Fish Passage Center

Weekly Report #14 - 20

August 1, 2014

847 NE 19th Ave., Suite 250
Portland, OR 97232
phone: (503) 833-3900
fax: (503) 232-1259

Summary of Events

Water Supply

Precipitation throughout the Columbia Basin has varied between 27% and 83% of average at individual sub-basins over July. Precipitation above The Dalles has been 55% of average over July. Over the 2014 water year, precipitation has ranged between 74% and 97% of average.

Table 1. Summary of July precipitation and cumulative October through July 30, 2014, precipitation with respect to average (1971–2000), at select locations within the Columbia and Snake River Basins.

Location	Water Year 2014 July 1–30, 2014		Water Year 2014 October 1, 2013 to July 30, 2014	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia above Coulee	1.45	58	31.6	92
Snake River above Ice Harbor	0.43	44	16.1	77
Columbia above The Dalles	0.78	55	20.9	82
Kootenai	1.22	45	33.1	94
Clark Fork	0.46	30	20.0	80
Flathead	1.02	47	32.3	97
Pend Oreille River Basin above Waneta Dam	0.69	37	26.5	88
Salmon River Basin	0.56	38	19.7	74
Upper Snake Tributaries	0.93	64	21.6	87
Clearwater	0.47	27	34.0	89
Willamette River above Portland	0.75	83	51.8	84

Table 2 displays the July 30th ESP runoff volume forecasts for multiple reservoirs. The July 30th ESP forecast at The Dalles between January and July is 108,145 Kaf (107% of average).

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

Location	July 30, 2014, 5-day QPF ESP	
	% Average (1981–2010)	Runoff Volume (Kaf)
The Dalles (Jan–July)	107	108145
Grand Coulee (Jan–July)	109	65049
Libby Res. Inflow, MT (Apr–Aug)	112	6620
Hungry Horse Res. Inflow, MT (Jan–July)	132	2779
Lower Granite Res. Inflow (Apr–July)	99	19699
Brownlee Res. Inflow (Apr–July)	63	3437
Dworshak Res. Inflow (Apr–July)	122	2942

Grand Coulee Reservoir is at 1288.2 feet (7-30-14) and has drafted 0.5 feet over the last week (1.8 feet from full). Outflows at Grand Coulee have ranged between 129.1 and 153.8 Kcfs over the last week. The end of August draft limit at Grand Coulee is 1280 feet this year, with an additional 1.0 foot of draft by the end of August as part of the Lake Roosevelt Incremental Storage Release Program.

The Libby Reservoir is currently at elevation 2452.9 feet (7-30-14) and has held steady over the previous week (6.1 feet from full). Daily average outflows at Libby Dam have been 11.0 Kcfs over the last week.

Hungry Horse is currently at an elevation of 3558.9 feet (7-30-14) and has drafted 0.6 feet over the previous week (1.1 feet from full). Outflows at Hungry Horse have been 3.4 Kcfs over the last week.

Dworshak is currently at an elevation of 1574.2 feet (7-30-14) and has drafted 7.7 feet over the previous

week. Outflows over the past week ranged from 9.9 Kcfs to 13.2 Kcfs.

The Brownlee Reservoir was at an elevation of 2062.7 feet on July 30, 2014, and has drafted 4.2 feet last week. Inflows to Brownlee Dam have ranged between 7.9 and 9.0 Kcfs last week.

The Summer Biological Opinion flow period began on June 21st in the lower Snake River (Lower Granite). According to the June Final Water Supply Forecast (June 6, 2014), the flow objective this summer is 52 Kcfs at Lower Granite. Flows at Lower Granite Dam have averaged 34.3 Kcfs over the past week and 52.0 since the beginning of the summer flow period.

The flow objective at McNary over the summer period (July 1st to August 31st) is 200 Kcfs. Flows at McNary Dam have averaged 203.5 Kcfs over the past week and 222.5 Kcfs since the beginning of the summer flow period.

Spill

The Snake River projects transitioned to the summer spill program on June 21st. At the lower Columbia projects summer spill was initiated on June 16th. Summer spill operations throughout the FCRPS will continue until August 31st.

All of the Snake River projects met the summer spill levels specified in the Fish Operations Plan (FOP). Spill equal to18 Kcfs occurred at Lower Granite Dam. Spill at Little Goose Dam transitioned to a flat spill of 11 Kcfs due to decreased river flows. A flat spill specified in the FOP as 7–11 Kcfs (dependent on flow) is necessary to achieve the prescribed spill level downstream at Lower Monumental Dam and to maintain minimum operating pool operations. At Lower Monumental Dam, daily average spill was 17 Kcfs. At Ice Harbor spill is occurring as river flow in excess of that needed for the operation of one turbine unit.

Project	Spill Level Day/Night
Lower Granite	18 Kcfs/18 Kcfs
Little Goose	30%/30%
Lower Monumental	17 Kcfs/17 Kcfs
Ice Harbor	45 Kcfs/Gas Cap

At the Middle Columbia River projects, McNary Dam spilled 50% of daily average flow. At John Day Dam the 30% spill level is in effect. Spill at The Dalles Dam averaged 40% of total daily flow. Bonneville Dam spilled an alternating 85 Kcfs/121 Kcfs and 95 Kcfs/95 Kcfs.

Project	Spill Level Day/Night
McNary	50%/50%
John Day	30%/30%
The Dalles	40%/40%
Bonneville	85 Kcfs/121 Kcfs and 95 Kcfs/95 Kcfs

New in 2014 is a change in the way the U.S. Army Corps of Engineers will assess whether a project is in compliance with the total dissolved gas variances in place. The States of Oregon and Washington 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. In 2014, the location of a TDG monitor and/or type of 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 lower Columbia River forebay monitors (since Oregon does not have a forebay TDG requirement). On any given day the compliance of the tailrace monitors at the lower Columbia River projects will be determined using either the Washington or Oregon methodology, whichever is the most restrictive, and spill may be decreased if needed.

Monitoring for signs of gas bubble trauma (GBT) occurred at Little Goose, Lower Monumental, McNary, Bonneville, and Rock Island dams over the past week. One fish was observed with minor (Rank 1) signs of GBT at Little Goose Dam on 7/31 and one fish at Rock Island Dam on 7/31. The action criteria for GBT are 15% of total fish with any signs of GBT in the fins, or 5% with severe signs (Rank 3 or greater).

Smolt Monitoring

Smolt monitoring is ongoing at all seven SMP dams (BON, JDA, MCN, RIS, LMN, LGS, LGR). Sampling at the SMP traps has been completed for the 2014 out-migration season.

Subyearling Chinook dominated the collections at all the SMP dam sites this week. When compared to last week, subyearling Chinook passage decreased at all the SMP dam sites except LMN, where subyearling Chinook passage this week remained very similar to last week.

Subyearling Chinook passage at Bonneville Dam (BON) decreased again this week, when compared to the previous week. The daily average passage index for subyearling Chinook at BON this week was about 19,200 per day. Last week's daily average passage index was about 26,000 per day. Pacific lamprey macropthalmia were encountered in five of this week's samples at BON. The daily average collection for Pacific macropthalmia this week was about 100 per day. On the morning of July 30th, temperatures in the BON sample tank exceeded 70°F, which triggered the high temperature sampling protocol. Under the high temperature sampling protocol, SMP sampling at BON is modified from a daily 24-hour sample to an every-other-day 24-hour sample. This high temperature protocol will remain in place until the daily average temperature in the forebay falls below 69.5°F.

Subyearling Chinook passage at John Day Dam (JDA) decreased again this week. This week's daily average passage index for subyearling Chinook was about 21,100 per day. Last week's daily average passage index for subyearling Chinook was about 28,000 per day. Pacific lamprey ammocoetes were encountered on only one day this week (on July 31st). Pacific macropthalmia were encountered every day this week, with a daily average collection of about 330 per day. This week's daily average collection of Pacific macropthalmia was an increase over last week's daily average collection of about 200 per day. On the morning of July 31st, temperatures in the JDA sample tank exceeded 70°F, which triggered the high temperature sampling protocol. Under the high temperature sampling protocol, SMP sampling at JDA is modified from a daily 24-hour sample to a condition only sample (for up to 6 hours) every Monday and Thursday. This high temperature protocol will remain in place until the daily average temperature in the forebay falls below 69.5°F.

Sampling at McNary Dam (MCN) is every-other-day for the entire 2014 SMP season. Subyearling Chinook passage decreased again this week when compared to the previous week. The daily average passage index for subyearling Chinook at MCN this week was about 42,500 per day. Last week's daily average passage index for subyearling Chinook was about 63,600. Pacific lamprey macropthalmia were encountered in two of the three samples this week. The daily average collection for Pacific lamprey macropthalmia this week was about 100 per day, which is similar to last week's daily average collection of about 125 per day.

This week's daily average passage index for subyearling Chinook at Lower Granite Dam (LGR) was about 1,800 per day, which is a decrease from last week's daily average passage index of about 4,400 per day. Only one Pacific lamprey ammocoete was sampled this week, on July 27th, and no Pacific macropthalmia were sampled at LGR this week.

Compared to last week, passage of subyearling Chinook continued to decrease at Little Goose (LGS) but remained the same at Lower Monumental (LMN). This week's daily average passage index for subyearling Chinook at LGS was about 1,600 per day while that at LMN was about 1,700 per day. Last week's daily average passage indices for subyearling Chinook at these sites were nearly 4,000 per day at LGS and 1,700 at LMN. Pacific lamprey ammocoetes were encountered at LGS on July 27th and July 30th. No ammocoetes were encountered at LMN this week. Pacific lamprey macropthalmia were encountered every day this week at LGS but only once at LMN.

Passage of subyearling Chinook at Rock Island Dam (RIS) decreased this week, when compared to last week. This week's daily average passage index for subyearling Chinook was about 475 per day whereas that for last week was about 700 per day. So far this year, only Pacific lamprey macropthalmia have been collected at RIS. A total of five Pacific lamprey macropthalmia were encountered this week.

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. There were no new releases scheduled for this zone this week. In addition, no new releases are scheduled for this zone over the next 2 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. There were no releases scheduled for this zone this week and no releases are scheduled for this zone over the next 2 weeks.

Lower Columbia Zone: The Lower Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to McNary Dam. Approximately 2.14 million subyearling fall Chinook brights were scheduled to be released from Willard NFH into the Little White Salmon River by the end of July. This release was originally expected to occur at the beginning of July but had been delayed in order to allow time for the fish to reach the desired release size. Marking information for these fish is also unknown at this time. There are no other releases scheduled for this zone over the next 2 weeks.

Adult Passage

Daily adult summer Chinook passage numbers at Bonneville Dam ranged between 394 and 758 in the last week. The 2014 summer Chinook count of 109,734 is about 1.2 times greater than the 2013 count and about 1.3 times greater than the 10-year average. The 2014 Bonneville Dam summer Chinook jack count of 25,342 is 96.8% of the 2013 count, while being 1.3 times greater than the 10-year average count. At McNary Dam 84,671 adult summer Chinook have been counted. The 2014 adult summer Chinook count at McNary Dam is about 1.16 times greater than the 2013 count and is about 1.4 times greater than the 10-year average. The 2014 McNary Dam summer Chinook jack count of 15,833 has 1,675 more fish than the 2013 count and is about 1.46 times greater than the 10-year average count. The 2014 adult summer Chinook count of 14,033 at Lower Granite Dam in the Snake River is about 1.8 times greater than the 2013 count, while being 95% of the 10-year average count. The 2014 Lower Granite summer Chinook jack count of 6,892 has 179 fewer fish than the 2013 count, while having 1,167 more fish than the 10-year average count.

The 2014 Bonneville Dam adult steelhead count of 101,997 is about 1.6 times greater than the 2013 count of 65,020, while being about 98% of the 10-year average count of 104,177. The 2014 Bonneville Dam adult wild steelhead count of 51,907 is about 1.4 times greater than the 2013 count of 36,371 and about 1.15 times greater than the 10-year average count of 45,286. Daily adult steelhead counts at Lower Granite Dam ranged from 114 to 302 adults per day last week. This year's Lower Granite steelhead count of 12,319 is about 1.4 times greater than the 2013 count of 8,590 and has 338 more fish than the 10-year average count of 11,981. The 2014 Lower Granite Dam adult wild steelhead count of 6,056 is about 1.6 times greater than the 2013 count of 3,796 and is about 1.4 times greater than the 10-year average count of 4,325. At Willamette Falls, the 2014 count for steelhead was 25,940 as of July 29th. This year's steelhead count is about 1.5 times greater than the 2013 count of 17,137 and has 1,379 more fish than the 10-year average count of 24,561.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 208 and 712 last week. The 2014 adult sockeye count at Bonneville Dam of 612,892 is about 3.3 times greater than the 2013 count and about 3.2 times greater than the 10-year average count. The 2014 McNary Dam adult sockeye count of 541,697 is about 4.1 times greater than the 2013 count of 132,749 and about 4.0 times greater than the 10-year average count of 135,487. The Lower Granite Dam 2014 adult sockeye count of 2,574 has 1,901 more fish than the 2013 count of 673 and 1,916 more fish than the 10-year average of 658. As of July 31st at Bonneville Dam, the adult shad count was 2,602,460. This year's shad count is about 69.4% of the 2013 count of 3,748,158 and 93.6% of the 10-year average count of 2,779,670.

Wanapum Dam Update

At Wanapum Dam a significant crack (65-feet long by 2-inches wide) was discovered in a spillway monolith (#4) on February 27, 2014. This discovery has led to an emergency drawdown of the Wanapum pool to an elevation range of 541–545 feet, which is over 20 feet below its typical forebay elevation. Preliminary results of an investigation by Grant PUD and its consultants has determined that the primary contributing factor to a fracture developing within the dam's spillway was a mathematical error during the pre-construction design of Wanapum Dam.

The drawdown of Wanapum pool had caused the adult fishways at Wanapum Dam to not be operational. The adult fishways exits had been approximately 10 feet above the forebay water level. Grant County has designed adult fishway retrofits that involve the use of weir boxes and chutes to deliver adult fish into the forebay of Wanapum Dam. On April 15, 2014, the weir and chute retrofit was operational at the left bank fishway. A weir and chute has also been installed at the right bank fishway at Wanapum and was operational on April 26, 2014. Grant County PUD installed a spiral flume on the left bank fishway that reduces the elevation of the chute outflow from approximately 10 feet down to several feet. At the time of installing the spiral flume at the left bank fishway exit, Grant County also installed a ramp structure leading up to the weir and barriers to prevent jumping outside the structure. Grant PUD has also completed the installation of the spiral flume at the right bank fishway.

Visual observations of the exit retrofits have been promising. During Wanapum Dam site visits on May 7, May 21, June 4, June 18, July 2, and July 23, 2014, many fish have been seen passing the left bank fishway weir and chute. On July 23, 2014, over a 20-minute period, the left bank weir successfully passed well over a 150 fish (predominantly sockeye and chinook). Although a majority of fish continue to pass via the left bank ladder at Wanapum, more fish appear to be passing the right bank ladder weir as compared to previous site visits (approximately 30 total fish in 20 minutes on July 23, 2014). During previous visits, a significant eddy had been noticed at the right bank fishway entrance; during the recent visit this eddy was much smaller. It seems likely that the reduction of this eddy has enabled fish to more easily find the right bank fishway entrance.

As of July 30, 2014, a total of 586,935 sockeye and 69,378 adult summer Chinook had passed Priest Rapids Dam. As of July 29, 2014, 568,803 sockeye and 70,642 summer Chinook had passed Rock Island Dam.

Over the last week, one of four pumps supplying water to the upper ladder at the left bank Fishway has malfunctioned. Initially, it was believed that debris build-up on the intake of the pump caused the malfunction. However after cleaning the intakes to all of the pumps, one pump continued to have problems. As a result, Grant County was in the process of replacing the faulty pump with a spare pump on July 31, 2014. During the pump replacement period (most of the day on July 31st), the upper ladder at Wanapum operated with three of four pumps, and attraction water in the lower ladder had been turned off as to not attract fish into the left ladder entrances. The operation of three of four pumps in the upper left ladder should provide enough water for those fish that have entered the left fishway to continue to move up and through the ladder.

The drawdown of Wanapum pool has also had a significant impact on the adult fishways at Rock Island Dam, operated by Chelan PUD. With the lower than normal tailrace levels, Chelan PUD has constructed extensions or denils at several ladder entrances. Chelan County PUD currently has all three denils in place, two at the right bank fishway and one of the left bank fishway.

Hatchery Releases Last Two Weeks

Hatchery Release Summary
From: 7/18/2014 to 07/31/14

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
U.S. Fish and Wildlife Service	Willard Hatchery	CH0	FA	2014	2,145,000	07-21-14	07-31-14	Willard Hatchery	Little White Salmon River
U.S. Fish and Wildlife Service Total					**2,145,000**				
Grand Total					**2,145,000**				

Hatchery Releases Next Two Weeks

Hatchery Release Summary
From: 8/1/2014 to 8/14/2014

No Releases Scheduled

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

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

	Grand Coulee		Chief Joseph		Wells		Rocky Reach		Rock Island		Wanapum		Priest Rapids	
Date	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
07/18/2014	129.3	0.2	129.8	0.0	137.6	10.0	134.8	12.6	141.9	28.2	140.6	20.3	150.3	28.5
07/19/2014	132.5	0.1	132.1	0.0	135.7	10.0	132.2	12.0	141.7	27.2	137.2	20.3	144.2	28.6
07/20/2014	118.5	0.1	122.6	0.0	124.8	9.4	124.3	11.9	133.5	27.0	130.7	20.2	135.9	29.6
07/21/2014	129.1	0.1	120.3	0.0	133.3	9.4	133.9	12.8	141.3	27.9	140.9	20.2	152.9	27.9
07/22/2014	136.4	0.1	142.8	0.0	137.2	10.0	130.0	13.0	137.0	27.8	130.2	20.2	132.5	28.6
07/23/2014	149.3	0.1	146.0	3.1	146.9	10.0	141.9	16.6	147.4	28.9	144.2	20.4	152.9	30.5
07/24/2014	150.2	0.1	151.1	36.5	154.4	12.7	150.9	26.2	154.6	28.4	149.6	30.7	153.8	39.6
07/25/2014	153.8	0.1	152.4	28.1	163.3	16.6	163.9	31.1	171.9	28.5	167.4	31.6	180.5	48.9
07/26/2014	143.1	0.1	139.5	22.3	149.5	10.0	145.0	13.1	152.3	27.3	151.1	20.2	162.5	31.4
07/27/2014	129.0	0.1	130.6	1.9	140.5	10.0	136.9	12.5	141.5	27.0	140.4	20.2	154.8	27.8
07/28/2014	138.3	0.1	139.6	0.0	147.5	10.0	144.2	12.3	150.3	27.3	143.8	20.3	152.2	27.0
07/29/2014	138.2	0.1	132.2	0.0	141.6	10.0	139.6	12.3	145.1	27.3	146.2	20.3	146.3	26.9
07/30/2014	142.5	0.1	145.3	0.0	140.0	10.0	126.2	12.6	130.2	28.5	130.5	20.5	140.8	28.1
07/31/2014	147.5	0.1	147.4	0.0	146.2	10.0	136.5	13.2	143.8	28.4	136.5	20.8	141.1	29.9

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

	Dworshak		Brownlee	Hells Canyon	Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
Date	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
07/18/2014	13.3	3.7	---	11.2	39.7	18.5	39.5	11.8	40.6	17.0	42.0	32.4
07/19/2014	13.3	3.6	---	11.5	36.3	18.5	36.0	10.8	36.2	16.6	36.7	26.7
07/20/2014	12.2	2.6	---	13.1	38.5	18.5	38.0	11.3	38.5	17.0	40.2	30.3
07/21/2014	10.7	1.0	---	11.9	37.4	18.6	38.4	11.4	38.6	17.0	39.9	30.0
07/22/2014	9.9	0.2	---	12.3	33.3	18.6	31.9	9.5	31.3	17.0	33.2	23.6
07/23/2014	9.8	0.2	---	13.4	33.5	18.7	33.3	10.0	33.9	16.7	35.4	25.4
07/24/2014	10.1	0.5	---	10.4	34.9	18.7	35.9	10.8	35.5	17.0	37.9	28.1
07/25/2014	9.9	0.2	---	10.4	31.8	18.7	28.5	10.8	29.8	16.5	31.3	21.6
07/26/2014	13.4	3.7	---	11.9	33.1	18.7	32.3	11.5	33.2	17.0	34.7	25.0
07/27/2014	13.5	3.7	---	13.0	33.7	18.7	31.2	10.8	33.2	16.7	35.8	26.1
07/28/2014	13.4	3.7	---	13.6	35.9	18.5	36.1	10.9	36.0	17.0	36.4	26.5
07/29/2014	13.3	3.5	---	14.0	36.6	18.5	36.2	10.8	39.5	16.8	42.0	32.1
07/30/2014	13.2	3.4	---	12.8	34.3	18.4	33.7	10.8	33.1	17.0	33.3	23.3
07/31/2014	12.8	3.2	---	14.0	33.3	18.5	32.5	10.8	34.0	16.7	33.8	23.9

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

	McNary		John Day		The Dalles		Bonneville			
Date	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
07/18/2014	201.4	101.0	204.6	61.4	194.3	77.7	210.7	100.4	7.9	89.9
07/19/2014	202.2	101.1	183.6	57.7	171.6	68.6	177.3	96.1	0.0	68.8
07/20/2014	207.8	104.2	191.2	76.0	172.8	69.1	184.1	90.8	0.0	80.8
07/21/2014	182.0	91.2	194.3	74.1	180.8	72.2	203.2	95.1	7.1	88.5
07/22/2014	185.1	92.5	171.9	51.5	158.6	63.4	179.4	99.9	0.0	67.1
07/23/2014	189.5	95.0	168.9	50.5	157.4	62.9	172.9	94.9	0.0	65.5
07/24/2014	186.9	93.7	185.0	55.5	169.8	67.4	185.4	90.7	0.0	82.3
07/25/2014	213.8	107.0	213.8	64.2	199.8	79.8	205.8	95.4	5.5	92.4
07/26/2014	212.6	106.6	199.6	60.4	183.0	73.2	197.3	100.5	0.0	84.4
07/27/2014	204.5	102.6	192.6	57.7	180.4	71.9	195.8	95.8	2.7	84.8
07/28/2014	206.7	103.7	202.9	60.8	187.9	75.1	204.6	90.5	9.2	92.6
07/29/2014	194.4	97.5	182.7	55.1	170.5	68.2	192.1	95.4	0.7	83.5
07/30/2014	205.5	103.0	194.5	58.4	178.5	71.4	189.2	100.6	1.4	74.9
07/31/2014	184.1	92.3	186.2	55.6	177.5	70.8	195.9	96.4	3.3	83.8

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
Lower Granite Dam											
Little Goose Dam											
	07/21/14	Chinook + Steelhead	43	0	0	0.00%	0.00%	0	0	0	0
	07/28/14	Chinook + Steelhead	41	0	0	0.00%	0.00%	0	0	0	0
Lower Monumental Dam											
	07/23/14	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	07/31/14	Chinook + Steelhead	55	1	1	1.82%	0.00%	1	0	0	0
McNary Dam											
	07/21/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/25/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/27/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/31/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
Bonneville Dam											
	07/19/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/22/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/26/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/29/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
Rock Island Dam											
	07/22/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/24/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/29/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/31/14	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	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 Upper Columbia River Sites

	Hungry H. Dnst				Boundary				Grand Coulee				Grand C. Tlwr				Chief Joseph			
Date	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr
7/18	108.2	108.4	108.8	24	---	---	---	0	116.8	117.0	117.5	24	114.0	114.2	114.5	24	114.1	114.1	114.2	3
7/19	108.1	108.5	109.0	24	---	---	---	0	116.7	117.0	117.3	24	114.2	114.7	115.4	24	114.0	114.3	114.5	24
7/20	108.1	108.6	108.9	24	---	---	---	0	116.8	116.9	117.1	24	113.9	114.2	114.9	24	114.1	114.7	115.0	24
7/21	106.5	106.8	107.0	24	---	---	---	0	116.0	116.2	116.6	24	113.6	113.9	114.1	24	113.8	114.1	114.5	24
7/22	106.2	106.3	106.4	23	---	---	---	0	115.1	115.4	115.9	24	112.7	113.0	113.2	24	113.4	113.6	113.9	24
7/23	106.9	107.5	107.9	24	---	---	---	0	115.0	115.3	115.6	24	113.0	113.4	114.0	24	113.3	113.7	114.2	24
7/24	107.2	107.4	107.6	24	---	---	---	0	114.2	114.6	114.8	24	112.0	112.1	112.3	24	111.5	111.8	112.4	24
7/25	106.6	106.9	107.5	23	---	---	---	0	113.8	114.1	114.4	24	111.3	111.8	112.0	24	111.2	111.5	111.6	24
7/26	106.6	106.7	106.9	24	---	---	---	0	111.9	112.5	112.9	24	111.2	111.5	111.7	24	111.4	112.0	112.2	24
7/27	106.7	107.2	107.7	24	---	---	---	0	108.4	109.1	110.5	24	110.7	111.1	111.4	24	112.1	112.5	112.9	24
7/28	106.8	107.0	107.4	24	---	---	---	0	110.1	111.0	111.8	24	111.0	111.3	111.7	24	111.8	112.2	112.5	24
7/29	106.8	107.2	107.6	24	---	---	---	0	109.3	109.6	110.3	24	110.8	111.2	111.6	24	111.8	112.3	112.6	24
7/30	107.0	107.4	107.7	24	---	---	---	0	109.4	109.7	109.9	24	110.5	110.9	111.2	24	111.6	112.0	112.3	24
7/31	107.2	107.4	107.7	23	---	---	---	0	110.1	110.7	111.9	23	110.3	110.7	111.5	23	111.1	111.4	111.6	23

Total Dissolved Gas Saturation Data at Mid Columbia River Sites

	Chief J. Dnst				Wells				Wells Dwnstrm				Rocky Reach				Rocky R. Tlwr			
Date	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr
7/18	113.9	113.9	114.0	3	113.1	113.3	113.5	18	114.2	114.4	114.6	18	113.9	114.2	114.9	24	115.9	116.4	116.8	24
7/19	114.2	114.5	114.7	24	112.9	113.1	113.5	20	114.0	114.2	114.6	20	112.6	112.8	113.3	24	115.3	115.8	116.5	24
7/20	114.1	114.5	115.2	24	112.7	112.9	113.3	18	113.8	114.2	114.8	18	111.8	111.9	112.2	24	114.4	115.2	115.6	24
7/21	113.5	113.9	114.7	24	112.2	112.5	113.1	17	113.1	113.6	114.4	17	110.7	111.0	111.5	24	114.1	114.9	115.2	24
7/22	113.0	113.2	113.9	24	112.3	112.5	112.7	19	113.3	113.6	113.9	19	110.3	110.6	110.7	24	114.0	115.0	115.4	24
7/23	112.9	113.3	113.9	24	112.9	113.4	113.9	18	114.1	114.6	115.3	18	111.1	111.4	111.5	24	115.1	115.6	115.9	24
7/24	114.8	117.0	117.2	24	111.0	111.3	111.9	19	112.7	113.0	114.3	19	111.1	111.3	111.3	24	116.3	116.9	117.4	24
7/25	112.0	112.6	113.4	24	111.6	112.1	112.7	21	113.8	114.6	116.0	21	110.9	111.2	111.4	24	117.2	117.8	118.2	24
7/26	111.2	111.4	111.6	24	111.4	111.4	112.1	12	112.5	112.5	113.8	12	111.9	112.7	113.2	24	115.6	116.7	117.1	24
7/27	111.5	111.9	112.4	24	111.8	112.0	112.8	15	112.8	113.1	114.0	15	112.4	112.7	113.1	24	115.5	116.3	116.7	24
7/28	111.3	112.0	113.2	24	112.5	112.9	113.4	19	113.6	114.2	115.0	19	112.2	112.8	113.1	24	115.0	116.1	116.5	24
7/29	111.7	112.5	113.3	24	112.3	112.6	113.3	20	113.2	113.8	114.6	20	112.7	113.4	113.8	24	115.6	116.4	117.1	24
7/30	111.5	112.0	112.4	24	112.1	112.5	112.8	19	113.0	113.7	114.3	19	112.6	112.9	113.3	24	115.2	116.0	116.4	24
7/31	110.8	111.1	111.4	23	111.6	111.9	112.4	18	112.8	113.1	114.1	18	112.1	112.6	113.0	23	115.0	115.5	116.0	23

Total Dissolved Gas Saturation at Mid Columbia River Sites

	Rock Island				Rock I. Tlwr				Wanapum				Wanapum Tlwr				Priest Rapids			
Date	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr
7/18	112.6	112.9	113.4	24	113.3	116.0	116.6	23	---	---	---	0	---	---	---	0	---	---	---	0
7/19	112.3	112.6	112.8	24	110.5	114.1	115.7	24	---	---	---	0	---	---	---	0	---	---	---	0
7/20	111.3	111.6	112.1	24	107.9	112.9	113.3	24	---	---	---	0	---	---	---	0	---	---	---	0
7/21	110.4	111.0	111.7	24	109.0	114.4	114.8	24	---	---	---	0	---	---	---	0	---	---	---	0
7/22	110.1	110.6	110.9	24	108.6	113.8	114.2	24	---	---	---	0	---	---	---	0	---	---	---	0
7/23	111.3	111.8	112.5	24	112.3	115.1	115.6	24	---	---	---	0	---	---	---	0	---	---	---	0
7/24	111.2	112.4	113.1	24	112.4	114.0	114.7	24	---	---	---	0	---	---	---	0	---	---	---	0
7/25	112.9	113.9	114.3	24	114.2	114.9	115.0	23	---	---	---	0	---	---	---	0	---	---	---	0
7/26	111.6	112.7	113.7	24	112.2	114.0	114.7	24	---	---	---	0	---	---	---	0	---	---	---	0
7/27	112.3	112.8	113.1	24	110.8	113.7	114.2	24	---	---	---	0	---	---	---	0	---	---	---	0
7/28	111.6	112.8	113.4	24	110.1	114.0	114.7	23	---	---	---	0	---	---	---	0	---	---	---	0
7/29	112.6	113.4	114.1	24	110.5	114.3	114.9	24	---	---	---	0	---	---	---	0	---	---	---	0
7/30	112.6	113.1	113.7	24	107.4	114.0	114.7	24	---	---	---	0	---	---	---	0	---	---	---	0
7/31	112.2	112.7	113.2	23	108.9	113.8	114.3	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

	Priest R. Dnst				Pasco				Dworshak				Clrwtr-Peck				Anatone			
Date	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr
7/18	---	---	---	0	---	---	---	0	108.2	108.4	108.5	24	106.9	107.3	107.7	24	101.8	102.9	103.8	24
7/19	---	---	---	0	---	---	---	0	108.3	108.8	109.1	24	107.3	108.3	109.0	24	102.2	103.7	104.9	24
7/20	---	---	---	0	---	---	---	0	105.3	106.4	108.2	24	105.5	106.2	106.7	24	102.2	103.3	104.2	24
7/21	---	---	---	0	---	---	---	0	102.3	103.6	104.5	24	103.8	104.5	105.3	24	101.9	102.9	103.9	24
7/22	---	---	---	0	---	---	---	0	100.7	101.0	101.5	24	102.6	103.5	104.4	24	101.7	102.8	103.8	24
7/23	---	---	---	0	---	---	---	0	100.9	101.5	102.2	24	103.1	104.2	105.2	24	102.0	103.4	105.1	24
7/24	---	---	---	0	---	---	---	0	100.5	100.7	100.9	24	103.1	104.6	109.6	24	101.6	102.9	103.9	24
7/25	---	---	---	0	---	---	---	0	100.4	100.8	101.2	24	102.7	103.8	104.7	24	101.9	103.3	104.4	24
7/26	---	---	---	0	---	---	---	0	107.4	107.9	108.1	24	106.9	108.2	108.8	24	102.0	103.4	104.7	24
7/27	---	---	---	0	---	---	---	0	107.8	108.2	108.5	24	107.5	108.5	109.3	24	102.1	103.5	104.8	24
7/28	---	---	---	0	---	---	---	0	108.1	108.5	108.7	24	107.8	108.6	109.3	24	102.3	103.6	104.8	24
7/29	---	---	---	0	---	---	---	0	108.2	108.7	109.3	24	108.1	109.0	110.2	24	102.2	103.4	105.0	22
7/30	---	---	---	0	---	---	---	0	107.4	107.8	108.0	24	107.4	108.5	109.1	24	102.0	103.1	104.3	24
7/31	---	---	---	0	---	---	---	0	108.0	109.0	111.4	23	108.1	109.4	110.6	23	101.9	103.0	104.5	23

Total Dissolved Gas Saturation Data at Snake River Sites

	Clrwtr-Lewiston				Lower Granite				L. Granite Tlwr				Little Goose				L. Goose Tlwr			
Date	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr
7/18	104.4	106.0	107.1	24	103.0	103.2	103.6	24	115.7	116.0	116.4	24	111.8	112.2	113.2	24	113.1	113.4	113.6	24
7/19	105.7	108.2	109.8	24	102.8	102.9	103.2	24	116.2	116.5	116.7	24	110.5	110.7	111.0	24	113.1	113.4	113.7	24
7/20	105.1	106.8	108.2	24	102.4	102.6	103.0	24	115.8	116.1	116.2	24	109.6	109.9	110.5	24	112.6	112.8	113.0	24
7/21	104.3	106.7	108.2	24	100.6	100.9	101.6	24	115.6	116.0	116.3	24	107.5	107.9	108.7	24	111.7	112.2	112.6	24
7/22	103.1	105.1	106.8	24	100.6	100.8	101.3	24	116.4	116.6	116.8	24	106.8	107.0	107.3	24	111.1	111.5	112.2	24
7/23	103.6	105.8	108.0	24	101.5	102.1	102.9	24	116.5	116.9	117.6	23	106.9	107.3	107.5	24	111.2	111.9	112.5	24
7/24	103.2	105.4	107.3	23	101.4	101.6	101.9	24	116.4	116.7	117.7	24	106.0	106.4	106.7	24	110.9	111.2	111.5	24
7/25	103.6	106.1	107.7	24	101.4	101.5	101.8	24	116.8	117.2	117.9	24	105.8	105.9	106.2	24	112.4	113.5	113.9	24
7/26	104.4	107.5	109.4	24	101.4	101.5	101.7	24	116.9	117.3	117.7	24	105.8	106.0	106.1	24	112.3	112.8	113.2	24
7/27	105.7	108.1	109.8	24	101.3	101.5	101.9	24	116.4	116.8	117.3	24	106.2	106.7	107.0	24	112.1	112.9	113.3	24
7/28	105.8	108.1	109.8	24	100.6	100.8	101.0	24	116.1	116.4	116.7	24	106.8	106.9	107.1	24	112.3	112.6	112.9	24
7/29	106.0	108.5	110.2	24	100.2	101.3	101.8	24	115.7	116.1	116.6	24	107.4	107.7	107.9	24	112.6	113.2	113.6	24
7/30	105.5	107.6	109.2	24	102.2	102.7	102.9	24	115.9	116.1	116.5	24	108.9	109.6	112.6	24	113.5	114.3	116.4	24
7/31	105.7	108.1	109.6	23	103.1	103.4	103.7	23	116.3	116.6	116.9	23	111.9	113.0	114.4	23	113.7	114.3	114.9	23

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

	Lower Mon.				L. Mon. Tlwr				Ice Harbor				Ice Harbor Tlwr				McNary-Oregon			
Date	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr
7/18	112.9	113.2	113.7	24	116.0	116.3	116.5	24	114.4	114.9	115.4	24	113.4	114.0	115.8	24	---	---	---	0
7/19	111.8	112.1	112.3	24	115.6	115.9	116.2	24	113.6	113.8	114.0	24	113.7	114.4	115.2	24	---	---	---	0
7/20	110.8	110.9	111.1	24	115.7	116.1	116.7	24	113.0	113.2	113.5	24	113.5	114.1	114.8	24	---	---	---	0
7/21	109.2	109.6	110.1	24	115.4	115.8	116.2	24	111.3	111.6	112.3	24	113.8	114.3	114.8	24	---	---	---	0
7/22	108.2	108.4	108.6	24	115.4	115.7	116.1	24	110.4	110.7	110.9	24	113.3	114.0	114.5	24	---	---	---	0
7/23	108.2	108.4	108.8	24	114.8	115.5	115.8	24	110.6	110.8	111.4	24	113.2	114.1	114.8	24	---	---	---	0
7/24	106.9	107.3	107.7	24	115.0	115.2	115.7	24	108.8	109.1	109.6	24	113.5	113.9	114.2	24	---	---	---	0
7/25	107.3	107.6	108.0	24	115.3	115.9	116.3	24	108.7	109.2	109.6	24	113.4	113.8	114.1	24	---	---	---	0
7/26	107.3	107.6	108.1	24	115.3	115.7	116.1	24	109.5	109.7	109.8	24	113.9	114.4	115.0	24	---	---	---	0
7/27	107.2	107.4	107.7	24	114.9	115.3	115.6	24	109.2	109.4	109.7	24	113.9	114.4	114.9	24	---	---	---	0
7/28	108.2	108.5	109.4	24	115.3	115.8	116.1	24	110.3	111.1	112.2	24	113.3	113.9	114.5	24	---	---	---	0
7/29	109.3	110.1	111.4	24	115.3	116.2	116.6	24	112.5	113.0	113.8	24	113.8	114.3	114.9	24	---	---	---	0
7/30	110.1	110.5	111.1	24	115.6	115.8	116.1	24	113.2	113.6	114.0	24	113.6	114.3	114.6	24	---	---	---	0
7/31	111.2	111.6	112.0	23	115.1	116.1	116.7	23	113.6	113.9	114.3	23	113.3	113.8	114.5	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

	McNary-Wash				McNary Tlwr				John Day				John Day Tlwr				The Dalles			
	24 h	12 h		#	24 h	12 h		#	24h	12h		#	24h	12h		#	24h	12h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	AVG	High	hr
7/18	110.5	110.8	111.1	24	116.6	116.8	117.1	24	107.7	108.0	108.1	24	114.0	114.4	115.0	24	106.9	107.3	107.7	24
7/19	108.9	109.4	109.7	24	116.5	116.7	117.1	24	106.8	107.1	107.3	24	114.1	114.6	115.1	24	106.6	106.9	107.3	24
7/20	108.4	108.7	108.8	24	116.3	116.8	117.2	24	106.4	106.7	106.9	24	114.3	114.8	114.9	24	107.4	107.7	108.2	24
7/21	106.0	106.4	107.1	24	115.4	116.0	116.3	24	104.4	104.7	105.5	24	114.4	115.6	116.7	24	107.4	107.7	108.3	24
7/22	106.4	106.5	107.3	24	115.7	116.1	116.4	24	103.3	103.4	103.6	24	113.2	113.5	114.0	24	108.7	109.3	109.5	24
7/23	107.1	107.4	107.5	24	115.5	116.0	116.7	24	103.2	103.3	103.4	24	113.0	113.3	113.9	24	106.9	107.3	107.4	24
7/24	105.7	105.9	106.3	24	115.2	115.5	115.7	24	103.1	103.4	103.6	24	112.8	113.1	113.8	24	105.9	106.5	106.8	24
7/25	105.5	105.8	106.1	24	116.0	116.2	116.4	24	103.2	103.6	103.9	24	112.7	113.1	113.6	24	106.6	107.1	107.9	24
7/26	106.5	106.9	108.3	24	116.4	116.9	117.5	24	103.7	104.2	104.5	24	112.5	112.8	113.3	24	106.8	107.2	107.7	24
7/27	109.1	109.6	111.2	24	116.6	117.0	117.4	24	105.1	105.6	106.2	24	112.8	113.2	114.2	24	107.6	107.8	108.2	24
7/28	111.4	111.7	111.9	24	116.7	117.1	117.6	24	105.7	105.9	106.2	24	113.4	113.8	114.2	24	108.7	108.9	109.2	24
7/29	111.9	112.0	112.2	24	116.4	116.7	117.0	24	106.1	106.8	107.2	24	113.4	113.7	113.9	24	108.1	108.4	108.9	24
7/30	111.9	112.2	112.4	24	116.5	116.8	117.0	24	107.5	108.3	108.9	24	113.5	114.0	114.4	24	107.9	108.2	108.6	24
7/31	111.6	111.7	112.3	23	116.2	116.5	116.9	23	108.7	109.5	110.5	23	113.7	114.3	114.7	23	109.3	109.9	110.6	23

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

	The Dalles Dnst				Bonneville				Warrendale				Camas\Washougal				Cascade Island			
	24 h	12 h		#	24 h	12 h		#	24h	12h		#	24h	12h		#	24h	12h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/18	113.9	114.3	114.8	24	106.3	106.7	107.5	24	113.5	114.1	114.7	24	---	---	---	0	116.9	117.4	118.1	24
7/19	113.5	113.8	113.9	24	106.3	106.8	107.3	24	114.7	115.4	115.7	24	---	---	---	0	116.5	116.6	116.8	24
7/20	113.4	113.7	114.0	24	106.7	107.0	107.1	24	113.3	113.6	114.0	24	---	---	---	0	115.3	115.9	118.2	24
7/21	114.0	114.6	114.9	24	107.0	107.3	107.7	24	114.3	115.4	116.7	24	---	---	---	0	115.5	116.4	118.6	24
7/22	114.8	115.4	116.0	24	108.4	109.4	110.4	24	115.7	116.3	117.2	24	---	---	---	0	116.6	117.1	118.5	24
7/23	113.5	114.0	114.4	24	110.0	110.6	110.9	24	115.3	116.0	116.4	24	---	---	---	0	116.7	117.1	117.4	24
7/24	112.9	113.1	113.5	24	108.0	108.3	108.7	24	113.9	114.2	114.6	24	---	---	---	0	115.1	115.8	118.2	24
7/25	113.9	114.3	114.6	24	108.7	109.1	109.5	24	114.7	115.4	116.3	24	---	---	---	0	115.7	116.6	118.5	24
7/26	114.2	114.5	114.8	24	109.9	110.7	111.2	24	115.7	116.2	116.5	24	---	---	---	0	116.7	117.0	118.3	24
7/27	114.3	114.8	115.4	24	111.0	111.5	111.8	24	115.8	116.3	116.7	24	---	---	---	0	116.5	116.7	117.1	24
7/28	114.4	115.6	116.3	24	111.7	111.9	112.1	24	115.5	115.7	116.0	24	---	---	---	0	115.5	116.2	118.4	24
7/29	114.6	114.9	115.2	24	111.0	111.4	111.6	24	115.6	116.1	116.9	24	---	---	---	0	115.6	116.5	118.4	24
7/30	114.3	114.9	115.1	24	109.2	109.4	109.6	24	115.6	116.1	116.5	24	113.3	113.8	115.1	14	116.6	116.9	117.7	24
7/31	115.1	115.6	116.2	23	109.1	109.7	110.2	23	115.2	115.9	116.7	23	112.5	113.6	114.4	23	116.6	116.8	117.0	23

Two-Week Summary of Passage Indices

Source: Fish Passage Center Updated: 8/1/2014 7:26

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/currentsmpsubmitdata.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)
07/18/2014	*	---	---	---	---	0	0	16	0	0	312	---
07/19/2014	*	---	---	---	---	0	0	0	0	---	286	0
07/20/2014		---	---	---	---	0	0	0	0	0	761	0
07/21/2014	*	---	---	---	---	0	0	0	0	---	333	114
07/22/2014		---	---	---	---	0	0	0	0	0	0	0
07/23/2014	*	---	---	---	---	0	0	0	0	---	0	0
07/24/2014		---	---	---	---	0	0	10	0	0	286	0
07/25/2014	*	---	---	---	---	0	0	0	0	---	0	0
07/26/2014		---	---	---	---	0	0	0	0	0	0	0
07/27/2014	*	---	---	---	---	0	0	0	0	---	0	0
07/28/2014		---	---	---	---	0	0	0	0	0	0	219
07/29/2014	*	---	---	---	---	0	0	0	0	---	0	0
07/30/2014		---	---	---	---	0	0	0	0	0	0	0
07/31/2014	*	---	---	---	---	0	0	0	0	---	36	---
08/01/2014		---	---	---	---	---	---	---	---	---	---	---
Total:		**0**	**0**	**0**	**0**	**0**	**0**	**26**	**0**	**0**	**2,014**	**333**
# Days:		**0**	**0**	**0**	**0**	**14**	**14**	**14**	**14**	**7**	**14**	**12**
Average:		**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**144**	**28**
YTD		**65,404**	**63,600**	**25,420**	**10,159**	**4,807,472**	**2,838,732**	**1,969,597**	**26,427**	**2,022,048**	**2,320,483**	**2,151,268**

				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)
07/18/2014	*	---	---	---	---	4,605	9,823	1,904	1,107	108,476	25,438	---
07/19/2014	*	---	---	---	---	3,689	6,870	1,938	926	---	47,692	29,546
07/20/2014		---	---	---	---	5,266	2,931	1,148	876	56,261	35,473	28,953
07/21/2014	*	---	---	---	---	6,145	3,645	1,384	403	---	23,504	37,435
07/22/2014		---	---	---	---	3,057	1,766	672	398	44,215	20,183	29,229
07/23/2014	*	---	---	---	---	3,235	1,116	3,737	668	---	17,783	6,952
07/24/2014		---	---	---	---	4,909	2,093	2,088	557	45,402	26,112	24,248
07/25/2014	*	---	---	---	---	4,801	1,539	783	630	---	22,957	23,726
07/26/2014		---	---	---	---	1,659	789	3,071	801	58,817	42,496	20,807
07/27/2014	*	---	---	---	---	1,260	803	2,916	520	---	21,999	19,537
07/28/2014		---	---	---	---	1,637	1,409	1,980	364	31,892	16,306	16,079
07/29/2014	*	---	---	---	---	1,354	1,612	1,351	341	---	16,908	20,314
07/30/2014		---	---	---	---	1,103	3,118	839	327	36,786	12,846	14,782
07/31/2014	*	---	---	---	---	948	1,889	725	342	---	14,241	---
08/01/2014		---	---	---	---	---	---	---	---	---	---	---
Total:		**0**	**0**	**0**	**0**	**43,668**	**39,403**	**24,536**	**8,260**	**381,849**	**343,938**	**271,608**
# Days:		**0**	**0**	**0**	**0**	**14**	**14**	**14**	**14**	**7**	**14**	**12**
Average:		**0**	**0**	**0**	**0**	**3,119**	**2,815**	**1,753**	**590**	**54,550**	**24,567**	**22,634**
YTD		**0**	**27**	**4**	**332**	**904,958**	**994,010**	**370,146**	**33,272**	**4,502,256**	**2,582,044**	**4,094,953**

Two-Week Summary of Passage Indices

				COMBINED COHO								
		WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2
Date		(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
07/18/2014	*	---	---	---	---	0	0	0	0	0	0	---
07/19/2014	*	---	---	---	---	0	0	0	2	---	0	0
07/20/2014		---	---	---	---	0	0	0	1	0	0	0
07/21/2014	*	---	---	---	---	0	0	0	0	---	0	0
07/22/2014		---	---	---	---	0	0	0	0	0	0	114
07/23/2014	*	---	---	---	---	0	0	0	0	---	0	0
07/24/2014		---	---	---	---	0	0	0	2	0	72	0
07/25/2014	*	---	---	---	---	0	0	0	0	---	0	0
07/26/2014		---	---	---	---	0	0	0	0	0	0	0
07/27/2014	*	---	---	---	---	0	0	0	3	---	0	0
07/28/2014		---	---	---	---	0	0	0	0	0	0	0
07/29/2014	*	---	---	---	---	0	0	0	0	---	0	0
07/30/2014		---	---	---	---	0	0	0	0	0	0	0
07/31/2014	*	---	---	---	---	0	0	0	0	---	0	---
08/01/2014		---	---	---	---	---	---	---	---	---	---	---
Total:		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**72**	**114**
# Days:		**0**	**0**	**0**	**0**	**14**	**14**	**14**	**14**	**7**	**14**	**12**
Average:		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**5**	**10**
YTD		**0**	**0**	**0**	**267**	**74,168**	**59,431**	**27,316**	**66,431**	**147,455**	**225,188**	**776,651**

				COMBINED STEELHEAD								
		WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2
Date		(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
07/18/2014	*	---	---	---	---	11	14	0	7	410	0	---
07/19/2014	*	---	---	---	---	0	14	0	3	---	0	0
07/20/2014		---	---	---	---	0	0	0	0	0	0	0
07/21/2014	*	---	---	---	---	0	14	0	3	---	0	0
07/22/2014		---	---	---	---	0	0	0	0	0	0	0
07/23/2014	*	---	---	---	---	0	14	4	3	---	0	0
07/24/2014		---	---	---	---	11	0	0	3	0	0	0
07/25/2014	*	---	---	---	---	0	6	0	3	---	0	0
07/26/2014		---	---	---	---	0	0	0	3	0	0	0
07/27/2014	*	---	---	---	---	9	3	0	4	---	0	0
07/28/2014		---	---	---	---	0	3	0	0	0	0	0
07/29/2014	*	---	---	---	---	8	4	0	2	---	0	0
07/30/2014		---	---	---	---	8	3	9	3	0	0	0
07/31/2014	*	---	---	---	---	0	3	0	0	---	0	---
08/01/2014		---	---	---	---	---	---	---	---	---	---	---
Total:		**0**	**0**	**0**	**0**	**47**	**78**	**13**	**34**	**410**	**0**	**0**
# Days:		**0**	**0**	**0**	**0**	**14**	**14**	**14**	**14**	**7**	**14**	**12**
Average:		**0**	**0**	**0**	**0**	**3**	**6**	**1**	**2**	**59**	**0**	**0**
YTD		**2,080**	**43,465**	**4,243**	**12,842**	**3,376,163**	**1,975,583**	**1,183,174**	**27,451**	**586,885**	**1,032,890**	**459,444**

Two-Week Summary of Passage Indices

				COMBINED SOCKEYE								
		WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2
Date		(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
07/18/2014	*	---	---	---	---	4	14	0	0	0	0	---
07/19/2014	*	---	---	---	---	19	14	0	3	---	143	0
07/20/2014		---	---	---	---	21	29	0	7	0	0	0
07/21/2014	*	---	---	---	---	0	0	0	0	---	0	0
07/22/2014		---	---	---	---	0	14	0	3	0	0	0
07/23/2014	*	---	---	---	---	23	0	0	0	---	0	0
07/24/2014		---	---	---	---	0	0	0	0	0	0	0
07/25/2014	*	---	---	---	---	0	0	0	3	---	96	0
07/26/2014		---	---	---	---	0	0	0	3	0	0	0
07/27/2014	*	---	---	---	---	0	0	0	1	---	0	0
07/28/2014		---	---	---	---	0	0	0	3	0	0	109
07/29/2014	*	---	---	---	---	0	3	0	5	---	72	0
07/30/2014		---	---	---	---	0	9	0	2	0	0	115
07/31/2014	*	---	---	---	---	0	0	0	6	---	0	---
08/01/2014		---	---	---	---	---	---	---	---	---	---	---
Total:		**0**	**0**	**0**	**0**	**67**	**83**	**0**	**36**	**0**	**311**	**224**
# Days:		**0**	**0**	**0**	**0**	**14**	**14**	**14**	**14**	**7**	**14**	**12**
Average:		**0**	**0**	**0**	**0**	**5**	**6**	**0**	**3**	**0**	**22**	**19**
YTD		**0**	**0**	**2**	**0**	**181,985**	**88,386**	**69,781**	**37,914**	**1,495,357**	**577,672**	**590,103**

				COMBINED LAMPREY JUVENILES								
		WTB	IMN	GRN	LEW	LGR†	LGS	LMN	RIS	MCN	JDA	BO2
Date		(Coll)	(Coll)	(Coll)	(Coll)	(Samp)	(Coll)	(Coll)	(Coll)	(Coll)	(Coll)	(Coll)
07/18/2014	*	---	---	---	---	0	0	0	0	200	500	---
07/19/2014	*	---	---	---	---	1	0	0	1	---	0	0
07/20/2014		---	---	---	---	0	0	0	1	0	100	204
07/21/2014	*	---	---	---	---	1	0	0	0	---	0	150
07/22/2014		---	---	---	---	0	0	0	3	200	300	100
07/23/2014	*	---	---	---	---	0	0	4	0	---	0	54
07/24/2014		---	---	---	---	0	4	10	0	100	450	25
07/25/2014	*	---	---	---	---	0	4	0	1	---	933	275
07/26/2014		---	---	---	---	0	12	0	1	200	600	100
07/27/2014	*	---	---	---	---	1	10	0	1	---	200	100
07/28/2014		---	---	---	---	0	6	0	1	100	300	0
07/29/2014	*	---	---	---	---	0	4	0	1	---	100	50
07/30/2014		---	---	---	---	0	10	0	0	0	100	66
07/31/2014	*	---	---	---	---	0	806	5	0	---	125	---
08/01/2014		---	---	---	---	---	---	---	---	---	---	---
Total:		**0**	**0**	**0**	**0**	**3**	**856**	**19**	**10**	**800**	**3,708**	**1,124**
# Days:		**0**	**0**	**0**	**0**	**14**	**14**	**14**	**14**	**7**	**14**	**12**
Average:		**0**	**0**	**0**	**0**	**0**	**61**	**1**	**1**	**114**	**265**	**94**
YTD		**1**	**3**	**0**	**0**	**124**	**20,709**	**29,471**	**56**	**57,855**	**98,860**	**19,193**

Two-Week Summary of Passage Indices

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

Smolt indices, clipped & unclipped or combined, are presented in the following order: yearling chinook (chinook 1's,) subyearling chinook (chinook 0's), steelhead, coho, sockeye, and lamprey juveniles. Two classes of fish counts are shown in these tables:
Two classes of fish counts are shown in these tables:
Sample counts (Samp) are provided for juvenile lamprey at LGR. See note below for details †.
Collection counts (Coll), which account for sample rates but are not adjusted for flow;
Passage indices (INDEX), which are collection counts divided by the proportion of water passing through the sampled powerhouse.
Passage indices are not population estimates, but are used to adjust collection counts for daily fluctuations in the site's or project's operations.
The classes of counts presented in the report are defined below for each site. Most samples occur over a 24-hr period that spans two calendar days. In this report, the date shown corresponds with the sample end date.
Combined lamprey juvenile collection counts are provided for all sites. Combined lamprey juveniles is a combination of pacific lamprey ammocoetes, brook lamprey ammocoetes, unknown lamprey ammocoetes, pacific lamprey macropthalmia, 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: 8/1/14 7:23 AM

07/18/14 TO 08/01/14

		Species				
Site	Data	**CH0**	**CH1**	ST	SO	**Grand Total**
LGR	Sum of NumberCollected	20,905		23	32	20,960
	Sum of NumberBarged	20,713		20	30	20,763
	Sum of NumberBypassed	4		0	0	4
	Sum of Numbertrucked	0		0	0	0
	Sum of SampleMorts	74		0	1	75
	Sum of FacilityMorts	114		3	1	118
	Sum of ResearchMorts	0		0	0	0
	Sum of TotalProjectMorts	188		3	2	193
LGS	Sum of NumberCollected	27,192		55	58	27,305
	Sum of NumberBarged	27,007		54	45	27,106
	Sum of NumberBypassed	2		1	0	3
	Sum of Numbertrucked	0		0	0	0
	Sum of SampleMorts	36		0	3	39
	Sum of FacilityMorts	147		0	10	157
	Sum of ResearchMorts	0		0	0	0
	Sum of TotalProjectMorts	183		0	13	196
LMN	Sum of NumberCollected	12,444	15	7		12,466
	Sum of NumberBarged	12,073	14	4		12,091
	Sum of NumberBypassed	153	0	2		155
	Sum of Numbertrucked	0	0	0		0
	Sum of SampleMorts	24	0	0		24
	Sum of FacilityMorts	194	1	1		196
	Sum of ResearchMorts	0	0	0		0
	Sum of TotalProjectMorts	218	1	1		220
Total Sum of NumberCollected		60,541	15	85	90	60,731
Total Sum of NumberBarged		59,793	14	78	75	59,960
Total Sum of NumberBypassed		159	0	3	0	162
Total Sum of Numbertrucked		0	0	0	0	0
Total Sum of SampleMorts		134	0	0	4	138
Total Sum of FacilityMorts		455	1	4	11	471
Total Sum of ResearchMorts		0	0	0	0	0
Total Sum of TotalProjectMorts		589	1	4	15	609

YTD Transportation Summary

Source: Fish Passage Center Updated: 8/1/14 7:23 AM

TO: 08/01/14

		Species					
Site	Data	**CH0**	**CH1**	CO	SO	ST	**Grand Total**
LGR	Sum of NumberCollected	626,555	3,442,337	52,722	130,942	2,404,227	6,656,783
	Sum of NumberBarged	612,995	1,939,440	48,991	70,843	1,326,854	3,999,123
	Sum of NumberBypassed	11,726	1,501,375	3,722	59,638	1,077,085	2,653,546
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	300	138	1	46	60	545
	Sum of FacilityMorts	1,524	1,305	8	415	121	3,373
	Sum of ResearchMorts	10	79	0	0	107	196
	Sum of TotalProjectMorts	1,834	1,522	9	461	288	4,114
LGS	Sum of NumberCollected	702,977	1,951,715	41,832	61,200	1,369,604	4,127,328
	Sum of NumberBarged	701,444	1,768,373	40,932	54,837	1,149,448	3,715,034
	Sum of NumberBypassed	324	182,657	890	6,109	220,103	410,083
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	97	34	1	18	16	166
	Sum of FacilityMorts	1,112	651	9	236	167	2,175
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	1,209	685	10	254	183	2,341
LMN	Sum of NumberCollected	252,491	1,326,208	19,905	48,363	792,130	2,439,097
	Sum of NumberBarged	249,944	1,138,565	17,505	45,099	686,168	2,137,281
	Sum of NumberBypassed	616	177,066	0	2,568	89,957	270,207
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	42	25	0	1	17	85
	Sum of FacilityMorts	489	964	0	301	192	1,946
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	531	989	0	302	209	2,031
Total Sum of NumberCollected		1,582,023	6,720,260	114,459	240,505	4,565,961	13,223,208
Total Sum of NumberBarged		1,564,383	4,846,378	107,428	170,779	3,162,470	9,851,438
Total Sum of NumberBypassed		12,666	1,861,098	4,612	68,315	1,387,145	3,333,836
Total Sum of NumberTrucked		0	0	0	0	0	0
Total Sum of SampleMorts		439	197	2	65	93	796
Total Sum of FacilityMorts		3,125	2,920	17	952	480	7,494
Total Sum of ResearchMorts		10	79	0	0	107	196
Total Sum of TotalProjectMorts		3,574	3,196	19	1,017	680	8,486

Cumulative Adult Passage at Mainstem Dams Through: 07/31

		Spring Chinook						Summer Chinook						Fall Chinook					
	END	2014		2013		10-Yr Avg.		2014		2013		10-Yr Avg.		2014		2013		10-Yr Avg.	
DAM	DATE	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	07/31	188083	26094	83345	33820	130283	22257	109734	25342	93097	26186	85460	18863	0	0	0	0	0	0
TDA	07/31	143142	21080	69202	32311	99813	18973	94803	18971	84373	20486	72087	14696	0	0	0	0	0	0
JDA	07/31	123224	19103	56991	28957	87036	17743	83940	16799	73435	19362	64274	15150	0	0	0	0	0	0
MCN	07/27	107147	16033	52176	22279	79413	14950	83080	15348	71284	13898	57996	10524	0	0	0	0	0	0
IHR	07/31	79298	12428	38017	18611	54814	9602	16735	4380	11155	6234	16304	4373	0	0	0	0	0	0
LMN	07/31	79942	14020	36470	19053	54458	8539	15182	7967	11031	7529	17795	4537	0	0	18	7	1	0
LGS	07/31	77966	13649	35072	19443	49920	9660	16056	7279	9348	7473	16598	5216	0	0	0	0	0	0
LGR	07/31	79167	13732	35031	19940	49728	11001	14033	6892	7735	7071	14775	5725	0	0	0	0	0	0
PRD	07/31	23742	2649	13725	1298	14700	1468	69644	2834	66034	2190	48518	1798	0	0	0	0	0	0
WAN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS	07/29	23247	2934	13345	3100	13890	2468	70642	4041	60864	2214	43581	3884	0	0	0	0	0	0
RRH	07/29	12376	2377	6841	2101	5576	1020	50579	2844	51647	2561	31405	2946	0	0	0	0	0	0
WEL	07/20	15376	2544	7133	2980	4880	1164	33187	2123	31534	2706	15692	1091	0	0	0	0	0	0
WFA	07/29	29770	1531	27532	1612	40150	1075	0	0	0	0	0	0	0	0	0	0	0	0

		Coho						Sockeye			Steelhead						Lamprey		
	END	2014		2013		10-Yr Avg.				10-Yr			10-Yr	Wild	Wild	10-Yr			10-Yr
DAM	DATE	Adult	Jack	Adult	Jack	Adult	Jack	2014	2013	Avg.	2014	2013	Avg.	2014	2013	Avg.	2014	2013	Avg.
BON	07/31	5	-2	0	0	0	0	612892	184946	192043	101997	65020	104177	51907	36371	45286	26143	18717	19144
TDA	07/31	0	0	0	0	0	0	584799	161378	158874	53597	34685	52901	29453	20298	24839	7683	5782	4201
JDA	07/31	0	1	1	0	0	0	555794	154956	160843	33296	21204	40668	16938	11154	17396	5315	3502	3249
MCN	07/27	0	0	1	0	1	0	541697	132749	135487	23314	11276	23321	11803	5187	8786	542	518	680
IHR	07/31	0	0	0	0	0	0	2321	884	504	13083	10655	15333	4862	3358	4492	206	134	110
LMN	07/31	0	0	0	0	0	0	2750	1007	627	12840	7521	15544	5885	3040	5607	67	36	25
LGS	07/31	0	0	0	0	0	0	2703	961	590	8207	4161	10747	4416	2072	3689	42	13	16
LGR	07/31	0	0	0	0	0	0	2574	673	658	12319	8590	11981	6056	3796	4325	18	7	2
PRD	07/31	0	0	0	0	0	0	587575	161640	166657	2205	1395	2618	0	0	0	1203	1066	480
WAN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS	07/29	0	0	0	0	0	0	568803	155699	162679	1436	822	1627	793	546	983	70	51	72
RRH	07/29	0	0	0	0	0	0	477206	127985	137221	747	582	1329	404	393	783	41	24	17
WEL	07/20	0	0	0	0	0	0	388052	98397	107703	287	208	287	164	142	174	0	0	2
WFA	07/29	9	0	2	0	0	0	0	0	0	25940	17137	24561	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.

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