



Fish Passage Center

Weekly Report #09 - 16

June 26, 2009

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Summary of Events:

Water Supply: Precipitation throughout the Columbia Basin has varied between 48% and 420% of average at individual sub-basins over June. Precipitation above The Dalles has been 149% of average over June. Over the entire water year, precipitation has generally been near average.

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

Location	Water Year 2009 June 1-22		Water Year 2009 October 1, 2008 to June 22, 2009	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	2.69	153	19.17	96
Snake River Above Ice Harbor	3.12	292	17.12	116
Columbia Above The Dalles	1.96	149	19.29	100
Kootenai	1.47	81	17.46	86
Clark Fork	5.61	397	18.45	135
Flathead	1.61	83	16.41	90
Pend Oreille/ Spokane	1.53	95	25.05	94
Central Washington	0.32	68	6.70	86
Snake River Plain	2.96	420	10.94	117
Salmon/Boise/ Payette	2.47	229	16.63	96
Clearwater	2.26	124	28.66	110
SW Washington Cascades/Cowlitz	1.03	48	58.69	91
Willamette Valley	1.68	102	47.83	87

Table 2 displays the June Final and June Mid-month runoff volume forecasts for multiple reservoirs. The most notable differences between the June Final and June Mid-Month forecasts came at Libby Dam and Lower Granite Dam. At Libby, the June Mid-Month forecast decreased 6% relative to the June Final Forecast. At Lower Granite Dam, the June Mid-Month forecast increased 6% relative to the June Final Forecast, it appears most of the increase at Lower Granite was due to an increase in water supply above Brownlee Dam (increased 5%). The Water Supply Forecast at The Dalles between January and July is 92000 Kaf (86% of average).

Table 2. June Final and June Mid-month Runoff Volume Forecasts for various reservoirs within the Columbia and Snake River Basins.

Location	June Final		June Mid-Month	
	% Average (1971- 2000)	Probable Runoff Volume (Kaf)	% Average (1971- 2000)	Probable Runoff Volume (Kaf)
The Dalles (Jan- July)	86	92000	86	92000
Grand Coulee (Jan-July)	85	53700	83	52300
Libby Res. Inflow, MT (Apr-Aug)	80	5000 5062*	74	4610
Hungry Horse Res. Inflow, MT (Jan- July)	93	2060	92	2050
Lower Granite Res. Inflow (Apr- July)	102	21900	108	23200
Brownlee Res. Inflow (Apr-July)	76	4780	81	5100
Dworshak Res. Inflow (Apr-July)	98	2590 2597*	99	2610

* Denotes COE Forecast

The Spring Biological Opinion flow period began on April 3rd in the lower Snake River (Lower Granite) and ended on June 20th, 2009. The spring flow objective at Lower Granite this year was 100 Kcfs, average flow at Lower Granite over the spring period was 110.3 Kcfs. The summer flow period began on 6-21-09; the summer flow objective is 52.5 Kcfs in 2009 at Lower Granite. Flows at Lower Granite have average 93.7 Kcfs at Lower Granite over the first five days of the summer period.

The spring flow objective period began on April 10th at Priest Rapids and McNary and will end on June 30th, 2009. The flow objectives this spring are 228 Kcfs at McNary and 135 Kcfs at Priest Rapids. Flows at Priest Rapids have averaged 140.2 Kcfs over the spring season and 159.5 Kcfs last week; and flows at McNary have averaged 270.0 Kcfs over the spring season and 266.4 Kcfs last week.

Grand Coulee Reservoir is at 1285.9 feet (6-25-09) and has drafted 1.4 feet over the last week. Outflows at Grand Coulee have ranged between 131.9 and 155.7 Kcfs over the last week. The Bureau of Reclamation would prefer to start the July 4th weekend with the reservoir at three feet from full, and then fill over the weekend.

The Libby Reservoir is currently at elevation 2430.3 feet (6-25-09) and has refilled 2.8 feet last week. Outflows at Libby are currently 17 Kcfs.

Hungry Horse is currently at an elevation of 3555.5 ft (6-25-09) and has refilled 3.7 feet last week. Outflows at Hungry Horse have been 2.3 Kcfs last week.

Dworshak is currently at an elevation of 1599.7 feet (6-25-09) and has refilled 1.0 foot last week. Outflows at Dworshak have ranged between 4.3 and 8.6 Kcfs over the last week. The proposed operation for Dworshak is to remain full through the July 4th weekend unless water is needed to moderate temperatures at Lower Granite Dam.

The Brownlee Reservoir was at an elevation of 2075.3 feet on June 25th, 2009, drafting 0.6 feet last week. Outflows at Brownlee Dam have been 20.1 to 32.8 Kcfs over the last week.

Spill:

The 2009 planned summer spill program at the lower Snake River Projects began at 0001 hours on June 20, 2009. The following table shows the planned operations for 2009.

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

All of the lower Snake River hydroprojects met the court order over the past week. The court ordered spill changed to the summer amounts on June 20th.

The 2009 spill program began at the lower Columbia River projects at 0001 hours on April 10th and will continue through June 30th. The following table shows the planned operations for 2009 and notes the projects that switched to summer spill levels early.

Project	Day/Night Spill
McNary	50%/50%* (beginning June 20)
John Day	30%/30% on pre-test days; 30%/30% vs. 40%/40% on test days
The Dalles	40%/40%
Bonneville	85 Kcfs/gas cap*(beginning June 21)

McNary Dam spill has met the Court Order over the past week. The COE implemented the summer spill of 50% beginning on June 20th, which will extend through August 31st. At John Day Dam the testing of 30% versus 40% spill was stopped and the TSW closed due to an avian predation issue. The current plan at John Day is to continue the 30% versus 40% spill test without the TSW. The Dalles Dam met the court ordered 40% level over the past week. Bonneville Dam spill levels met the court ordered 100 Kcfs until June 20 and then switched to the summer spill test of 85 Kcfs/ Gas cap. This spill will continue until July 21, when the daytime spill level will decrease to 75 Kcfs.

Total Dissolved Gas levels were generally below the waiver standards throughout the Snake and

Columbia rivers as flows receded. The tailrace monitor at Ice Harbor malfunctioned on June 24 and 25. The Camas/Washougal monitor exceeded the 115% on June 24 by 0.7%. The gas cap spill was reduced at Bonneville Dam, although there is no requirement to manage spill to this gage.

Gas bubble trauma (GBT) monitoring occurred at Little Goose and Lower Monumental dams in the Snake River, Rock Island in the Mid Columbia River and at McNary and Bonneville dams in the lower Columbia. No fish were observed with signs of GBT in the samples this past week.

Smolt Monitoring: Collection of Spring migrants continued to decline at all SMP sites in the Snake River and Lower Columbia this past week, while subyearling Chinook indices also increased or remained steady in the Snake River, but increased significantly at Lower Columbia River sites.

At Lower Granite Dam subyearling Chinook predominated with steelhead numbers having dropped off rapidly over the past week. Average daily passage index for subyearling Chinook was at 20,000 per day this week compared to a similar value for last week.

At Rock Island dam the daily passage indices for subyearling Chinook predominated in the sample. Coho indices predominated last week but numbers dropped below 100 per day over the past several days, while subyearling Chinook numbers averaged just over 100 per day this week. Mid to late June is typically the time period when subyearlings predominate at Rock Island.

In the lower Columbia River subyearling Chinook smolt numbers rose rapidly this past week. At McNary Dam subyearling Chinook passage indices increased substantially with the average daily index rising to 240,000 for the past three sampling dates compared to just over 60,000 per day the previous week. At Bonneville Dam all Spring migrant indices were down again and subyearling Chinook passage continued to increase. The subyearling average daily index rose again this week from 16,000 per day average last week to over 72,000 per day 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. Approximately 305,000 spring Chinook parr were scheduled for release into Meadow Creek (via helicopter) on or around June 22nd. These spring Chinook parr are not expected to out-migrate until spring of 2010. There were no other releases of salmonid juveniles to this zone for this week.

Releases of subyearling fall Chinook surrogates to the Clearwater River are scheduled to begin on June 29th. These releases are expected to total just over 117,000 subyearlings and are scheduled to run through mid-July. In addition to the 300,000 spring Chinook parr that were scheduled to be released into Meadow Creek this week, approximately 300,000 spring Chinook parr are scheduled for release into the Selway River in early July. These parr are unmarked and are not expected to out-migrate until spring of 2010. There are no other scheduled releases of juvenile salmonids to 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. The volitional release of approximately 3.45 subyearling fall Chinook from Ringold Springs Hatchery that began on June 8th was scheduled to end this week. In addition, about 6.7 million subyearling fall Chinook are being volitionally released from Priest Rapids Hatchery. This release is expected to end sometime next week. About 72% of these subyearling fall Chinook from Priest Rapids Hatchery are unmarked. In addition, two releases totaling nearly 750,000 subyearling summer Chinook from Turtle Rock Hatchery into the Mid-Columbia River are scheduled to end sometime next week. There were no other scheduled releases of juvenile salmonids to this zone this week. There are releases of juvenile salmonids to this zone that are expected to begin 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 releases of juvenile salmonids were scheduled for this zone over the past week. Furthermore, there are no releases scheduled for this zone over the next two weeks.

Adult Passage:

The summer Chinook count began June 1st at Bonneville Dam. Daily passage numbers at Bonneville Dam ranged between 1581 and 2661 adult summer Chinook in the last week. The 2009 summer Chinook count of 52646 is about 1.09 times greater than the 2008 count and 1.33 times greater than the 10 year average. The summer Chinook jack count of 23747 is about 3.04 times greater than the 2008 of 7804 and about 5.14 times greater than the 10 year average. The adult summer Chinook count at The Dalles Dam was 46878, about 89% of the Bonneville passage to date. A total of 27323 adult summer Chinook have passed McNary Dam. The 2009 McNary Dam adult summer Chinook count was about 1.19 times greater than the 2008 count and 1.34 times greater than the 10 year average. The 2009 McNary summer Chinook jack count of 9757 was 1.70 times greater than the 2008 count and 4.27 times greater than the 10 year average. The adult summer Chinook count at Lower Granite Dam in the Snake River of 6272 was 94.8% of the 2008 count and 1.62 times greater than the 10 year average. The Lower Granite summer Chinook jack count of 4191 was 2.64 times greater than the 2008 count and 6.35 times greater than the 10 year average.

The Bonneville Dam 2009 steelhead count of 10768 is about 95.9% of the 2008 count and 90.5% of the 10 year average. In the Snake River, this year's Lower Granite steelhead count of 11050 is 1.41 times greater than the 2008 count of 7811 and 1.39 times greater than the 10 year average of 7916. The 2009 wild steelhead count as of June 24th was 3403. At Rock Island Dam, as of June 24th, 125 adult steelhead have been counted and at Rocky Reach Dam, 462 adult steelhead have been counted so far this season. At Willamette Falls Dam, the 2009 count for steelhead was 12619, as of June 19th. This year's steelhead count is only about 80.5% of the 2008 count of 15674 at Willamette Falls Dam for the same date range.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 6818 and 10078 last week. The 2009 adult sockeye count at Bonneville Dam of 86323 is about 63.3% of the 2008 count of 136435 and about 1.96 times greater than the 10 year average of 44017. As of June 24th at Bonneville Dam, the adult Shad count was 1310766 which was about 87% of the 2008 count of 1506298 and only about 47.6% of the 10 year average count of 2752323.

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
06/12/2009	133.6	0.1	135.2	0.0	149.5	9.2	147.9	13.5	155.7	32.4	158.1	25.9	155.6	20.2
06/13/2009	110.2	0.1	117.7	0.0	130.7	9.5	132.8	11.0	144.3	25.5	141.7	21.0	132.0	22.9
06/14/2009	64.6	0.1	63.2	0.0	96.7	7.4	104.8	9.7	115.5	23.5	132.6	20.0	127.1	23.9
06/15/2009	99.0	0.2	94.8	0.0	97.3	7.1	94.1	13.0	103.5	30.2	126.9	18.4	138.9	19.9
06/16/2009	96.6	0.2	97.3	0.0	104.4	7.7	104.5	12.7	110.1	24.1	102.2	17.9	98.5	18.2
06/17/2009	119.0	0.1	115.4	0.0	126.9	7.7	129.9	11.8	136.6	28.3	132.5	20.0	123.8	19.6
06/18/2009	138.2	0.1	139.6	0.0	152.3	9.5	150.2	13.0	157.3	30.7	164.5	27.9	155.1	21.7
06/19/2009	131.9	0.2	137.3	0.0	148.9	10.0	149.2	12.7	156.5	29.8	164.7	24.3	167.6	20.3
06/20/2009	134.5	0.2	128.9	0.0	141.3	9.4	140.5	12.6	147.7	30.8	157.1	21.0	151.4	20.8
06/21/2009	134.9	0.2	137.7	0.0	147.1	9.3	143.4	10.3	147.4	23.9	146.5	21.5	142.1	18.9
06/22/2009	155.7	0.2	160.6	0.0	169.2	14.9	161.6	34.2	164.3	30.0	169.4	29.8	158.6	28.6
06/23/2009	142.0	0.2	141.8	0.0	156.7	10.6	159.4	15.2	163.8	31.0	180.6	48.3	183.4	26.6
06/24/2009	146.8	0.3	145.8	0.0	161.2	10.0	153.7	13.6	156.1	32.0	170.4	35.7	171.2	20.3
06/25/2009	144.8	0.1	140.1	0.0	153.1	10.0	146.6	14.0	148.3	31.3	150.9	17.5	142.0	21.6

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

Date	Dworshak		Hells Brownlee Canyon		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
06/12/2009	4.1	1.0	25.9	27.1	106.6	20.8	101.6	30.5	103.6	20.0	106.7	67.9
06/13/2009	2.2	0.0	24.0	24.6	96.7	20.7	94.0	28.2	93.8	19.5	96.2	41.8
06/14/2009	2.2	0.0	24.9	25.4	99.7	20.8	93.9	28.1	94.5	20.0	96.5	29.0
06/15/2009	3.5	0.0	26.3	26.0	101.0	20.6	97.2	29.2	97.8	20.2	99.6	53.8
06/16/2009	6.6	2.3	25.8	26.4	108.4	20.5	102.9	31.1	105.3	21.9	106.5	68.4
06/17/2009	7.1	1.8	25.5	24.7	104.2	20.5	97.5	29.1	98.5	21.3	100.8	41.8
06/18/2009	7.4	0.0	24.3	24.8	101.5	20.7	96.8	29.0	100.5	23.0	101.3	30.3
06/19/2009	5.7	0.0	23.4	24.6	102.8	20.7	97.4	29.4	99.3	24.4	100.6	53.5
06/20/2009	4.3	0.0	23.2	22.7	92.8	20.7	86.4	26.0	87.7	25.8	89.3	62.0
06/21/2009	4.3	0.0	23.2	19.7	88.5	18.8	83.9	25.2	85.0	17.2	86.1	36.0
06/22/2009	6.4	0.0	25.9	32.4	89.0	18.7	83.7	25.1	83.8	17.5	85.9	25.9
06/23/2009	8.6	0.0	26.4	34.5	108.2	18.8	103.7	31.0	106.8	17.0	109.8	39.7
06/24/2009	8.0	0.0	27.1	31.1	97.8	18.8	94.9	28.7	94.6	17.5	94.0	28.2
06/25/2009	6.4	0.0	---	---	85.2	18.7	78.6	23.3	80.0	17.3	82.9	46.0

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

Date	McNary		John Day		The Dalles		Bonneville		PH1	PH2
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill		
06/12/2009	263.8	105.6	245.3	72.7	238.8	95.7	257.6	100.0	60.1	85.5
06/13/2009	256.0	102.5	253.3	74.7	246.4	98.6	259.8	99.7	61.6	86.5
06/14/2009	248.6	99.6	240.5	70.4	237.2	94.8	250.4	99.6	50.9	87.8
06/15/2009	240.2	96.6	229.9	66.6	222.0	88.8	241.8	99.7	42.7	87.3
06/16/2009	255.2	102.3	243.2	72.9	236.5	94.4	252.5	99.5	53.5	87.4
06/17/2009	224.6	90.2	217.8	65.1	212.2	85.0	231.3	99.5	33.8	85.9
06/18/2009	256.5	102.7	246.6	70.3	241.6	96.5	248.9	99.6	43.7	93.5
06/19/2009	271.8	109.1	268.2	77.2	261.8	104.7	276.8	99.8	69.4	95.5
06/20/2009	275.8	137.9	254.9	74.7	250.6	100.2	277.0	99.8	70.7	94.4
06/21/2009	251.4	125.7	250.7	75.4	242.3	97.1	247.9	91.2	55.3	89.3
06/22/2009	239.0	119.5	225.3	67.6	221.7	88.5	233.3	94.8	40.5	85.9
06/23/2009	290.0	145.1	282.4	82.0	269.8	107.8	272.1	99.3	63.1	97.6
06/24/2009	284.0	142.2	276.4	82.0	273.1	109.2	282.5	98.8	67.1	104.5
06/25/2009	253.7	127.0	247.3	82.2	242.8	96.8	261.1	97.6	55.0	96.4

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											
	06/17/09	Chinook + Steelhead	20	0	0	0.00%	0.00%	0	0	0	0
Little Goose Dam											
	06/22/09	Chinook + Steelhead	78	0	0	0.00%	0.00%	0	0	0	0
Lower Monumental Dam											
	06/16/09	Chinook + Steelhead	65	0	0	0.00%	0.00%	0	0	0	0
	06/23/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
McNary Dam											
	06/23/09	Chinook + Steelhead	101	0	0	0.00%	0.00%	0	0	0	0
Bonneville Dam											
	06/16/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/20/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/23/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0

Hatchery Releases Last Two Weeks

Hatchery Release Summary									
From:	6/12/2009		to		06/25/09				
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2009	800,000	06-01-09	06-15-09	Nez Perce Tribal Hatchery	Clearwater River M F
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	SP	2010	305,000	06-22-09	06-26-09	Meadow Creek - CLES	S Fk Clearwater River
Nez Perce Tribe Total					1,105,000				
U.S. Fish and Wildlife Service	Little White Salmon NFH	CH0	FA	2009	4,500,000	06-18-09	06-18-09	Little White Salmon Hatchery	Little White Salmon River
U.S. Fish and Wildlife Service Total					4,500,000				
Washington Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2009	6,700,000	06-15-09	06-30-09	Priest Rapids Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Ringold Springs Hatchery	CH0	FA	2009	3,450,000	06-08-09	06-23-09	Ringold Springs Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	CH0	SU	2009	325,000	06-15-09	06-30-09	Turtle Rock Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	CH0	SU	2009	418,000	06-15-09	06-30-09	Turtle Rock Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife Total					10,893,000				
Grand Total					16,498,000				

Hatchery Releases Next Two Weeks

Hatchery Release Summary									
From:	6/26/2009		to		7/9/2009				
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
National Marine Fisheries Service	Lyons Ferry Hatchery	CH0	FA	2009	117,362	06-29-09	07-20-09	Big Canyon (Clearwater River)	Clearwater River M F
National Marine Fisheries Service Total					117,362				
Nez Perce Tribe	Clearwater Hatchery	CH0	SP	2010	300,000	07-01-09	07-15-09	Selway River	Clearwater River M F
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	SP	2010	305,000	06-22-09	06-26-09	Meadow Creek - CLES	S Fk Clearwater River
Nez Perce Tribe Total					605,000				
Washington Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2009	6,700,000	06-15-09	06-30-09	Priest Rapids Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	CH0	SU	2009	325,000	06-15-09	06-30-09	Turtle Rock Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	CH0	SU	2009	418,000	06-15-09	06-30-09	Turtle Rock Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife Total					7,443,000				
Grand Total					8,165,362				

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

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>High</u>	<u>24 h</u>	<u>12 h</u>	<u>High</u>	<u>24 h</u>	<u>12 h</u>	<u>High</u>	<u>24 h</u>	<u>12 h</u>	<u>High</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>
6/12	105.5	106.0	106.3	24	119.8	120.4	121.2	24	114.9	115.1	115.4	24	111.7	113.0	114.5	24	111.2	111.7	112.2	24
6/13	105.8	106.2	106.8	24	118.3	118.8	119.6	22	115.5	115.8	116.2	24	110.8	112.1	113.5	22	111.7	112.1	112.3	24
6/14	105.6	105.9	106.4	24	116.5	117.5	119.4	23	115.6	115.8	116.1	24	110.0	111.1	112.6	23	113.0	114.1	115.8	24
6/15	106.0	106.3	106.8	24	119.2	120.4	121.7	23	115.7	115.8	116.0	24	111.7	113.1	113.8	23	112.3	112.5	112.6	24
6/16	105.7	105.9	106.3	24	120.7	122.0	122.8	22	115.9	116.1	116.2	24	112.7	113.4	114.0	22	112.1	112.6	112.7	24
6/17	105.5	105.7	106.2	24	120.0	120.2	120.7	15	116.2	116.6	117.1	23	111.6	112.7	113.7	22	112.5	113.1	113.7	24
6/18	105.5	105.9	106.3	24	---	---	---	0	117.2	117.6	117.9	24	111.4	112.6	114.2	22	112.8	113.3	113.6	24
6/19	105.8	105.9	106.2	24	120.3	120.3	121.9	12	117.7	117.9	118.2	24	112.3	113.0	113.9	22	113.2	113.5	113.9	24
6/20	105.9	106.4	106.8	24	122.1	123.1	124.3	24	117.8	118.4	118.6	24	112.2	113.8	114.6	24	113.4	113.7	114.1	24
6/21	105.9	106.0	106.5	24	121.1	122.2	122.8	24	118.3	118.4	118.9	24	111.7	113.0	113.7	24	112.8	113.1	113.4	24
6/22	105.0	105.3	105.8	24	121.0	121.4	121.7	21	117.4	117.7	118.0	24	111.0	112.2	114.1	21	112.2	112.4	112.6	24
6/23	104.8	105.1	105.4	24	120.1	120.9	122.0	22	117.6	118.0	118.4	24	111.8	113.1	114.2	22	112.3	112.5	112.9	24
6/24	105.1	105.6	105.8	24	118.5	120.7	122.0	22	118.6	119.0	119.2	24	112.2	113.4	114.3	22	113.4	113.7	113.9	24
6/25	105.4	105.8	106.3	24	116.4	117.9	120.6	22	118.2	118.3	118.5	23	112.4	113.8	115.1	22	113.0	113.3	113.7	24

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>High</u>	<u>24 h</u>	<u>12 h</u>	<u>High</u>	<u>24 h</u>	<u>12 h</u>	<u>High</u>	<u>24 h</u>	<u>12 h</u>	<u>High</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>
6/12	110.4	110.8	111.1	24	110.7	111.0	111.6	20	112.4	112.9	113.7	20	111.2	111.7	112.0	24	112.5	113.8	114.8	24
6/13	111.4	111.8	112.4	24	111.2	111.8	113.1	24	113.0	113.6	115.0	24	111.3	111.7	112.0	24	112.3	112.9	113.7	24
6/14	111.8	112.8	113.5	24	111.2	112.0	112.9	24	112.7	113.4	114.0	24	111.4	111.7	111.8	24	111.3	111.9	112.4	24
6/15	112.0	112.4	113.0	24	111.2	112.1	112.6	23	112.6	113.5	114.2	23	111.7	111.9	112.2	24	111.1	111.7	112.4	24
6/16	111.5	112.1	112.8	24	111.5	112.7	113.4	24	113.4	114.5	115.2	24	111.5	112.0	112.2	24	111.8	113.0	114.1	24
6/17	112.0	112.5	113.1	23	111.2	112.4	113.2	24	113.8	114.6	115.2	24	111.3	111.6	111.9	24	112.6	113.7	114.7	24
6/18	112.2	112.7	113.0	24	111.7	112.5	112.7	24	113.4	114.4	114.8	24	111.6	112.1	112.5	24	112.5	113.2	113.9	24
6/19	112.6	112.9	113.1	24	112.4	112.6	112.7	24	114.0	114.3	114.7	24	112.3	112.5	112.7	24	112.2	112.7	113.6	24
6/20	112.8	113.1	113.4	24	112.9	113.5	114.0	24	114.3	115.0	115.7	24	112.3	112.6	112.8	24	112.1	113.1	113.9	24
6/21	112.2	113.0	113.7	24	111.9	112.6	113.3	24	113.6	114.2	115.0	24	111.8	111.9	112.2	24	112.3	113.1	113.7	24
6/22	111.3	111.7	112.1	24	110.8	111.0	111.4	24	113.2	113.8	114.8	24	110.7	111.0	111.5	24	112.4	114.3	117.1	24
6/23	111.3	111.5	112.1	24	111.4	111.9	112.4	24	113.5	114.1	114.6	24	111.1	111.9	112.2	24	113.2	114.0	115.7	24
6/24	112.8	113.0	113.1	24	112.9	113.1	113.6	23	114.6	115.1	115.8	23	113.2	114.0	114.5	24	114.1	114.7	115.5	24
6/25	111.8	112.1	112.5	24	111.6	112.0	112.9	24	113.2	113.7	114.3	24	112.1	112.4	112.9	24	113.3	114.1	114.7	24

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>High</u>	<u>24 h</u>	<u>12 h</u>	<u>High</u>	<u>24 h</u>	<u>12 h</u>	<u>High</u>	<u>24 h</u>	<u>12 h</u>	<u>High</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>
6/12	111.2	111.9	112.5	24	115.2	116.0	116.8	24	113.7	114.9	115.7	23	114.3	114.7	115.1	23	112.9	113.5	114.2	23
6/13	111.2	111.5	111.9	24	115.5	115.8	116.1	24	115.0	115.9	117.6	23	115.4	115.6	116.1	23	114.6	115.2	116.1	23
6/14	111.0	111.2	111.4	24	115.1	115.5	116.5	24	113.6	114.0	114.6	24	115.0	115.2	115.7	24	113.4	113.9	114.2	24
6/15	111.1	111.6	112.1	24	115.4	115.7	116.0	24	113.5	114.1	114.5	24	114.5	114.8	115.3	24	113.5	114.3	115.4	24
6/16	111.1	111.7	112.2	24	114.2	115.1	115.6	24	112.2	112.9	113.8	24	114.0	114.8	115.6	24	113.0	113.7	114.7	24
6/17	110.9	111.3	111.8	24	115.4	116.0	116.8	24	111.3	111.7	112.5	24	113.6	114.1	116.0	24	111.2	111.8	112.3	24
6/18	111.2	112.1	112.6	24	115.6	116.9	117.8	24	111.3	112.2	112.5	24	113.0	113.6	114.1	24	110.8	112.2	113.2	24
6/19	112.0	112.2	112.6	24	115.9	116.6	117.3	24	111.9	112.1	112.7	24	113.5	113.6	114.1	24	112.4	112.8	113.7	24
6/20	111.9	112.4	113.1	24	116.3	116.7	117.4	24	111.4	111.9	112.9	24	112.9	113.2	113.9	24	111.3	111.9	112.9	24
6/21	110.7	111.1	111.5	24	114.2	114.8	116.0	24	110.0	110.4	111.1	24	112.5	112.9	113.6	24	109.6	109.9	110.9	24
6/22	110.4	110.8	112.5	24	114.5	114.8	115.4	24	109.0	109.3	109.9	24	111.5	111.7	112.3	24	108.7	109.6	110.1	24
6/23	113.0	113.9	115.3	24	116.2	116.8	117.6	24	110.6	112.4	112.7	24	112.4	113.0	113.7	24	111.1	112.3	113.3	24
6/24	113.1	114.1	114.6	24	116.2	117.3	117.8	24	113.8	114.7	115.2	24	114.3	114.8	115.1	24	112.5	112.9	113.2	24
6/25	112.0	112.4	113.3	24	115.6	116.0	116.9	24	---	---	---	0	---	---	---	0	---	---	---	0

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

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

Date	<u>Priest R. Dnst</u>				<u>Pasco</u>				<u>Dworshak</u>				<u>Clwrtr-Peck</u>				<u>Anatone</u>			
	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#
	Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr	
6/12	113.5	114.0	114.5	23	110.2	111.0	111.6	24	104.3	106.4	107.2	24	102.4	102.8	103.1	24	105.2	105.6	106.1	24
6/13	114.7	115.1	115.5	23	110.2	110.8	111.2	24	101.8	102.5	103.3	23	101.9	102.8	103.3	24	105.2	105.7	106.5	24
6/14	114.2	114.5	115.1	24	110.4	110.9	111.2	24	101.8	102.3	103.0	24	101.6	102.2	102.8	24	104.9	105.4	105.9	24
6/15	114.0	114.2	114.7	24	110.1	110.9	111.4	24	101.4	101.6	101.9	24	101.4	101.8	102.0	24	105.0	105.4	106.0	24
6/16	113.2	113.5	113.9	24	110.6	111.3	111.8	24	105.5	107.1	107.7	24	102.8	104.0	104.6	24	105.4	106.2	106.9	24
6/17	112.5	112.8	113.0	24	110.2	110.9	111.3	24	105.3	107.1	107.6	24	102.5	103.1	103.5	24	105.0	105.5	105.9	24
6/18	112.2	113.2	113.9	24	108.6	109.7	110.5	24	101.7	102.0	102.2	23	102.1	103.1	103.7	24	105.0	106.0	106.6	24
6/19	113.7	113.9	114.3	24	109.2	109.9	110.7	24	101.9	102.1	102.6	24	101.5	101.8	102.5	24	104.5	104.8	104.9	24
6/20	112.7	113.0	113.3	24	108.8	109.4	109.9	24	102.2	102.6	103.0	24	101.8	102.5	103.1	24	104.5	105.0	105.7	24
6/21	111.0	111.4	112.4	24	106.5	106.9	107.8	24	101.6	101.8	102.0	24	100.9	101.1	101.7	24	103.6	103.7	103.9	24
6/22	111.1	112.1	113.9	24	104.3	105.2	105.8	24	101.1	101.4	102.3	24	100.8	101.3	101.6	24	104.1	104.9	105.5	24
6/23	113.2	113.5	113.9	24	107.0	108.8	110.0	24	101.1	101.5	101.7	24	101.7	102.7	103.2	24	105.8	106.8	107.4	24
6/24	114.3	114.6	115.1	24	109.7	110.5	111.1	24	101.9	102.4	102.6	24	102.7	103.4	104.0	24	105.9	106.7	107.4	24
6/25	---	---	---	0	108.9	110.1	110.9	24	101.5	101.8	102.0	24	101.8	102.5	103.1	24	104.2	104.8	105.3	24

Total Dissolved Gas Saturation Data at Snake River Sites

Date	<u>Clwrtr-Lewiston</u>				<u>Lower Granite</u>				<u>L. Granite Tlwr</u>				<u>Little Goose</u>				<u>L. Goose Tlwr</u>			
	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#
	Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr	
6/12	102.0	102.9	103.8	24	105.8	106.1	106.4	24	110.4	110.6	110.9	24	110.4	110.6	110.9	24	114.2	114.3	114.4	24
6/13	101.8	102.9	104.3	24	105.7	105.9	106.0	24	110.1	110.2	110.5	24	109.6	110.0	110.4	24	113.8	114.1	114.3	24
6/14	101.3	101.9	102.7	24	104.8	104.9	105.2	24	110.1	110.3	111.1	24	109.6	109.7	109.9	24	113.8	113.9	114.1	24
6/15	101.2	101.9	102.5	24	104.5	104.7	104.8	24	110.2	110.3	110.6	24	109.1	109.4	109.7	24	113.8	114.0	114.3	24
6/16	102.2	103.6	104.5	24	104.3	104.6	104.8	24	110.0	110.0	110.2	24	108.8	109.3	110.4	24	113.8	114.1	115.2	24
6/17	102.2	102.9	103.7	24	104.5	104.5	104.6	24	109.8	109.9	110.0	24	108.6	108.8	109.1	24	113.8	114.2	114.6	24
6/18	102.2	103.3	104.3	22	104.5	104.7	104.8	24	109.9	110.1	110.5	24	107.6	108.0	108.4	24	113.3	113.7	114.0	24
6/19	101.2	101.6	102.2	24	104.4	104.6	104.8	24	109.8	109.9	110.3	24	107.2	107.3	107.9	24	113.3	113.6	113.8	24
6/20	101.7	102.6	103.3	22	104.2	104.5	104.7	24	109.7	110.0	110.1	24	107.4	108.0	108.5	24	113.0	113.3	113.5	24
6/21	100.5	100.8	101.1	20	103.3	103.7	104.3	24	108.8	108.9	109.1	24	106.4	106.7	107.6	24	112.3	112.7	112.8	24
6/22	100.7	101.7	102.5	23	101.9	102.1	102.5	24	108.5	108.7	109.2	24	105.0	105.2	105.4	24	111.5	112.0	112.7	24
6/23	101.9	103.4	104.4	23	102.1	102.5	102.9	24	108.0	108.2	108.6	24	105.3	105.7	106.3	24	113.6	114.4	114.8	24
6/24	102.8	104.5	105.7	24	104.0	104.5	104.8	24	108.9	109.2	109.5	24	106.6	107.4	108.4	24	113.5	114.1	114.3	24
6/25	102.3	103.5	104.6	24	104.5	104.8	104.9	24	108.7	108.8	109.1	24	106.2	106.6	107.1	24	112.2	112.6	113.1	24

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

Date	<u>Lower Mon.</u>				<u>L. Mon. Tlwr</u>				<u>Ice Harbor</u>				<u>Ice Harbor Tlwr</u>				<u>McNary-Oregon</u>			
	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#
	Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr	
6/12	115.2	115.3	115.7	24	116.6	117.1	117.4	24	115.8	115.9	116.1	24	118.6	120.0	120.6	24	---	---	---	0
6/13	114.9	115.0	115.1	24	115.8	116.1	116.3	24	115.6	115.8	115.8	24	117.5	118.6	120.8	24	---	---	---	0
6/14	114.7	114.8	115.1	24	115.6	116.0	116.3	24	115.1	115.3	115.6	24	116.4	116.9	117.1	24	---	---	---	0
6/15	113.9	114.2	114.7	24	115.9	116.7	118.0	24	114.3	114.5	115.1	24	117.3	118.5	120.3	24	---	---	---	0
6/16	113.7	113.8	114.0	24	117.3	117.5	117.8	24	114.0	114.3	114.4	24	118.3	119.6	120.2	24	---	---	---	0
6/17	113.4	113.6	113.8	24	116.4	116.9	117.5	24	114.2	114.4	114.5	24	116.8	117.7	119.1	24	---	---	---	0
6/18	112.4	112.6	112.9	24	115.5	116.1	117.3	24	113.9	114.2	114.5	24	116.8	117.1	117.4	24	---	---	---	0
6/19	112.6	112.8	113.1	24	116.6	118.6	118.9	24	113.8	114.0	114.2	24	117.6	118.1	118.9	24	---	---	---	0
6/20	112.1	112.3	112.6	24	118.4	118.6	118.8	24	113.0	113.2	113.5	24	118.6	118.9	119.3	24	---	---	---	0
6/21	111.6	111.9	112.3	24	114.4	114.9	116.7	24	112.2	112.5	113.2	24	117.4	117.7	118.1	24	---	---	---	0
6/22	110.0	110.2	110.6	24	114.1	114.5	115.1	24	110.9	111.1	111.8	24	117.0	117.4	117.8	24	---	---	---	0
6/23	110.3	110.9	111.2	24	115.3	116.3	117.1	24	111.0	111.7	112.6	24	119.1	119.9	120.4	24	---	---	---	0
6/24	112.8	113.7	114.1	24	115.1	116.4	117.5	24	113.0	113.4	113.6	24	121.5	122.1	122.3	24	---	---	---	0
6/25	112.6	112.9	113.6	24	115.1	115.8	117.0	24	112.2	112.5	113.4	24	118.1	120.4	121.9	24	---	---	---	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>24h</u>	<u>12h</u>	<u>High</u>	<u>#</u>	
	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	AVG	High	hr
6/12	112.3	112.8	113.6	24	116.4	117.0	117.4	24	114.5	115.0	115.2	24	118.6	119.3	120.0	24	113.1	113.8	114.7	24
6/13	111.9	112.5	113.3	24	116.1	116.3	116.5	24	114.8	115.0	115.2	24	119.3	119.9	120.2	24	114.7	115.0	115.1	24
6/14	111.9	112.3	113.0	24	116.3	116.8	117.4	24	112.7	113.1	113.8	24	118.5	119.8	120.1	24	111.9	112.8	113.9	24
6/15	111.1	111.8	112.4	24	116.1	116.6	117.1	24	111.1	111.4	111.7	24	117.8	119.0	119.7	24	110.7	111.1	111.5	24
6/16	110.3	110.4	110.6	24	116.2	116.7	116.9	24	110.3	110.5	110.8	24	118.8	119.7	119.9	24	111.2	111.7	111.9	24
6/17	110.8	111.1	111.8	24	114.1	114.4	114.8	24	109.1	109.7	110.4	24	117.4	118.4	118.8	24	110.6	111.4	112.2	24
6/18	111.7	112.2	113.1	24	114.8	115.2	115.5	24	107.3	107.5	107.8	24	118.5	120.0	120.5	24	109.3	109.7	110.9	24
6/19	110.8	111.6	112.9	24	115.0	115.1	115.2	24	106.9	107.1	107.2	24	119.3	119.8	120.1	24	109.7	110.1	110.9	24
6/20	108.4	108.7	109.3	24	117.0	117.3	117.9	24	106.5	106.7	107.0	24	118.6	119.4	119.6	24	108.7	109.0	109.3	24
6/21	108.0	108.2	108.8	24	116.2	116.6	117.0	24	105.2	105.5	106.3	24	118.6	118.9	119.1	24	107.6	108.0	109.0	24
6/22	106.5	107.1	108.0	24	115.4	116.3	116.8	24	103.9	104.1	104.5	24	116.8	117.7	118.1	24	107.7	107.9	108.3	24
6/23	107.3	108.2	110.2	24	117.4	117.9	118.0	24	104.2	104.8	105.5	24	118.8	119.6	119.8	24	109.8	111.0	112.3	24
6/24	109.8	110.7	111.3	24	118.0	119.0	122.4	24	105.6	106.0	106.6	24	119.1	119.4	119.7	24	111.1	111.6	112.2	24
6/25	110.6	110.8	111.1	24	116.5	117.1	117.4	24	104.9	105.3	105.4	24	118.0	119.0	119.2	24	108.6	109.4	110.4	24

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>24h</u>	<u>12h</u>	<u>High</u>	<u>#</u>	
	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	AVG	High	hr
6/12	117.1	117.5	117.9	24	113.2	113.6	113.9	24	---	---	---	0	113.3	114.1	115.0	24	118.6	118.8	119.2	24
6/13	117.8	118.3	118.7	24	113.8	114.0	114.3	24	---	---	---	0	113.5	114.0	114.6	24	118.5	118.6	118.7	24
6/14	116.5	116.9	117.4	24	112.3	112.7	113.5	24	---	---	---	0	113.0	113.5	114.1	24	118.1	118.4	118.6	24
6/15	115.6	116.0	116.3	24	111.1	111.4	111.8	24	---	---	---	0	112.9	113.4	113.9	24	118.0	118.4	118.7	24
6/16	115.8	116.3	116.7	24	111.2	111.6	111.8	24	---	---	---	0	112.8	113.5	113.8	24	118.0	118.3	118.5	24
6/17	115.4	115.7	116.0	24	111.4	111.7	112.0	24	---	---	---	0	112.5	113.3	113.8	24	117.6	117.9	118.2	24
6/18	115.2	115.7	116.6	24	110.9	111.3	111.5	24	---	---	---	0	113.2	114.3	115.1	24	117.9	118.6	119.2	24
6/19	115.8	116.1	116.6	24	110.7	110.9	111.1	24	---	---	---	0	111.7	112.2	113.2	24	118.7	118.9	119.0	24
6/20	115.4	115.9	116.6	24	110.6	110.8	111.1	24	---	---	---	0	111.2	111.9	112.5	24	118.8	118.9	119.1	24
6/21	114.3	114.6	115.1	24	108.5	108.9	109.8	24	---	---	---	0	110.4	110.9	111.7	24	116.4	117.4	118.7	24
6/22	113.8	114.3	114.7	24	108.1	108.6	109.1	24	---	---	---	0	110.3	112.1	113.6	24	116.0	117.4	120.1	24
6/23	115.8	117.2	117.7	24	110.7	111.9	112.9	24	---	---	---	0	112.5	114.6	116.3	24	117.2	118.6	121.2	24
6/24	116.7	117.3	117.7	24	114.3	115.0	115.5	24	---	---	---	0	113.7	115.7	117.7	24	117.8	119.1	121.0	24
6/25	114.6	114.8	115.2	24	110.9	111.7	113.2	24	---	---	---	0	112.7	113.9	115.3	24	116.8	118.3	120.4	24

Two-Week Summary of Passage Indices

Source: Fish Passage Center

Updated: 6/26/2009 10:09

Two-Week Summary of Passage Indices

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

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

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

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

COMBINED YEARLING CHINOOK											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
06/12/2009	---	---	---	---	683	498	125	0	6,423	3,041	2,782
06/13/2009 *	---	29	---	---	562	245	70	5	---	2,895	2,049
06/14/2009	---	44	---	---	477	186	79	4	4,458	2,502	1,265
06/15/2009 *	---	20	---	---	127	388	161	1	---	2,097	1,606
06/16/2009	---	13	---	---	467	546	175	0	2,130	1,427	1,131
06/17/2009 *	---	---	---	---	62	432	167	0	---	953	673
06/18/2009	---	---	---	---	281	428	128	3	1,191	995	864
06/19/2009 *	---	---	---	---	564	322	53	2	---	599	379
06/20/2009	---	---	---	---	505	215	124	5	1,882	539	309
06/21/2009 *	---	---	---	---	0	143	90	3	---	879	594
06/22/2009	---	---	---	---	0	144	46	3	1,429	192	523
06/23/2009 *	---	---	---	---	310	36	49	5	---	286	345
06/24/2009	---	---	---	---	61	72	0	0	1,123	250	109
06/25/2009 *	---	---	---	---	248	0	62	2	---	476	259
06/26/2009	---	---	---	---	---	---	---	---	823	905	201
<hr/>											
Total:	0	106	0	0	4,347	3,655	1,329	33	19,459	18,036	13,089
# Days:	0	4	0	0	14	14	14	14	8	15	15
Average:	0	27	0	0	311	261	95	2	2,432	1,202	873
YTD	37,667	44,616	20,207	29,713	3,081,016	2,432,768	448,405	9,203	2,246,801	1,026,742	1,714,146

COMBINED SUBYEARLING CHINOOK											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
06/12/2009	---	---	---	---	13,221	10,176	2,355	36	30,838	14,744	13,057
06/13/2009 *	---	0	---	---	14,489	4,423	4,300	70	---	9,749	13,404
06/14/2009	---	0	---	---	17,748	9,630	2,911	64	50,874	7,969	12,706
06/15/2009 *	---	0	---	---	13,170	10,907	2,800	42	---	10,180	14,695
06/16/2009	---	0	---	---	25,139	22,622	6,169	83	86,461	15,312	15,156
06/17/2009 *	---	---	---	---	23,148	19,737	10,789	44	---	19,552	20,226
06/18/2009	---	---	---	---	38,830	15,510	10,932	121	86,011	17,106	22,776
06/19/2009 *	---	---	---	---	31,837	21,381	6,402	132	---	21,878	36,107
06/20/2009	---	---	---	---	39,912	30,804	7,268	159	277,251	26,911	49,699
06/21/2009 *	---	---	---	---	18,798	39,180	5,045	110	---	42,572	67,953
06/22/2009	---	---	---	---	23,337	28,879	11,990	135	129,985	50,457	54,100
06/23/2009 *	---	---	---	---	13,721	24,939	14,921	190	---	33,501	65,691
06/24/2009	---	---	---	---	10,506	15,363	8,465	70	311,561	41,412	101,763
06/25/2009 *	---	---	---	---	5,263	7,284	5,325	67	---	50,364	135,039
06/26/2009	---	---	---	---	---	---	---	---	146,712	83,522	111,517
<hr/>											
Total:	0	0	0	0	289,119	260,835	99,672	1,323	1,119,693	445,229	733,889
# Days:	0	4	0	0	14	14	14	14	8	15	15
Average:	0	0	0	0	20,651	18,631	7,119	95	139,962	29,682	48,926
YTD	0	15	15	545	848,176	1,020,269	350,265	2,356	1,218,146	534,779	2,807,275

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)
06/12/2009	---	---	---	---	124	142	37	139	3,408	3,086	2,952
06/13/2009 *	---	0	---	---	62	136	0	52	---	5,210	3,190
06/14/2009	---	0	---	---	64	172	20	175	2,112	1,387	1,565
06/15/2009 *	---	0	---	---	286	157	123	160	---	3,098	2,198
06/16/2009	---	0	---	---	280	273	60	482	1,614	2,281	1,367
06/17/2009 *	---	---	---	---	185	143	26	233	---	976	1,642
06/18/2009	---	---	---	---	406	143	77	288	1,103	1,181	1,100
06/19/2009 *	---	---	---	---	251	287	26	237	---	1,558	1,136
06/20/2009	---	---	---	---	505	143	28	119	898	1,255	946
06/21/2009 *	---	---	---	---	388	681	116	117	---	1,914	485
06/22/2009	---	---	---	---	827	108	283	116	412	2,007	358
06/23/2009 *	---	---	---	---	559	537	124	44	---	669	414
06/24/2009	---	---	---	---	244	573	73	13	307	1,200	163
06/25/2009 *	---	---	---	---	248	359	223	18	---	1,334	1,347
06/26/2009	---	---	---	---	---	---	---	---	204	645	803
Total:	0	0	0	0	4,429	3,854	1,216	2,193	10,058	27,801	19,666
# Days:	0	4	0	0	14	14	14	14	8	15	15
Average:	0	0	0	0	316	275	87	157	1,257	1,853	1,311
YTD	0	0	0	332	83,564	75,076	16,107	37,386	124,068	236,447	498,778

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)
06/12/2009	---	---	---	---	6,083	2,915	2,343	22	1,588	1,452	624
06/13/2009 *	---	55	---	---	3,310	2,780	1,305	30	---	2,626	468
06/14/2009	---	31	---	---	4,040	2,604	1,222	23	1,564	719	262
06/15/2009 *	---	59	---	---	3,722	3,194	719	28	---	492	1,549
06/16/2009	---	40	---	---	4,517	4,479	1,227	18	1,185	488	658
06/17/2009 *	---	---	---	---	4,914	2,052	1,223	18	---	700	274
06/18/2009	---	---	---	---	2,870	1,785	1,022	39	762	530	393
06/19/2009 *	---	---	---	---	2,131	1,792	688	45	---	748	435
06/20/2009	---	---	---	---	2,084	1,471	510	23	1,157	774	577
06/21/2009 *	---	---	---	---	1,163	1,183	339	10	---	482	365
06/22/2009	---	---	---	---	1,208	698	364	10	408	1,241	554
06/23/2009 *	---	---	---	---	1,304	1,039	407	5	---	621	138
06/24/2009	---	---	---	---	1,161	787	267	4	203	847	131
06/25/2009 *	---	---	---	---	1,610	538	186	0	---	381	453
06/26/2009	---	---	---	---	---	---	---	---	106	906	669
Total:	0	185	0	0	40,117	27,317	11,822	275	6,973	13,007	7,550
# Days:	0	4	0	0	14	14	14	14	8	15	15
Average:	0	46	0	0	2,866	1,951	844	20	872	867	503
YTD	1,833	24,102	9,611	8,297	4,507,008	3,560,502	726,830	17,577	803,085	939,301	674,679

Two-Week Summary of Passage Indices

Date	COMBINED SOCKEYE										
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
06/12/2009	---	---	---	---	0	142	0	15	1,134	453	341
06/13/2009 *	---	0	---	---	0	64	0	23	---	402	59
06/14/2009	---	0	---	---	0	0	8	9	549	391	218
06/15/2009 *	---	0	---	---	0	29	10	16	---	293	164
06/16/2009	---	0	---	---	31	29	28	32	254	178	127
06/17/2009 *	---	---	---	---	0	29	13	38	---	63	148
06/18/2009	---	---	---	---	63	0	51	19	339	57	59
06/19/2009 *	---	---	---	---	63	0	0	33	---	84	59
06/20/2009	---	---	---	---	63	0	14	16	267	35	144
06/21/2009 *	---	---	---	---	0	0	5	6	---	355	106
06/22/2009	---	---	---	---	0	0	10	5	206	191	31
06/23/2009 *	---	---	---	---	0	36	12	9	---	0	207
06/24/2009	---	---	---	---	0	36	0	4	102	141	54
06/25/2009 *	---	---	---	---	0	0	12	4	---	191	194
06/26/2009	---	---	---	---	---	---	---	---	102	0	0
Total:	0	0	0	0	220	365	163	229	2,953	2,834	1,911
# Days:	0	4	0	0	14	14	14	14	8	15	15
Average:	0	0	0	0	16	26	12	16	369	189	127
YTD	170	0	0	177	46,196	46,230	21,575	4,612	189,459	111,372	74,322

* 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, and sockeye. Two classes of fish counts are shown in these tables: collection counts, which account for sample rates but are not adjusted for flow; and passage indices, 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.

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/Washington Dept. of Fish and Wildlife.

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.

Two Week Transportation Summary

Source: Fish Passage Center

Updated:

6/26/09 10:06 AM

		06/12/09	TO	06/26/09	Species			
Site	Data	CH0	CH1	CO	ST	SO	Grand Total	
LGR	Sum of NumberCollected	230,300	3,475	3,525	32,045	175	269,520	
	Sum of NumberBarged	228,874	3,470	3,520	31,625	169	267,658	
	Sum of NumberBypassed	427	0	0	385	0	812	
	Sum of Numbertrucked	0	0	0	0	0	0	
	Sum of SampleMorts	56	1	0	1	1	59	
	Sum of FacilityMorts	931	4	5	34	5	979	
	Sum of ResearchMorts	12	0	0	0	0	12	
	Sum of TotalProjectMorts	999	5	5	35	6	1,050	
LGS	Sum of NumberCollected	182,010	2,553	2,690	19,079	255	206,587	
	Sum of NumberBarged	178,886	2,544	2,690	19,050	255	203,425	
	Sum of NumberBypassed	2,433	0	0	0	0	2,433	
	Sum of Numbertrucked	0	0	0	0	0	0	
	Sum of SampleMorts	40	0	0	6	0	46	
	Sum of FacilityMorts	644	9	0	23	0	676	
	Sum of ResearchMorts	7	0	0	0	0	7	
	Sum of TotalProjectMorts	691	9	0	29	0	729	
LMN	Sum of NumberCollected	78,629	1,037	964	9,313	128	90,071	
	Sum of NumberBarged	74,726	1,028	964	8,394	128	85,240	
	Sum of NumberBypassed	3,769	7	0	899	0	4,675	
	Sum of Numbertrucked	0	0	0	0	0	0	
	Sum of SampleMorts	23	1	0	4	0	28	
	Sum of FacilityMorts	111	1	0	14	0	126	
	Sum of ResearchMorts	0	0	0	0	0	0	
	Sum of TotalProjectMorts	134	2	0	18	0	154	
MCN	Sum of NumberCollected	594,384	10,996	5,765	3,989	1,676	616,810	
	Sum of NumberBarged	0	0	0	0	0	0	
	Sum of NumberBypassed	593,634	10,933	5,750	3,982	1,675	615,974	
	Sum of Numbertrucked	0	0	0	0	0	0	
	Sum of SampleMorts	44	18	0	1	0	63	
	Sum of FacilityMorts	680	44	15	6	1	746	
	Sum of ResearchMorts	26	1	0	0	0	27	
	Sum of TotalProjectMorts	750	63	15	7	1	836	
Total Sum of NumberCollected		1,085,323	18,061	12,944	64,426	2,234	1,182,988	
Total Sum of NumberBarged		482,486	7,042	7,174	59,069	552	556,323	
Total Sum of NumberBypassed		600,263	10,940	5,750	5,266	1,675	623,894	
Total Sum of Numbertrucked		0	0	0	0	0	0	
Total Sum of SampleMorts		163	20	0	12	1	196	
Total Sum of FacilityMorts		2,366	58	20	77	6	2,527	
Total Sum of ResearchMorts		45	1	0	0	0	46	
Total Sum of TotalProjectMorts		2,574	79	20	89	7	2,769	

YTD Transportation Summary

Source: Fish Passage Center

Updated:

6/26/09 10:06 AM

TO: 06/26/09

		Species					
Site	Data	CH0	CH1	CO	SO	ST	Grand Total
LGR	Sum of NumberCollected	599,482	2,352,337	59,783	33,251	3,427,320	6,472,173
	Sum of NumberBarged	580,153	1,500,628	57,712	25,974	1,839,099	4,003,566
	Sum of NumberBypassed	15,465	847,954	1,951	7,068	1,587,772	2,460,210
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	145	118	2	22	30	317
	Sum of FacilityMorts	3,707	2,732	118	187	400	7,144
	Sum of ResearchMorts	12	1,035	0	0	19	1,066
	Sum of TotalProjectMorts	3,864	3,885	120	209	449	8,527
LGS	Sum of NumberCollected	738,890	1,720,033	55,138	33,557	2,515,569	5,063,187
	Sum of NumberBarged	720,801	903,067	48,311	25,684	991,373	2,689,236
	Sum of NumberBypassed	7,707	751,922	2,825	5,826	1,460,070	2,228,350
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	84	49	0	4	17	154
	Sum of FacilityMorts	5,488	1,621	2	43	313	7,467
	Sum of ResearchMorts	10	4	0	0	0	14
	Sum of TotalProjectMorts	5,582	1,674	2	47	330	7,635
LMN	Sum of NumberCollected	268,728	320,691	11,992	15,967	517,917	1,135,295
	Sum of NumberBarged	263,883	311,664	11,977	15,791	505,829	1,109,144
	Sum of NumberBypassed	4,359	8,788	9	114	11,810	25,080
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	29	15	0	2	8	54
	Sum of FacilityMorts	355	237	5	6	252	855
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	384	252	5	8	260	909
MCN	Sum of NumberCollected	644,538	1,301,365	68,399	105,688	467,425	2,587,415
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	643,639	1,299,775	68,334	105,631	467,255	2,584,634
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	57	147	1	2	14	221
	Sum of FacilityMorts	815	1,419	64	54	153	2,505
	Sum of ResearchMorts	27	24	0	1	3	55
	Sum of TotalProjectMorts	899	1,590	65	57	170	2,781
Total Sum of NumberCollected		2,251,638	5,694,426	195,312	188,463	6,928,231	15,258,070
Total Sum of NumberBarged		1,564,837	2,715,359	118,000	67,449	3,336,301	7,801,946
Total Sum of NumberBypassed		671,170	2,908,439	73,119	118,639	3,526,907	7,298,274
Total Sum of NumberTrucked		0	0	0	0	0	0
Total Sum of SampleMorts		315	329	3	30	69	746
Total Sum of FacilityMorts		10,365	6,009	189	290	1,118	17,971
Total Sum of ResearchMorts		49	1,063	0	1	22	1,135
Total Sum of TotalProjectMorts		10,729	7,401	192	321	1,209	19,852

Cumulative Adult Passage at Mainstem Dams Through: 06/25

DAM	EndDate	Spring Chinook						Summer Chinook						Fall Chinook					
		2009		2008		10-Yr Avg.		2009		2008		10-Yr Avg.		2009		2008		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	06/24	114525	66631	125543	17554	160243	11507	52646	23747	48284	7804	39599	4622	0	0	0	0	0	0
TDA	06/24	93908	53646	95438	15801	113852	9048	46878	16175	36448	7216	30767	3371	0	0	0	0	0	0
JDA	06/24	76806	49733	81772	14925	95147	7579	35998	16693	31814	7449	25580	2810	0	0	0	0	0	0
MCN	06/24	70413	43328	68080	12133	86998	7409	27323	9757	22941	5730	20425	2287	0	0	0	0	0	0
IHR	06/24	55435	28223	53142	7757	59050	4663	12623	5470	15332	3467	8014	1199	0	0	0	0	0	0
LMN	06/24	66931	20009	54512	6885	57079	4270	13672	4211	13776	1575	6877	764	0	0	0	0	0	0
LGS	06/24	52642	24331	50396	7805	54016	4453	9199	4148	9223	2138	4878	826	0	0	0	0	0	0
LGR	06/24	49667	31064	50146	10946	54673	5280	6272	4191	6614	1586	3863	660	0	0	0	0	0	0
PRD	06/23	13469	2910	12178	620	18164	621	8766	303	2755	232	5350	174	0	0	0	0	0	0
RIS	06/24	12634	6003	12490	1119	14914	1069	5253	884	1800	125	2699	195	0	0	0	0	0	0
RRH	06/24	6090	1086	4065	371	5734	430	1743	207	198	16	863	32	0	0	0	0	0	0
WEL	06/24	4137	1723	2524	412	3501	296	0	0	0	0	0	0	0	0	0	0	0	0
WFA	06/19	20713	1937	9208	181	-	-	0	0	0	0	-	-	0	0	0	0	-	-

DAM	Coho						Sockeye			Steelhead			
	2009		2008		10-Yr Avg.		2009	2008	10-Yr Avg.	2009	2008	10-Yr Avg.	Wild 2009
	Adult	Jack	Adult	Jack	Adult	Jack							
BON	0	0	0	0	0	0	86323	136435	44017	10768	11225	11901	2378
TDA	0	0	0	0	0	0	62067	96160	32651	3758	3865	4264	987
JDA	0	0	0	0	0	0	50433	86092	29576	6531	6640	5677	2359
MCN	0	0	0	0	0	0	25553	45069	16972	3743	3492	3330	1261
IHR	0	0	0	0	0	0	70	20	4	3767	3463	2559	1118
LMN	0	0	0	0	0	0	37	3	0	5550	4249	2552	2323
LGS	0	0	0	0	0	0	22	6	0	5735	2698	2449	2210
LGR	0	0	0	0	0	0	7	0	0	11050	7811	7916	3403
PRD	0	0	0	0	0	0	10008	4818	3874	93	290	88	0
RIS	0	0	0	0	0	0	4421	1420	1406	125	431	114	67
RRH	0	0	0	0	0	0	1734	733	644	462	686	211	236
WEL	0	0	0	0	0	0	789	262	217	102	261	52	72
WFA	0	0	0	0	-	-	0	0	-	12619	15674	-	-

BON and LGR have switched to video counts so the data is delayed.

*PRD is not posting 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.

Page last updated on: 05/21/09

BON counts from January 1, 2009 to March 14, 2009 (our traditional counts begin March 15):

Year	Chinook Adult	Chinook Jack	Steelhead	Wild Steelhead
2009	19	-1	321	109
2008	42	0	568	273