | 104.1       | 24                   | 101.6       | 102.1       | 102.3                  | 23        | 111.8       | 114.3               | 115.2       | 24        | 104.6                | 104.8       | 105.1       | 24 | 108.6     | 108.8      | 109.1      | 24 |
| 8/10 | 102.3                  | 104.3       | 105.8       | 24                   | 101.6       | 101.8       | 102.0                  | 24        | 111.5       | 114.3               | 115.3       | 24        | 103.9                | 104.1       | 104.3       | 24 | 108.7     | 109.1      | 109.6      | 24 |
| 8/11 | 102.6                  | 104.7       | 106.3       | 23                   | 100.8       | 100.9       | 101.2                  | 23        | 111.2       | 113.9               | 114.8       | 23        | 104.3                | 104.7       | 104.8       | 23 | 108.6     | 108.9      | 109.3      | 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>High</u> | <u>#</u>            | <u>24 h</u> | <u>12 h</u> | <u>High</u>       | <u>#</u>  | <u>24 h</u> | <u>12 h</u>            | <u>High</u> | <u>#</u>  | <u>24 h</u>          | <u>12 h</u> | <u>High</u> |    |           |            |            |   |
|      | <u>Avg</u>        | <u>Avg</u>  |             | <u>hr</u>           | <u>Avg</u>  | <u>Avg</u>  |                   | <u>hr</u> | <u>Avg</u>  | <u>Avg</u>             |             | <u>hr</u> | <u>Avg</u>           | <u>Avg</u>  |             |    | <u>hr</u> | <u>Avg</u> | <u>Avg</u> |   |
| 7/29 | 107.7             | 108.1       | 108.5       | 24                  | 115.1       | 116.3       | 117.5             | 24        | 114.0       | 114.4                  | 115.0       | 24        | 111.3                | 112.4       | 113.6       | 24 | ---       | ---        | ---        | 0 |
| 7/30 | 108.0             | 108.2       | 108.6       | 24                  | 114.2       | 116.4       | 117.0             | 24        | 114.1       | 114.3                  | 114.5       | 24        | 110.3                | 111.8       | 113.9       | 24 | ---       | ---        | ---        | 0 |
| 7/31 | 106.7             | 106.9       | 107.5       | 24                  | 113.6       | 116.2       | 117.4             | 24        | 113.1       | 113.3                  | 113.9       | 24        | 109.6                | 110.5       | 113.1       | 24 | ---       | ---        | ---        | 0 |
| 8/1  | 106.9             | 107.3       | 107.7       | 24                  | 113.2       | 116.3       | 117.3             | 24        | 112.4       | 112.7                  | 112.8       | 24        | 109.8                | 111.3       | 113.4       | 24 | ---       | ---        | ---        | 0 |
| 8/2  | 106.8             | 107.2       | 107.6       | 24                  | 113.0       | 116.5       | 118.0             | 24        | 111.7       | 112.2                  | 112.6       | 24        | 108.1                | 108.9       | 109.9       | 24 | ---       | ---        | ---        | 0 |
| 8/3  | 105.2             | 105.4       | 105.7       | 24                  | 112.9       | 116.6       | 117.4             | 24        | 108.9       | 109.3                  | 110.2       | 24        | 108.8                | 109.4       | 110.2       | 24 | ---       | ---        | ---        | 0 |
| 8/4  | 105.9             | 106.3       | 106.7       | 24                  | 113.4       | 117.5       | 118.3             | 24        | 109.6       | 110.1                  | 110.5       | 24        | 108.6                | 109.4       | 110.1       | 24 | ---       | ---        | ---        | 0 |
| 8/5  | 106.1             | 106.3       | 106.4       | 24                  | 113.1       | 116.2       | 118.6             | 24        | 110.4       | 110.6                  | 110.8       | 24        | 108.5                | 109.6       | 110.7       | 24 | ---       | ---        | ---        | 0 |
| 8/6  | 105.7             | 105.8       | 106.1       | 24                  | 112.1       | 112.5       | 113.7             | 24        | 109.7       | 109.8                  | 110.3       | 24        | 109.3                | 109.8       | 110.8       | 24 | ---       | ---        | ---        | 0 |
| 8/7  | 105.5             | 105.7       | 106.0       | 24                  | 110.9       | 111.5       | 112.0             | 24        | 109.3       | 109.4                  | 109.5       | 24        | 108.3                | 108.8       | 109.2       | 24 | ---       | ---        | ---        | 0 |
| 8/8  | 105.0             | 105.3       | 105.9       | 24                  | 110.3       | 111.1       | 111.5             | 24        | 108.4       | 108.8                  | 109.5       | 24        | 108.7                | 109.6       | 110.5       | 24 | ---       | ---        | ---        | 0 |
| 8/9  | 104.4             | 104.6       | 104.8       | 24                  | 110.3       | 111.4       | 111.8             | 24        | 107.6       | 107.9                  | 108.0       | 24        | 108.4                | 109.0       | 109.4       | 24 | ---       | ---        | ---        | 0 |
| 8/10 | 104.0             | 104.3       | 104.7       | 24                  | 110.8       | 111.2       | 111.8             | 24        | 107.0       | 107.3                  | 107.6       | 24        | 107.9                | 108.4       | 108.7       | 24 | ---       | ---        | ---        | 0 |
| 8/11 | 103.6             | 103.8       | 104.0       | 23                  | 111.0       | 112.0       | 113.2             | 23        | 105.9       | 106.2                  | 106.5       | 23        | 108.2                | 109.7       | 110.7       | 23 | ---       | ---        | ---        | 0 |

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

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

| Date | <u>McNary-Wash</u> |             |             | <u>McNary Tlwr</u> |             |            | <u>John Day</u> |            |            | <u>John Day Tlwr</u> |             |           | <u>The Dalles</u> |            |             |           |       |       |       |    |
|------|--------------------|-------------|-------------|--------------------|-------------|------------|-----------------|------------|------------|----------------------|-------------|-----------|-------------------|------------|-------------|-----------|-------|-------|-------|----|
|      | <u>24 h</u>        | <u>12 h</u> | <u>#</u>    | <u>24 h</u>        | <u>12 h</u> | <u>#</u>   | <u>24h</u>      | <u>12h</u> | <u>#</u>   | <u>24h</u>           | <u>12h</u>  | <u>#</u>  | <u>24h</u>        | <u>12h</u> | <u>#</u>    |           |       |       |       |    |
|      | <u>Avg</u>         | <u>Avg</u>  | <u>High</u> | <u>hr</u>          | <u>Avg</u>  | <u>Avg</u> | <u>High</u>     | <u>hr</u>  | <u>Avg</u> | <u>Avg</u>           | <u>High</u> | <u>hr</u> | <u>Avg</u>        | <u>AVG</u> | <u>High</u> | <u>hr</u> |       |       |       |    |
| 7/29 | 111.1              | 111.6       | 111.9       | 24                 | 116.9       | 117.2      | 117.6           | 24         | 107.9      | 108.5                | 109.0       | 24        | 114.1             | 114.4      | 114.9       | 24        | 108.9 | 109.2 | 109.4 | 24 |
| 7/30 | 111.2              | 111.3       | 111.9       | 24                 | 116.3       | 116.8      | 117.2           | 24         | 107.7      | 108.0                | 108.3       | 24        | 114.3             | 114.5      | 114.8       | 24        | 107.1 | 108.2 | 108.5 | 24 |
| 7/31 | 109.3              | 109.9       | 110.3       | 24                 | 115.8       | 116.8      | 117.2           | 24         | 106.0      | 106.3                | 106.8       | 24        | 114.1             | 114.6      | 115.1       | 24        | 103.9 | 104.3 | 104.4 | 24 |
| 8/1  | 108.5              | 109.0       | 109.6       | 24                 | 116.5       | 117.1      | 117.8           | 24         | 105.9      | 106.3                | 106.8       | 24        | 114.0             | 114.4      | 114.9       | 24        | 106.1 | 106.8 | 107.3 | 24 |
| 8/2  | 106.0              | 106.8       | 107.7       | 24                 | 114.5       | 114.9      | 115.7           | 24         | 105.0      | 105.5                | 106.0       | 24        | 112.7             | 113.2      | 113.4       | 24        | 106.0 | 106.9 | 107.4 | 24 |
| 8/3  | 104.1              | 104.4       | 104.6       | 24                 | 114.0       | 114.4      | 115.0           | 24         | 104.1      | 104.4                | 105.0       | 24        | 113.0             | 113.2      | 113.6       | 24        | 103.9 | 104.5 | 105.1 | 24 |
| 8/4  | 105.2              | 105.6       | 105.8       | 24                 | 115.1       | 116.0      | 116.8           | 24         | 104.8      | 105.1                | 105.5       | 24        | 113.1             | 113.4      | 113.6       | 24        | 107.9 | 109.3 | 109.6 | 24 |
| 8/5  | 106.0              | 106.3       | 107.0       | 24                 | 115.5       | 116.1      | 116.6           | 24         | 104.7      | 105.1                | 105.6       | 24        | 112.9             | 113.3      | 114.0       | 24        | 108.3 | 109.0 | 109.2 | 24 |
| 8/6  | 106.4              | 106.8       | 107.3       | 24                 | 114.3       | 114.8      | 115.0           | 24         | 103.4      | 103.7                | 103.9       | 24        | 112.5             | 113.2      | 113.6       | 24        | 104.7 | 105.1 | 105.4 | 24 |
| 8/7  | 107.3              | 107.5       | 107.7       | 24                 | 113.7       | 114.0      | 114.2           | 24         | 103.0      | 103.2                | 103.3       | 24        | 112.1             | 112.5      | 112.6       | 24        | 103.8 | 104.2 | 104.5 | 24 |
| 8/8  | 105.5              | 106.0       | 106.6       | 24                 | 114.1       | 114.7      | 115.4           | 24         | 102.5      | 102.7                | 102.8       | 24        | 112.2             | 112.9      | 113.4       | 24        | 104.2 | 104.7 | 104.9 | 24 |
| 8/9  | 104.2              | 104.4       | 104.8       | 24                 | 114.2       | 114.6      | 114.9           | 24         | 102.0      | 102.1                | 102.3       | 24        | 112.6             | 113.2      | 113.9       | 24        | 104.5 | 105.0 | 105.3 | 24 |
| 8/10 | 103.4              | 103.6       | 103.8       | 24                 | 114.3       | 115.2      | 115.5           | 24         | 101.8      | 102.1                | 102.4       | 24        | 112.5             | 113.6      | 114.2       | 24        | 103.8 | 104.1 | 104.2 | 24 |
| 8/11 | 104.1              | 104.6       | 104.9       | 23                 | 114.8       | 115.6      | 116.0           | 23         | 102.3      | 102.8                | 103.2       | 23        | 112.9             | 113.6      | 114.1       | 23        | 105.7 | 106.2 | 106.5 | 23 |

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

| Date | <u>The Dalles Dnst</u> |             |             | <u>Bonneville</u> |             |            | <u>Warrendale</u> |            |            | <u>CamasWashougal</u> |             |           | <u>Cascade Island</u> |            |             |           |       |       |       |    |
|------|------------------------|-------------|-------------|-------------------|-------------|------------|-------------------|------------|------------|-----------------------|-------------|-----------|-----------------------|------------|-------------|-----------|-------|-------|-------|----|
|      | <u>24 h</u>            | <u>12 h</u> | <u>#</u>    | <u>24 h</u>       | <u>12 h</u> | <u>#</u>   | <u>24h</u>        | <u>12h</u> | <u>#</u>   | <u>24h</u>            | <u>12h</u>  | <u>#</u>  | <u>24h</u>            | <u>12h</u> | <u>#</u>    |           |       |       |       |    |
|      | <u>Avg</u>             | <u>Avg</u>  | <u>High</u> | <u>hr</u>         | <u>Avg</u>  | <u>Avg</u> | <u>High</u>       | <u>hr</u>  | <u>Avg</u> | <u>Avg</u>            | <u>High</u> | <u>hr</u> | <u>Avg</u>            | <u>AVG</u> | <u>High</u> | <u>hr</u> |       |       |       |    |
| 7/29 | 114.1                  | 114.8       | 115.2       | 24                | 109.0       | 109.7      | 110.1             | 24         | 115.9      | 116.5                 | 117.1       | 24        | 113.8                 | 115.0      | 115.7       | 24        | 117.1 | 117.4 | 117.4 | 24 |
| 7/30 | 112.6                  | 113.0       | 113.3       | 24                | 107.2       | 107.8      | 108.6             | 24         | 115.0      | 115.7                 | 116.4       | 24        | 111.3                 | 112.5      | 113.2       | 24        | 117.1 | 117.2 | 117.4 | 24 |
| 7/31 | 110.9                  | 111.3       | 111.7       | 24                | 104.2       | 104.7      | 105.7             | 24         | 115.1      | 115.9                 | 116.3       | 24        | 111.0                 | 112.4      | 113.5       | 24        | 117.0 | 117.2 | 117.3 | 24 |
| 8/1  | 112.1                  | 112.9       | 113.4       | 24                | 103.7       | 104.3      | 104.7             | 24         | 114.0      | 114.2                 | 114.4       | 24        | 110.8                 | 111.7      | 112.5       | 24        | 116.8 | 117.0 | 117.3 | 24 |
| 8/2  | 111.3                  | 111.6       | 112.9       | 24                | 103.9       | 104.1      | 104.3             | 24         | 114.5      | 115.1                 | 115.7       | 24        | 108.4                 | 109.5      | 110.0       | 24        | 116.9 | 117.0 | 117.3 | 24 |
| 8/3  | 110.9                  | 111.1       | 111.3       | 24                | 104.6       | 105.4      | 105.9             | 24         | 115.5      | 115.8                 | 116.1       | 24        | 111.6                 | 113.9      | 115.1       | 24        | 115.1 | 116.3 | 116.9 | 24 |
| 8/4  | 112.7                  | 114.0       | 114.6       | 24                | 106.5       | 107.1      | 107.8             | 24         | 116.2      | 116.8                 | 117.3       | 24        | 114.2                 | 115.1      | 115.7       | 24        | 114.1 | 114.2 | 114.3 | 24 |
| 8/5  | 113.2                  | 113.6       | 113.8       | 24                | 108.6       | 109.0      | 109.4             | 24         | 115.9      | 116.3                 | 116.7       | 24        | 113.1                 | 113.7      | 114.2       | 24        | 115.6 | 117.3 | 117.4 | 24 |
| 8/6  | 111.3                  | 111.7       | 111.9       | 24                | 105.8       | 106.1      | 107.1             | 24         | 115.8      | 116.1                 | 116.3       | 24        | 111.2                 | 112.7      | 113.7       | 24        | 115.3 | 116.7 | 117.2 | 24 |
| 8/7  | 110.2                  | 110.5       | 110.9       | 24                | 104.5       | 104.7      | 105.1             | 24         | 115.7      | 116.0                 | 116.2       | 24        | 111.8                 | 112.5      | 113.2       | 24        | 116.8 | 116.9 | 117.0 | 24 |
| 8/8  | 110.6                  | 111.3       | 111.4       | 24                | 104.2       | 104.4      | 104.7             | 24         | 115.5      | 115.8                 | 115.9       | 24        | 112.2                 | 113.1      | 113.9       | 24        | 116.7 | 116.8 | 116.8 | 24 |
| 8/9  | 110.7                  | 111.4       | 112.3       | 24                | 103.9       | 104.0      | 104.3             | 24         | 114.6      | 114.8                 | 115.1       | 24        | 111.6                 | 112.4      | 112.7       | 24        | 114.9 | 116.1 | 116.7 | 24 |
| 8/10 | 110.7                  | 111.5       | 111.9       | 24                | 104.5       | 105.0      | 105.4             | 24         | 115.2      | 115.5                 | 115.7       | 24        | 112.4                 | 113.8      | 114.6       | 24        | 114.2 | 115.1 | 116.8 | 24 |
| 8/11 | 111.5                  | 112.8       | 113.4       | 23                | 105.8       | 106.5      | 107.6             | 23         | 116.3      | 116.8                 | 117.1       | 23        | 113.8                 | 115.3      | 116.4       | 23        | 116.7 | 116.9 | 117.1 | 23 |

## Two-Week Summary of Passage Indices

Source: Fish Passage Center

Updated: 8/12/2016 8:20

### Two-Week Summary of Passage Indices

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

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

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

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

| COMBINED YEARLING CHINOOK |        |               |               |               |              |                  |                  |                  |               |                  |                  |                  |
|---------------------------|--------|---------------|---------------|---------------|--------------|------------------|------------------|------------------|---------------|------------------|------------------|------------------|
|                           | WTB    | IMN           | GRN           | LEW           | LGR          | LGS              | LMN              | RIS              | MCN           | JDA              | BO2              |                  |
| Date                      | (Coll) | (Coll)        | (Coll)        | (Coll)        | (INDEX)      | (INDEX)          | (INDEX)          | (INDEX)          | (INDEX)       | (INDEX)          | (INDEX)          |                  |
| 07/28/2016                | *      | ---           | ---           | ---           | ---          | 5                | 0                | 4                | 0             | 0                | ---              | ---              |
| 07/29/2016                | *      | ---           | ---           | ---           | ---          | 0                | 0                | 0                | 0             | ---              | 0                | 0                |
| 07/30/2016                | *      | ---           | ---           | ---           | ---          | 5                | 0                | 0                | 0             | 0                | ---              | ---              |
| 07/31/2016                | *      | ---           | ---           | ---           | ---          | 0                | 0                | 0                | 0             | ---              | ---              | 0                |
| 08/01/2016                | *      | ---           | ---           | ---           | ---          | 0                | 0                | 0                | 0             | 0                | ---              | ---              |
| 08/02/2016                | *      | ---           | ---           | ---           | ---          | 4                | 0                | 0                | 0             | ---              | 0                | 0                |
| 08/03/2016                | *      | ---           | ---           | ---           | ---          | 0                | 0                | 0                | 0             | 0                | ---              | ---              |
| 08/04/2016                | *      | ---           | ---           | ---           | ---          | 0                | 0                | 0                | 0             | ---              | ---              | 0                |
| 08/05/2016                | *      | ---           | ---           | ---           | ---          | 0                | 0                | 0                | 0             | 0                | 0                | ---              |
| 08/06/2016                | *      | ---           | ---           | ---           | ---          | 0                | 0                | 0                | 0             | ---              | ---              | 0                |
| 08/07/2016                | *      | ---           | ---           | ---           | ---          | 0                | 0                | 0                | 0             | 0                | ---              | ---              |
| 08/08/2016                | *      | ---           | ---           | ---           | ---          | 0                | 0                | 0                | 0             | ---              | ---              | 0                |
| 08/09/2016                | *      | ---           | ---           | ---           | ---          | 0                | 0                | 0                | 0             | 0                | 0                | ---              |
| 08/10/2016                | *      | ---           | ---           | ---           | ---          | 10               | 0                | 0                | 0             | ---              | ---              | 0                |
| 08/11/2016                | *      | ---           | ---           | ---           | ---          | 0                | 0                | 0                | 0             | 0                | ---              | ---              |
| <hr/>                     |        |               |               |               |              |                  |                  |                  |               |                  |                  |                  |
| <b>Total:</b>             |        | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>     | <b>24</b>        | <b>0</b>         | <b>4</b>         | <b>0</b>      | <b>0</b>         | <b>0</b>         | <b>0</b>         |
| <b># Days:</b>            |        | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>     | <b>15</b>        | <b>15</b>        | <b>15</b>        | <b>15</b>     | <b>8</b>         | <b>4</b>         | <b>7</b>         |
| <b>Average:</b>           |        | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>     | <b>2</b>         | <b>0</b>         | <b>0</b>         | <b>0</b>      | <b>0</b>         | <b>0</b>         | <b>0</b>         |
| <b>YTD</b>                |        | <b>27,295</b> | <b>56,779</b> | <b>16,183</b> | <b>7,757</b> | <b>5,899,058</b> | <b>3,490,956</b> | <b>4,892,141</b> | <b>44,783</b> | <b>2,181,660</b> | <b>1,456,048</b> | <b>2,660,728</b> |

| COMBINED SUBYEARLING CHINOOK |        |          |           |            |              |                  |                |                |               |                  |                |                  |
|------------------------------|--------|----------|-----------|------------|--------------|------------------|----------------|----------------|---------------|------------------|----------------|------------------|
|                              | WTB    | IMN      | GRN       | LEW        | LGR          | LGS              | LMN            | RIS            | MCN           | JDA              | BO2            |                  |
| Date                         | (Coll) | (Coll)   | (Coll)    | (Coll)     | (INDEX)      | (INDEX)          | (INDEX)        | (INDEX)        | (INDEX)       | (INDEX)          | (INDEX)        |                  |
| 07/28/2016                   | *      | ---      | ---       | ---        | ---          | 608              | 389            | 45             | 79            | 1,220            | ---            | ---              |
| 07/29/2016                   | *      | ---      | ---       | ---        | ---          | 763              | 742            | 47             | 90            | ---              | 27             | 1,918            |
| 07/30/2016                   | *      | ---      | ---       | ---        | ---          | 948              | 847            | 36             | 39            | 1,043            | ---            | ---              |
| 07/31/2016                   | *      | ---      | ---       | ---        | ---          | 812              | 919            | 32             | 43            | ---              | ---            | 1,273            |
| 08/01/2016                   | *      | ---      | ---       | ---        | ---          | 993              | 629            | 55             | 51            | 354              | ---            | ---              |
| 08/02/2016                   | *      | ---      | ---       | ---        | ---          | 1,631            | 719            | 82             | 48            | ---              | 33             | 7,441            |
| 08/03/2016                   | *      | ---      | ---       | ---        | ---          | 1,596            | 1,190          | 52             | 33            | 449              | ---            | ---              |
| 08/04/2016                   | *      | ---      | ---       | ---        | ---          | 1,866            | 654            | 71             | 37            | ---              | ---            | 846              |
| 08/05/2016                   | *      | ---      | ---       | ---        | ---          | 1,734            | 534            | 77             | 16            | 182              | 10             | ---              |
| 08/06/2016                   | *      | ---      | ---       | ---        | ---          | 1,911            | 546            | 31             | 18            | ---              | ---            | 363              |
| 08/07/2016                   | *      | ---      | ---       | ---        | ---          | 1,436            | 1,042          | 45             | 10            | 225              | ---            | ---              |
| 08/08/2016                   | *      | ---      | ---       | ---        | ---          | 1,341            | 967            | 28             | 12            | ---              | ---            | 859              |
| 08/09/2016                   | *      | ---      | ---       | ---        | ---          | 1,738            | 709            | 27             | 10            | 114              | 14             | ---              |
| 08/10/2016                   | *      | ---      | ---       | ---        | ---          | 2,254            | 1,040          | 31             | 5             | ---              | ---            | 295              |
| 08/11/2016                   | *      | ---      | ---       | ---        | ---          | 2,333            | 580            | 27             | 4             | 124              | ---            | ---              |
| <hr/>                        |        |          |           |            |              |                  |                |                |               |                  |                |                  |
| <b>Total:</b>                |        | <b>0</b> | <b>0</b>  | <b>0</b>   | <b>0</b>     | <b>21,964</b>    | <b>11,507</b>  | <b>686</b>     | <b>495</b>    | <b>3,711</b>     | <b>84</b>      | <b>12,995</b>    |
| <b># Days:</b>               |        | <b>0</b> | <b>0</b>  | <b>0</b>   | <b>0</b>     | <b>15</b>        | <b>15</b>      | <b>15</b>      | <b>15</b>     | <b>8</b>         | <b>4</b>       | <b>7</b>         |
| <b>Average:</b>              |        | <b>0</b> | <b>0</b>  | <b>0</b>   | <b>0</b>     | <b>1,464</b>     | <b>767</b>     | <b>46</b>      | <b>33</b>     | <b>464</b>       | <b>21</b>      | <b>1,856</b>     |
| <b>YTD</b>                   |        | <b>0</b> | <b>78</b> | <b>698</b> | <b>2,869</b> | <b>1,167,721</b> | <b>872,336</b> | <b>327,328</b> | <b>20,890</b> | <b>4,328,817</b> | <b>939,638</b> | <b>3,123,372</b> |

## Two-Week Summary of Passage Indices

| <b>COMBINED COHO</b> |        |          |          |          |            |                |                |               |               |                |               |
|----------------------|--------|----------|----------|----------|------------|----------------|----------------|---------------|---------------|----------------|---------------|
|                      | WTB    | IMN      | GRN      | LEW      | LGR        | LGS            | LMN            | RIS           | MCN           | JDA            | BO2           |
| Date                 | (Coll) | (Coll)   | (Coll)   | (Coll)   | (INDEX)    | (INDEX)        | (INDEX)        | (INDEX)       | (INDEX)       | (INDEX)        | (INDEX)       |
| 07/28/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | 0             | ---            | ---           |
| 07/29/2016           | *      | ---      | ---      | ---      | 5          | 0              | 0              | 0             | ---           | 0              | 0             |
| 07/30/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | 0             | ---            | ---           |
| 07/31/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | ---           | ---            | 0             |
| 08/01/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | 0             | ---            | ---           |
| 08/02/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | ---           | 0              | 0             |
| 08/03/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | 0             | ---            | ---           |
| 08/04/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | ---           | ---            | 0             |
| 08/05/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | 0             | 0              | ---           |
| 08/06/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | ---           | ---            | 0             |
| 08/07/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | 0             | ---            | ---           |
| 08/08/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | ---           | ---            | 0             |
| 08/09/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | 0             | 0              | ---           |
| 08/10/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | ---           | ---            | 0             |
| 08/11/2016           | *      | ---      | ---      | ---      | 0          | 0              | 0              | 0             | 0             | ---            | ---           |
| <hr/>                |        |          |          |          |            |                |                |               |               |                |               |
| <b>Total:</b>        |        | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b>   | <b>5</b>       | <b>0</b>       | <b>0</b>      | <b>0</b>      | <b>0</b>       | <b>0</b>      |
| <b># Days:</b>       |        | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b>   | <b>15</b>      | <b>15</b>      | <b>15</b>     | <b>15</b>     | <b>8</b>       | <b>4</b>      |
| <b>Average:</b>      |        | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b>   | <b>0</b>       | <b>0</b>       | <b>0</b>      | <b>0</b>      | <b>0</b>       | <b>0</b>      |
| <b>YTD</b>           |        | <b>0</b> | <b>0</b> | <b>0</b> | <b>316</b> | <b>198,072</b> | <b>147,678</b> | <b>60,123</b> | <b>45,366</b> | <b>154,245</b> | <b>58,662</b> |

| <b>COMBINED STEELHEAD</b> |        |            |               |              |              |                  |                  |                  |               |                |                |
|---------------------------|--------|------------|---------------|--------------|--------------|------------------|------------------|------------------|---------------|----------------|----------------|
|                           | WTB    | IMN        | GRN           | LEW          | LGR          | LGS              | LMN              | RIS              | MCN           | JDA            | BO2            |
| Date                      | (Coll) | (Coll)     | (Coll)        | (Coll)       | (INDEX)      | (INDEX)          | (INDEX)          | (INDEX)          | (INDEX)       | (INDEX)        | (INDEX)        |
| 07/28/2016                | *      | ---        | ---           | ---          | 15           | 25               | 4                | 0                | 0             | ---            | ---            |
| 07/29/2016                | *      | ---        | ---           | ---          | 15           | 50               | 5                | 0                | ---           | 0              | 0              |
| 07/30/2016                | *      | ---        | ---           | ---          | 15           | 44               | 5                | 0                | 0             | ---            | ---            |
| 07/31/2016                | *      | ---        | ---           | ---          | 14           | 29               | 0                | 0                | ---           | ---            | 0              |
| 08/01/2016                | *      | ---        | ---           | ---          | 0            | 6                | 0                | 0                | 8             | ---            | ---            |
| 08/02/2016                | *      | ---        | ---           | ---          | 18           | 31               | 5                | 0                | ---           | 0              | 0              |
| 08/03/2016                | *      | ---        | ---           | ---          | 4            | 13               | 5                | 0                | 8             | ---            | ---            |
| 08/04/2016                | *      | ---        | ---           | ---          | 9            | 12               | 5                | 0                | ---           | ---            | 0              |
| 08/05/2016                | *      | ---        | ---           | ---          | 0            | 13               | 0                | 0                | 0             | 0              | ---            |
| 08/06/2016                | *      | ---        | ---           | ---          | 14           | 9                | 0                | 0                | ---           | ---            | 0              |
| 08/07/2016                | *      | ---        | ---           | ---          | 13           | 16               | 0                | 0                | 0             | ---            | ---            |
| 08/08/2016                | *      | ---        | ---           | ---          | 0            | 13               | 0                | 0                | ---           | ---            | 0              |
| 08/09/2016                | *      | ---        | ---           | ---          | 0            | 3                | 0                | 0                | 0             | 0              | ---            |
| 08/10/2016                | *      | ---        | ---           | ---          | 0            | 0                | 0                | 0                | ---           | ---            | 0              |
| 08/11/2016                | *      | ---        | ---           | ---          | 5            | 0                | 0                | 0                | 0             | ---            | ---            |
| <hr/>                     |        |            |               |              |              |                  |                  |                  |               |                |                |
| <b>Total:</b>             |        | <b>0</b>   | <b>0</b>      | <b>0</b>     | <b>122</b>   | <b>264</b>       | <b>29</b>        | <b>0</b>         | <b>16</b>     | <b>0</b>       | <b>0</b>       |
| <b># Days:</b>            |        | <b>0</b>   | <b>0</b>      | <b>0</b>     | <b>15</b>    | <b>15</b>        | <b>15</b>        | <b>15</b>        | <b>8</b>      | <b>4</b>       | <b>7</b>       |
| <b>Average:</b>           |        | <b>0</b>   | <b>0</b>      | <b>0</b>     | <b>8</b>     | <b>18</b>        | <b>2</b>         | <b>0</b>         | <b>2</b>      | <b>0</b>       | <b>0</b>       |
| <b>YTD</b>                |        | <b>755</b> | <b>26,537</b> | <b>3,377</b> | <b>9,186</b> | <b>3,957,200</b> | <b>2,295,465</b> | <b>1,838,089</b> | <b>17,662</b> | <b>735,188</b> | <b>502,821</b> |

## Two-Week Summary of Passage Indices

| <b>COMBINED SOCKEYE</b> |               |               |               |               |                |                |                |                |                |                |                |
|-------------------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Date                    | WTB<br>(Coll) | IMN<br>(Coll) | GRN<br>(Coll) | LEW<br>(Coll) | LGR<br>(INDEX) | LGS<br>(INDEX) | LMN<br>(INDEX) | RIS<br>(INDEX) | MCN<br>(INDEX) | JDA<br>(INDEX) | BO2<br>(INDEX) |
| 07/28/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 1              | 0              | ---            | ---            |
| 07/29/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 0              | ---            | 0              | 0              |
| 07/30/2016              | *             | ---           | ---           | ---           | 0              | 2              | 0              | 0              | 0              | ---            | ---            |
| 07/31/2016              | *             | ---           | ---           | ---           | 0              | 2              | 0              | 0              | ---            | ---            | 0              |
| 08/01/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 0              | 0              | ---            | ---            |
| 08/02/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 3              | ---            | 0              | 0              |
| 08/03/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 0              | 0              | ---            | ---            |
| 08/04/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 0              | ---            | ---            | 0              |
| 08/05/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 0              | 0              | 0              | ---            |
| 08/06/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 0              | ---            | ---            | 0              |
| 08/07/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 1              | 0              | ---            | ---            |
| 08/08/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 0              | ---            | ---            | 0              |
| 08/09/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 0              | 0              | 0              | ---            |
| 08/10/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 0              | ---            | ---            | 0              |
| 08/11/2016              | *             | ---           | ---           | ---           | 0              | 0              | 0              | 0              | 0              | ---            | ---            |
| <hr/>                   |               |               |               |               |                |                |                |                |                |                |                |
| <b>Total:</b>           | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>       | <b>4</b>       | <b>0</b>       | <b>5</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       |
| <b># Days:</b>          | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>15</b>      | <b>15</b>      | <b>15</b>      | <b>15</b>      | <b>8</b>       | <b>4</b>       | <b>7</b>       |
| <b>Average:</b>         | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       |
| <b>YTD</b>              | <b>1</b>      | <b>0</b>      | <b>0</b>      | <b>133</b>    | <b>43,851</b>  | <b>32,774</b>  | <b>24,148</b>  | <b>56,639</b>  | <b>861,061</b> | <b>303,206</b> | <b>801,582</b> |

| <b>COMBINED LAMPREY JUVENILES</b> |               |               |               |               |                            |               |               |               |               |               |               |
|-----------------------------------|---------------|---------------|---------------|---------------|----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Date                              | WTB<br>(Coll) | IMN<br>(Coll) | GRN<br>(Coll) | LEW<br>(Coll) | LGR <sup>†</sup><br>(Samp) | LGS<br>(Coll) | LMN<br>(Coll) | RIS<br>(Coll) | MCN<br>(Coll) | JDA<br>(Coll) | BO2<br>(Coll) |
| 07/28/2016                        | *             | ---           | ---           | ---           | 1                          | 4             | 0             | 0             | 0             | ---           | ---           |
| 07/29/2016                        | *             | ---           | ---           | ---           | 3                          | 4             | 2             | 0             | ---           | 0             | 0             |
| 07/30/2016                        | *             | ---           | ---           | ---           | 4                          | 2             | 6             | 0             | 15            | ---           | ---           |
| 07/31/2016                        | *             | ---           | ---           | ---           | 0                          | 6             | 2             | 1             | ---           | ---           | 0             |
| 08/01/2016                        | *             | ---           | ---           | ---           | 0                          | 6             | 2             | 0             | 8             | ---           | ---           |
| 08/02/2016                        | *             | ---           | ---           | ---           | 2                          | 24            | 0             | 0             | ---           | 0             | 0             |
| 08/03/2016                        | *             | ---           | ---           | ---           | 0                          | 14            | 0             | 1             | 12            | ---           | ---           |
| 08/04/2016                        | *             | ---           | ---           | ---           | 0                          | 16            | 2             | 0             | ---           | ---           | 8             |
| 08/05/2016                        | *             | ---           | ---           | ---           | 0                          | 8             | 0             | 0             | 12            | 0             | ---           |
| 08/06/2016                        | *             | ---           | ---           | ---           | 1                          | 10            | 2             | 0             | ---           | ---           | 0             |
| 08/07/2016                        | *             | ---           | ---           | ---           | 0                          | 12            | 0             | 0             | 4             | ---           | ---           |
| 08/08/2016                        | *             | ---           | ---           | ---           | 0                          | 4             | 0             | 0             | ---           | ---           | 4             |
| 08/09/2016                        | *             | ---           | ---           | ---           | 1                          | 4             | 0             | 0             | 8             | 0             | ---           |
| 08/10/2016                        | *             | ---           | ---           | ---           | 2                          | 0             | 4             | 0             | ---           | ---           | 0             |
| 08/11/2016                        | *             | ---           | ---           | ---           | 0                          | 2             | 0             | 0             | 8             | ---           | ---           |
| <hr/>                             |               |               |               |               |                            |               |               |               |               |               |               |
| <b>Total:</b>                     | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>14</b>                  | <b>116</b>    | <b>20</b>     | <b>2</b>      | <b>67</b>     | <b>0</b>      | <b>12</b>     |
| <b># Days:</b>                    | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>15</b>                  | <b>15</b>     | <b>15</b>     | <b>15</b>     | <b>8</b>      | <b>4</b>      | <b>7</b>      |
| <b>Average:</b>                   | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>1</b>                   | <b>8</b>      | <b>1</b>      | <b>0</b>      | <b>8</b>      | <b>0</b>      | <b>2</b>      |
| <b>YTD</b>                        | <b>0</b>      | <b>5</b>      | <b>1</b>      | <b>0</b>      | <b>210</b>                 | <b>34,733</b> | <b>29,695</b> | <b>111</b>    | <b>34,480</b> | <b>26,193</b> | <b>10,107</b> |

## Two-Week Summary of Passage Indices

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

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

Two classes of fish counts are shown in these tables:

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

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

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

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

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

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

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

### Definitions for Smolt Index Counts

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

IMN (Collection) = Imnaha River Trap : Collection Counts

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



### Two Week Transportation Summary

Source: Fish Passage Center

Updated:

8/12/16 8:22 AM

**07/29/16 TO 08/12/16**

|                                |                          | Species |     |    |     |    |             |
|--------------------------------|--------------------------|---------|-----|----|-----|----|-------------|
| Site                           | Data                     | CH0     | CH1 | CO | ST  | SO | Grand Total |
| <b>LGR</b>                     | Sum of NumberCollected   | 9,424   | 10  | 2  | 52  |    | 9,488       |
|                                | Sum of NumberBarged      | 9,966   | 10  | 2  | 62  |    | 10,040      |
|                                | Sum of NumberBypassed    | 0       | 0   | 0  | 0   |    | 0           |
|                                | Sum of Numbertrucked     | 0       | 0   | 0  | 0   |    | 0           |
|                                | Sum of SampleMorts       | 50      | 0   | 0  | 0   |    | 50          |
|                                | Sum of FacilityMorts     | 15      | 0   | 0  | 0   |    | 15          |
|                                | Sum of ResearchMorts     | 0       | 0   | 0  | 0   |    | 0           |
|                                | Sum of TotalProjectMorts | 65      | 0   | 0  | 0   |    | 65          |
| <b>LGS</b>                     | Sum of NumberCollected   | 7,298   |     |    | 166 | 2  | 7,466       |
|                                | Sum of NumberBarged      | 7,464   |     |    | 180 | 2  | 7,646       |
|                                | Sum of NumberBypassed    | 0       |     |    | 0   | 0  | 0           |
|                                | Sum of Numbertrucked     | 0       |     |    | 0   | 0  | 0           |
|                                | Sum of SampleMorts       | 34      |     |    | 0   | 0  | 34          |
|                                | Sum of FacilityMorts     | 19      |     |    | 0   | 0  | 19          |
|                                | Sum of ResearchMorts     | 0       |     |    | 0   | 0  | 0           |
|                                | Sum of TotalProjectMorts | 53      |     |    | 0   | 0  | 53          |
| <b>LMN</b>                     | Sum of NumberCollected   | 306     | 2   |    | 12  |    | 320         |
|                                | Sum of NumberBarged      | 321     | 4   |    | 14  |    | 339         |
|                                | Sum of NumberBypassed    | 0       | 0   |    | 0   |    | 0           |
|                                | Sum of Numbertrucked     | 0       | 0   |    | 0   |    | 0           |
|                                | Sum of SampleMorts       | 2       | 0   |    | 0   |    | 2           |
|                                | Sum of FacilityMorts     | 0       | 0   |    | 0   |    | 0           |
|                                | Sum of ResearchMorts     | 0       | 0   |    | 0   |    | 0           |
|                                | Sum of TotalProjectMorts | 2       | 0   |    | 0   |    | 2           |
| Total Sum of NumberCollected   |                          | 17,028  | 12  | 2  | 230 | 2  | 17,274      |
| Total Sum of NumberBarged      |                          | 17,751  | 14  | 2  | 256 | 2  | 18,025      |
| Total Sum of NumberBypassed    |                          | 0       | 0   | 0  | 0   | 0  | 0           |
| Total Sum of Numbertrucked     |                          | 0       | 0   | 0  | 0   | 0  | 0           |
| Total Sum of SampleMorts       |                          | 86      | 0   | 0  | 0   | 0  | 86          |
| Total Sum of FacilityMorts     |                          | 34      | 0   | 0  | 0   | 0  | 34          |
| Total Sum of ResearchMorts     |                          | 0       | 0   | 0  | 0   | 0  | 0           |
| Total Sum of TotalProjectMorts |                          | 120     | 0   | 0  | 0   | 0  | 120         |

### YTD Transportation Summary

Source: Fish Passage Center

Updated: 8/12/16 8:22 AM

TO: 08/12/16

|                                |                          | Species   |            |         |        |           |             |
|--------------------------------|--------------------------|-----------|------------|---------|--------|-----------|-------------|
| Site                           | Data                     | CH0       | CH1        | CO      | SO     | ST        | Grand Total |
| <b>LGR</b>                     | Sum of NumberCollected   | 749,622   | 4,510,004  | 150,414 | 33,350 | 2,986,077 | 8,429,467   |
|                                | Sum of NumberBarged      | 715,331   | 1,403,213  | 117,278 | 31,849 | 1,110,004 | 3,377,675   |
|                                | Sum of NumberBypassed    | 31,770    | 3,104,914  | 33,069  | 650    | 1,875,866 | 5,046,269   |
|                                | Sum of NumberTrucked     | 0         | 0          | 0       | 0      | 0         | 0           |
|                                | Sum of SampleMorts       | 164       | 94         | 1       | 16     | 36        | 311         |
|                                | Sum of FacilityMorts     | 2,155     | 1,361      | 66      | 830    | 103       | 4,515       |
|                                | Sum of ResearchMorts     | 202       | 422        | 0       | 5      | 68        | 697         |
|                                | Sum of TotalProjectMorts | 2,521     | 1,877      | 67      | 851    | 207       | 5,523       |
| <b>LGS</b>                     | Sum of NumberCollected   | 606,049   | 2,438,124  | 104,356 | 22,900 | 1,600,749 | 4,772,178   |
|                                | Sum of NumberBarged      | 602,091   | 1,022,201  | 90,698  | 22,684 | 670,894   | 2,408,568   |
|                                | Sum of NumberBypassed    | 2,872     | 1,415,436  | 13,600  | 7      | 929,747   | 2,361,662   |
|                                | Sum of NumberTrucked     | 0         | 0          | 0       | 0      | 0         | 0           |
|                                | Sum of SampleMorts       | 136       | 23         | 1       | 22     | 12        | 194         |
|                                | Sum of FacilityMorts     | 950       | 464        | 57      | 187    | 96        | 1,754       |
|                                | Sum of ResearchMorts     | 0         | 0          | 0       | 0      | 0         | 0           |
|                                | Sum of TotalProjectMorts | 1,086     | 487        | 58      | 209    | 108       | 1,948       |
| <b>LMN</b>                     | Sum of NumberCollected   | 183,333   | 3,510,225  | 40,585  | 11,370 | 1,285,406 | 5,030,919   |
|                                | Sum of NumberBarged      | 180,013   | 1,897,394  | 34,346  | 11,348 | 630,499   | 2,753,600   |
|                                | Sum of NumberBypassed    | 2,568     | 1,612,351  | 6,238   | 0      | 654,785   | 2,275,942   |
|                                | Sum of NumberTrucked     | 0         | 0          | 0       | 0      | 0         | 0           |
|                                | Sum of SampleMorts       | 47        | 127        | 0       | 5      | 23        | 202         |
|                                | Sum of FacilityMorts     | 143       | 353        | 1       | 18     | 99        | 614         |
|                                | Sum of ResearchMorts     | 0         | 0          | 0       | 0      | 0         | 0           |
|                                | Sum of TotalProjectMorts | 190       | 480        | 1       | 23     | 122       | 816         |
| Total Sum of NumberCollected   |                          | 1,539,004 | 10,458,353 | 295,355 | 67,620 | 5,872,232 | 18,232,564  |
| Total Sum of NumberBarged      |                          | 1,497,435 | 4,322,808  | 242,322 | 65,881 | 2,411,397 | 8,539,843   |
| Total Sum of NumberBypassed    |                          | 37,210    | 6,132,701  | 52,907  | 657    | 3,460,398 | 9,683,873   |
| Total Sum of NumberTrucked     |                          | 0         | 0          | 0       | 0      | 0         | 0           |
| Total Sum of SampleMorts       |                          | 347       | 244        | 2       | 43     | 71        | 707         |
| Total Sum of FacilityMorts     |                          | 3,248     | 2,178      | 124     | 1,035  | 298       | 6,883       |
| Total Sum of ResearchMorts     |                          | 202       | 422        | 0       | 5      | 68        | 697         |
| Total Sum of TotalProjectMorts |                          | 3,797     | 2,844      | 126     | 1,083  | 437       | 8,287       |

**Cumulative Adult Passage at Mainstem Dams Through: 08/11**

| DAM | ENDDATE | Spring Chinook |       |        |       |            |       | Summer Chinook |       |        |       |            |       | Fall Chinook |      |       |      |            |      |
|-----|---------|----------------|-------|--------|-------|------------|-------|----------------|-------|--------|-------|------------|-------|--------------|------|-------|------|------------|------|
|     |         | 2016           |       | 2015   |       | 10-Yr Avg. |       | 2016           |       | 2015   |       | 10-Yr Avg. |       | 2016         |      | 2015  |      | 10-Yr Avg. |      |
|     |         | Adult          | Jack  | Adult  | Jack  | Adult      | Jack  | Adult          | Jack  | Adult  | Jack  | Adult      | Jack  | Adult        | Jack | Adult | Jack | Adult      | Jack |
| BON | 08/11   | 137215         | 11145 | 220480 | 13314 | 146704     | 24884 | 119591         | 10834 | 161735 | 17730 | 95523      | 21451 | 9593         | 1050 | 11805 | 1043 | 6102       | 1245 |
| TDA | 08/11   | 105504         | 9999  | 194116 | 12307 | 114381     | 21222 | 95764          | 8800  | 123915 | 15458 | 80170      | 17256 | 4872         | 566  | 7073  | 809  | 3466       | 810  |
| JDA | 08/11   | 93659          | 8262  | 166015 | 11514 | 99110      | 19896 | 90259          | 7715  | 108768 | 10988 | 71447      | 16841 | 2872         | 293  | 4475  | 489  | 1910       | 518  |
| MCN | 08/11   | 82626          | 7237  | 156151 | 8767  | 89797      | 16347 | 83894          | 6501  | 96287  | 8723  | 67089      | 12624 | 1235         | 144  | 2397  | 170  | 933        | 174  |
| IHR | 08/11   | 67484          | 5029  | 116462 | 5745  | 63912      | 10829 | 13980          | 1538  | 21408  | 2807  | 18397      | 4766  | 0            | 0    | 0     | 0    | 0          | 0    |
| LMN | 08/11   | 66115          | 6268  | 111511 | 8697  | 63840      | 10328 | 12280          | 2313  | 17594  | 4814  | 19621      | 5609  | 0            | 0    | 0     | 0    | 1          | 0    |
| LGS | 08/11   | 62597          | 6365  | 105124 | 8553  | 59587      | 11445 | 12184          | 1888  | 14959  | 4413  | 18598      | 6169  | 0            | 0    | 0     | 0    | 0          | 0    |
| LGR | 08/11   | 62050          | 5480  | 104873 | 8379  | 58449      | 12640 | 11349          | 2021  | 14264  | 4100  | 16468      | 6634  | 0            | 0    | 0     | 0    | 0          | 0    |
| PRD | 08/09   | 16843          | 1003  | 27716  | 1570  | 17080      | 1731  | 79300          | 5005  | 76046  | 3304  | 54393      | 2235  | 0            | 0    | 0     | 0    | 0          | 0    |
| WAN | 08/09   | 17164          | 919   | 25982  | 1077  | 16645      | 2069  | 78576          | 4022  | 73906  | 2012  | 51701      | 1741  | 0            | 0    | 0     | 0    | 0          | 0    |
| RIS | 08/10   | 18646          | 715   | 31748  | 1092  | 17101      | 2726  | 77171          | 2950  | 83399  | 2273  | 52979      | 4765  | 0            | 0    | 0     | 0    | 0          | 0    |
| RRH | 08/10   | 9449           | 351   | 15244  | 609   | 7441       | 1202  | 56142          | 2343  | 69249  | 1704  | 41188      | 3233  | 0            | 0    | 0     | 0    | 0          | 0    |
| WEL | 08/10   | 11789          | 833   | 19971  | 1520  | 7481       | 1542  | 41026          | 2175  | 51753  | 2859  | 29844      | 2816  | 0            | 0    | 0     | 0    | 0          | 0    |
| WFA | 08/10   | 29156          | 2094  | 50946  | 2036  | 35224      | 1274  | 0              | 0     | 0      | 0     | 0          | 0     | 0            | 0    | 0     | 0    | 0          | 0    |

| DAM | ENDDATE | Coho  |      |       |      |            |      | Sockeye |        |            | Steelhead |        |            |       |       | Lamprey    |       |       |            |
|-----|---------|-------|------|-------|------|------------|------|---------|--------|------------|-----------|--------|------------|-------|-------|------------|-------|-------|------------|
|     |         | 2016  |      | 2015  |      | 10-Yr Avg. |      | 2016    | 2015   | 10-Yr Avg. | 2016      | 2015   | 10-Yr Avg. | Wild  | Wild  | 10-Yr Avg. | 2016  | 2015  | 10-Yr Avg. |
|     |         | Adult | Jack | Adult | Jack | Adult      | Jack |         |        |            |           |        |            |       |       |            |       |       |            |
| BON | 08/11   | 12    | 3    | 37    | 14   | 51         | 12   | 342312  | 510245 | 284997     | 80069     | 125736 | 159443     | 29302 | 57554 | 66410      | 44468 | 34384 | 19448      |
| TDA | 08/11   | 0     | 0    | 7     | 0    | 1          | 0    | 288107  | 428868 | 243229     | 25871     | 42762  | 75919      | 11952 | 23357 | 35041      | 8709  | 10272 | 5042       |
| JDA | 08/11   | 0     | 0    | 0     | 0    | 3          | 1    | 289682  | 364843 | 234915     | 15150     | 19700  | 54210      | 7831  | 10858 | 23830      | 7204  | 6574  | 4056       |
| MCN | 08/11   | -1    | 0    | 14    | 5    | 1          | 0    | 261468  | 277769 | 202996     | 13199     | 15774  | 40684      | 6318  | 8375  | 16562      | 995   | 1314  | 844        |
| IHR | 08/11   | 0     | 0    | 0     | 0    | 0          | 0    | 895     | 1014   | 839        | 8269      | 7342   | 22120      | 3520  | 3561  | 6776       | 649   | 587   | 174        |
| LMN | 08/11   | -2    | 0    | 0     | 0    | 0          | 0    | 1015    | 870    | 982        | 8045      | 7830   | 23085      | 4052  | 4164  | 8004       | 175   | 186   | 49         |
| LGS | 08/11   | 0     | 0    | 0     | 0    | 0          | 0    | 939     | 557    | 928        | 7981      | 3244   | 10640      | 4161  | 2084  | 4422       | 152   | 97    | 21         |
| LGR | 08/11   | 0     | 0    | 0     | 0    | 0          | 0    | 803     | 402    | 974        | 9033      | 10490  | 14764      | 4856  | 5202  | 5795       | 77    | 35    | 3          |
| PRD | 08/09   | 0     | 1    | 0     | 0    | 0          | 0    | 310727  | 299896 | 238147     | 2096      | 2935   | 4299       | 0     | 0     | 0          | 4336  | 4288  | 1437       |
| WAN | 08/09   | 0     | 0    | 0     | 0    | 0          | 0    | 322042  | 294602 | 202706     | 1943      | 2498   | 4308       | 0     | 0     | 0          | 2327  | 3009  | 685        |
| RIS | 08/10   | 0     | 0    | 0     | 0    | 0          | 0    | 309667  | 261467 | 231067     | 1590      | 2026   | 3102       | 716   | 1161  | 1627       | 731   | 1135  | 229        |
| RRH | 08/10   | 0     | 0    | 0     | 0    | 0          | 0    | 235261  | 213230 | 196537     | 1144      | 1245   | 2210       | 466   | 698   | 1073       | 608   | 971   | 161        |
| WEL | 08/10   | 0     | 0    | 0     | 0    | 0          | 0    | 215092  | 184179 | 187113     | 811       | 751    | 1031       | 337   | 416   | 507        | 1     | 0     | 0          |
| WFA | 08/10   | 0     | 0    | 1     | 0    | 1          | 0    | 0       | 0      | 0          | 25725     | 6982   | 21819      | 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.

