



# Fish Passage Center

## Weekly Report #09 - 10

May 15, 2009

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### Summary of Events:

**Water Supply:** Precipitation throughout the Columbia Basin has varied between 96% and 316% of average at individual sub-basins over May. Precipitation above The Dalles has been 172% of average over May. Over the entire water year, precipitation has generally been near average.

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

Location	Water Year 2009 May 1-11		Water Year 2009 October 1, 2008 to May 11, 2009	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	0.93	118	15.58	93
Snake River Above Ice Harbor	1.32	197	13.60	109
Columbia Above The Dalles	1.20	172	16.75	101
Kootenai	1.05	133	15.16	89
Clark Fork	0.70	96	12.04	110
Flathead	0.94	109	13.82	95
Pend Oreille/ Spokane	1.42	153	22.3	95
Central Washington	0.60	218	6.32	93
Snake River Plain	1.01	193	7.83	102
Salmon/Boise/ Payette	1.56	245	14.13	94
Clearwater	1.85	172	25.63	115
SW Washington Cascades/ Cowlitz	3.75	279	55.68	93
Willamette Valley	3.96	316	45.36	88

Average snowpack in the Columbia River for basins above the Snake River confluence is 111% of average, for Snake River Basins the average snowpack is 87% of average, and for lower Columbia Basins between McNary and Bonneville Dam average snowpack is 221% of average.

Table 2 displays the April Final and May Final runoff volume forecasts for multiple reservoirs. Water Supply Forecasts have generally decreased slightly between the April Final and May Final forecasts, with the exception of Lower Granite which has increased slightly. The current forecast at The Dalles between January and July is 91100 Kaf (85% of average).

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

Location	April Final		May Final	
	% Average (1971- 2000)	Probable Runoff Volume (Kaf)	% Average (1971- 2000)	Probable Runoff Volume (Kaf)
The Dalles (Jan-July)	86	92000	85	91100
Grand Coulee (Jan-July)	89	56200	87	55000
Libby Res. Inflow, MT (Apr-Aug)	88 90*	5500 5672*	84	5270
Hungry Horse Res. Inflow, MT (Jan-July)	94	2100	92	2050
Lower Granite Res. Inflow (Apr- July)	95	20400	97	20900
Brownlee Res. Inflow (Apr-July)	79	4970	79	5000
Dworshak Res. Inflow (Apr-July)	102 99*	2710 2662	99 98*	2610 2631

\* Denotes COE Forecast

The Biological Opinion flow period began on April 3rd in the lower Snake River (Lower Granite) and began on April 10th in the mid (Priest Rapids) and lower (McNary) Columbia River. According to the April Final Water Supply Forecast, the flow objectives this spring are 100 Kcfs at Lower Granite, 228 Kcfs at McNary, and 135 Kcfs at Priest Rapids. Flows at Lower Granite Dam from April 3-May 14 have averaged 89.2 Kcfs and 89.8 Kcfs over the last week, flows at Priest Rapids from April 10-May 14 averaged 126.3 Kcfs and 123.7 Kcfs over the last week, and flows at McNary have averaged 237.6 Kcfs between April 10-May 14 and 231.5 Kcfs over the last week.

Grand Coulee Reservoir is at 1258.3 feet (5-14-09) and has held steady over the last week. Outflows at Grand Coulee have ranged between 97.2 and 124.3 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2405.9 feet (5-14-09) and has held relatively steady last week. Outflows at Libby have ranged between 8.0-10.0 Kcfs over the last week.

Hungry Horse is currently at an elevation of 3520.1 ft (5-14-09) and has refilled 0.3 feet last week. Outflows at Hungry Horse have ranged from 5.9 Kcfs to 6.2 Kcfs last week.

Dworshak is currently at an elevation of 1542.3 feet (5-14-09) and has refilled 9.9 feet last week. The Salmon Managers (NOAA, USFWS, WDFW, IFDG, ODFW) submitted SOR 2009-2 on May 12, 2009 to the Action Agencies asking for Dworshak outflows of approximately 10 Kcfs for up to a five day period if the flow objective of 100 Kcfs was not being met at Lower Granite Dam. The COE stated at the May 13<sup>th</sup> TMT Meeting that they would recommend an outflow of 7.9 Kcfs beginning on May 13<sup>th</sup>, 2009 at 2200 hours, then drop to 5.6 Kcfs on May 15<sup>th</sup>, 2009 at 2200 hours, then drop further to 4.6 Kcfs on May 16<sup>th</sup>, 2009 at 2200 hours, then drop to the minimum outflow of 1.6 Kcfs on May 18<sup>th</sup>, 2009 at 2200 hours. Despite the Salmon Managers request to implement the SOR as written, the COE decided to implement their recommendation based on the COE's concern that there is a small chance, if the runoff should decrease, that Dworshak may miss full refill. Outflows averaged 7.7 Kcfs on May 14<sup>th</sup>, 2009 at Dworshak Dam, however may be reduced on May 15<sup>th</sup>, 2009 as outflows at Lower Granite Dam were exceeding the 100 Kcfs flow objective as of 0400 on May 15<sup>th</sup>, 2009.

The Brownlee Reservoir was at an elevation of 2069.0 feet on May 14<sup>th</sup>, 2009, refilling 11.6 feet last

week. Outflows at Brownlee Dam have been 10.4 to 28.9 Kcfs over the last week.

**Spill:**

No spill occurred at Dworshak Dam over the past week. The 2009 planned spring spill program at the lower Snake River Projects began on April 3 at 0001 hours and will continue through June 20, 2009. The following table shows the planned operations for 2009.

<b>Project</b>	<b>Day/Night Spill</b>
Lower Granite	20Kcfs/20Kcfs
Little Goose	30%/30%
Lower Monumental	Gas Cap/Gas Cap
Ice Harbor	30%/30% vs 45Kcfs/Gas Cap Study

Flow in the Snake River decreased and then gradually increased over the past week. Spill at Lower Granite Dam has averaged an instantaneous 20 Kcfs. Spill at Little Goose Dam has met the 30% on a daily average basis. Spill to the gas cap at Lower Monumental Dam has occurred over the past week during a comparison of bulk versus uniform spill pattern test. Spill is higher during uniform spill pattern testing. The implementation of study-like conditions at Ice Harbor Dam began on April 30<sup>th</sup>, and spill has alternated between 30% spill for 24 hours and 45 Kcfs daytime spill and gas cap nighttime spill, in two day blocks. The 2009 spill program began at the lower Columbia River projects at 0001 hours on April 10<sup>th</sup> and will continue through June 30<sup>th</sup>. The following table shows the planned operations for 2009.

<b>Project</b>	<b>Day/Night Spill</b>
McNary	40%/40%
John Day	30%/30% on pre-test days; 30%/30% vs. 40%/40% on test days
The Dalles	40%/40%
Bonneville	100 Kcfs/100 Kcfs

McNary Dam spill met the Court Order over the past week. At John Day Dam the testing of 30% versus 40% spill has occurred. The Dalles Dam spill was spilling an instantaneous 40% of flow, except for May 10<sup>th</sup> and 11<sup>th</sup> when spill caps were reduced due to the TDG at the Bonneville Dam forebay. At Bonneville

dam there was a reduction in the spill cap on May 9<sup>th</sup> due to forebay TDG levels at Camas/Washougal, followed by a return to the Court Ordered spill level by midday on May 12<sup>th</sup>.

Total dissolved gas measurements at the Snake River federal hydroprojects were generally under the waiver limits over this past week with the exception of one day of slight increase (0.2%) at the Ice Harbor Dam forebay above 115%.

In the Lower Columbia TDG at the Bonneville Dam forebay exceeded the 115% on three days. Although the COE manages spill at Bonneville Dam to the Camas/Washougal monitor, it is not required.

Gas bubble trauma (GBT) monitoring occurred at Lower Granite, 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. A few fish with minor signs of GBT were detected in the samples at Bonneville Dams this past week.

#### **Adult Fish Passage:**

Adult counts at Bonneville Dam have been updated through May 14<sup>th</sup>. Daily adult spring Chinook counts at Bonneville Dam ranged from 1848 to 4277 adult salmon per day. Between March 15<sup>th</sup> and May 14<sup>th</sup>, 77251 spring Chinook have been counted at Bonneville Dam. In 2008, 95819 adult spring Chinook were counted at Bonneville Dam for the same time period. The 2009 adult spring Chinook count at Bonneville Dam is 80.6% of the 2008 count. The Bonneville spring Chinook adult count is only about 56.2% of the 10 year average of 137520. The 2009 Bonneville Dam spring Chinook jack count of 33481 is about 3.91 times greater than the 2008 count of 8557 and 4.68 times greater than the 10 year average of 7154. At Willamette Falls Dam 6214 adult spring Chinook have been counted so far this year. The 2009 adult spring Chinook count at Willamette Falls Dam is 2.28 times greater than the 2008 count of 2720. At The Dalles Dam the 2009 adult spring Chinook count is 52406 and at McNary Dam 30526 adult spring Chinook have been counted. The 2009 spring Chinook count at McNary Dam is 93.3% of the 2008 count and only about 49.0% of the 10 year average. The 2009 McNary Dam spring Chinook jack count of 11547 is 4.9 times greater than the 2008 count of 2346 and 4.4 times greater than the 10 year average count of 2602.

The Bonneville Dam 2009 steelhead count of 2891 is about 1.17 times greater than the 2008 count of 2461. The 2009 steelhead count is about 1.03 times

greater than of the 10-year average of 2804. At upriver sites, adult steelhead continue to move through the hydro system to reach their tributaries and spawning sites. The majority of these fish over-wintered in pools and will complete their trip to their spawning grounds in March through early May. Daily adult steelhead counts at Lower Granite Dam ranged from 18 to 47 adults per day last week. This year's Lower Granite steelhead count of 10668 is 1.39 times greater than the 2008 count of 7651 and 1.38 times greater than the 10 year average of 7716. The 2009 wild steelhead count as of May 6<sup>th</sup> was 3291. At Rock Island Dam, as of April 29<sup>th</sup>, 76 adult steelhead have been counted and at Rocky Reach Dam, 361 adult steelhead have been counted so far this season. At Willamette Falls Dam, the 2009 count for steelhead was 5111, as of May 12<sup>th</sup>. This year's steelhead count is only about 69.5% of the 2008 count of 7350 at Willamette Falls Dam for the same date range.

Stansell et al. reported that as of May 8<sup>th</sup>, that as many as 26 California sea lions and 26 Steller sea lions have been counted at Bonneville Dam on a single day. California sea lions numbers are lower than previous years, likely due to the removal of 11 animals this year and 11 last year. Steller sea lion numbers are higher than previous years. The highest daily abundance of sea lions at Bonneville Dam occurred on April 21<sup>st</sup> when 47 sea lions were observed at the dam. There has been an increase in the number of California sea lions over the past few weeks. However, California sea lion numbers are lower when compared to recent years. Sea lion trapping began on March 10<sup>th</sup>. To date, 7 animals have been euthanized, 4 have been relocated and 6 have been tagged and released. All of the 7 euthanized sea lions were infected with Gammaherpes virus and found to be unsuited for zoos or aquariums. The traps will continue to be used to mark sea lions not previously seen at the dam and to remove animals that meet the removal criteria granted to the states by NOAA Fisheries under Section 120 of the Marine Mammal Protection Act.

Stansell, Robert; Tackley, Sean; and Gibbons, Karrie. 2009. Status Report – Pinniped Predation and Deterrent Activities at Bonneville Dam, 2009. Fisheries Field Unit, US Army Corps of Engineers, Bonneville Lock and Dam, Cascade Locks, Oregon. Available online at <http://www.nwd-wc.usace.army.mil/tmt/documents/fish/2009/update20090508.pdf>.

**Smolt Monitoring:**

Trap collection of yearling Chinook appears to be decreasing at the Salmon River and Imnaha traps consistent with historic patterns; while at the Grande Ronde and Lewiston traps yearling Chinook collection remains relatively high for this time of year. Steelhead collection at the Salmon River and Imnaha traps was relatively low over the past week compared to historic patterns, while steelhead collection at Grande Ronde and Lewiston appears to be declining consistent with historic patterns. Sockeye passage numbers have increased at the Salmon and Lewiston traps in the past week as releases from the Sawtooth Lakes area were collected at these sites based on PIT-tag recaptures. At the Lower Granite Dam steelhead collection decreased rapidly over the past few days while yearling Chinook passage numbers increased. This is unusual in that typically yearling Chinook predominate in the Snake River until around May 1 when steelhead predominate. At McNary and Bonneville Dams yearling Chinook predominated in the collection over the past week.

The Salmon River Trap collection of yearling Chinook remained relatively low with the average daily collection at about 17 fish, and steelhead collection averaged just over 30 fish per day. Based on past years, this is typically the time when steelhead collection begins to decrease at the Salmon River Trap, but usually larger numbers of fish continue to be collected at this time of year. Flows in the Salmon River were at 24 Kcfs on May 15 as measured at the White Bird USGS gauge and are forecast to continue increasing over the next several days. Likely this peak in flows will be accompanied by increased numbers of steelhead. At the Imnaha River Trap a similar pattern is occurring with diminishing numbers of yearling Chinook being collected and at the same time relatively larger collection of steelhead is continuing. The steelhead numbers at the Imnaha Trap typically remain high later than on the Salmon River, so there may a few more weeks of high steelhead collection to come at that site. Flows in the Imnaha River appear to have declined over the past week to about 1.3 Kcfs on May 15. Flows are forecast to remain relatively steady over the next several days remaining at or below historic median levels for this time of year.

The Grande Ronde River, which has had relatively high flows most of May had another rapid increase in flows over the past week. Flows dipped to near historic median on May 1 at 7,000 cfs but then increased well above historic median to 14 Kcfs on

May 7. The Trap has had continued high collection of yearling Chinook this past week, with nearly 500 fish collected on May 13; yearling Chinook smolt collection was well above average for this time of year. Steelhead collection has also been relatively high over the past week with over 180 fish in the trap each day. The Lewiston Trap on the Snake River captured relatively large numbers of yearling Chinook and steelhead last week, during recent high flow event. On May 6 flows rose to 70 Kcfs as measured at Anatone, and remained there through May 8. Median flows for this time period are closer to 50 Kcfs. The Trap has collected 3,600 yearling Chinook and over 2,000 steelhead since May 7.

Over the past few days at Lower Granite Dam yearling Chinook indices have begun to increase to a level well above that of steelhead. Typically, steelhead indices increase above those of Chinook until early May, but due an early release of steelhead from Dworshak hatchery steelhead have predominated until now. Steelhead indices reached 164,000 on May 12 but then declined to 53,000 on May 14. The passage index for yearling Chinook had also declined over the past week but, then rose to 156,000 on May 14. Small numbers of sockeye have been collected this past week; those fish with PIT-tags were marked and released at the Sawtooth Trap on May 7.

At Rock Island dam the daily passage indices have remained relatively low over the past week. Indices increased for all spring migrants at the site. The average daily index for yearling Chinook increased to 290 per day compared to 130 per day last week. Steelhead indices average just over 430 per day, compared to about 130 per day last week. Sockeye and Coho indices were also relatively higher this week with the average index for those species at 64 and 120 respectively.

The predominant salmonids in the sample at McNary Dam the past week were yearling Chinook, and steelhead. The passage index for yearling Chinook averaged 160,000 this past week, while steelhead indices averaged 43,000. Lamprey numbers have decreased in the sample over the past two weeks with the numbers averaging about 5 to 10 per day. At Bonneville Dam a peak index of 390,000 subyearling Chinook passed the project on May 3 as the latest Spring Creek release of subyearling Chinook went out May 1. Yearling Chinook passage have predominated since those subyearlings passed. Steelhead indices have begun to increase at the project as well over the past 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. The release of 770,350 subyearling fall Chinook below Hells Canyon Dam was scheduled to end this week. The scheduled release of approximately 402,000 subyearling fall Chinook from Lyons Ferry Hatchery into Couse Creek began this week and is expected to run through early June; approximately 50% of these subyearling fall Chinook are unmarked. Releases of 300,000 summer steelhead that began weeks ago in the Salmon River drainage were scheduled to end this week; about 50% of these were unmarked. Additionally, a 156,000 fish summer steelhead release at Big Creek Acclimation Pond (Grande Ronde River) was scheduled for May 11<sup>th</sup>. There were no other scheduled releases of juvenile salmonids to this zone this week.

Approximately 1.4 million subyearling fall Chinook are expected to be released during the last week of May. These are planned as a 900,000 fish release (56% unmarked) into the Snake River at Pittsburg landing and Captain John's Acclimation Pond, and a 500,000 fish release (33% unmarked) into the Clearwater River at Big Canyon Creek Acclimation Pond. There are no other scheduled releases 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. About 450,000 subyearling summer Chinook were released from Wells Hatchery into the Mid Columbia. Releases of 495,000 yearling summer Chinook from Wells and Turtle Rock Hatcheries that began 2-4 weeks ago were scheduled to end this week; 64% of these were from Wells and 36% were from Turtle Rock. Various releases of yearling spring Chinook that began several weeks ago are scheduled to end today; these releases total about 1.07 million juveniles. Of these, about 72% were released from acclimation facilities on the Yakima River and 28% were released into the Chiwawa River (Wenatchee River trib.). The Yakama Tribal Program to re-establish Coho runs in the Yakima, Methow, and Wenatchee basins was scheduled to end today. From April through mid May, about 1 million, 404,000, and 99,000 coho were released into the Yakima, Wenatchee, and Methow rivers respectively. Several releases of summer steelhead to the Wenatchee River that began in mid April are scheduled to end today. In all, these releases totaled about 327,000 juveniles, all of which

were tagged with green or pink Elastomer tags. There were no other scheduled releases of juvenile salmonids to this zone this week.

Finally, approximately 200,000 subyearling summer Chinook are scheduled for release into the Yakima next week; 15% of these are unmarked. There are no other scheduled releases to this zone 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. A release of 90,000 summer steelhead to the Klickitat River that began several weeks ago is scheduled to end today. About 12,500 winter steelhead juveniles were scheduled for release into Hood River on May 14<sup>th</sup>. Finally, about 1 million coho juveniles were scheduled for release into the Klickitat River this week.

Looking ahead, about 600,000 subyearling fall Chinook are scheduled for release into the Umatilla River next week. There are no other scheduled releases to this zone over the next two weeks.

**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
05/01/2009	115.0	0.0	118.1	27.3	122.6	8.6	118.3	0.0	123.1	13.6	142.4	19.4	143.5	23.4
05/02/2009	78.1	0.0	86.1	0.0	101.6	7.5	103.5	0.0	109.5	9.8	122.0	18.5	118.0	24.1
05/03/2009	65.1	0.0	54.6	0.0	59.2	4.8	56.4	0.0	59.4	9.8	97.7	16.3	106.8	23.2
05/04/2009	120.4	0.0	115.5	0.0	128.2	8.6	123.5	0.0	124.7	11.7	91.4	16.5	80.9	21.3
05/05/2009	79.8	0.0	90.7	0.0	98.2	6.7	95.5	0.0	101.1	12.5	111.3	18.6	107.8	23.4
05/06/2009	69.0	0.0	66.9	0.0	74.1	5.5	73.6	0.0	77.8	10.6	109.3	17.3	106.8	23.9
05/07/2009	92.2	0.0	90.5	0.0	87.1	6.2	81.6	0.0	82.6	9.0	69.1	16.2	64.9	22.9
05/08/2009	121.6	0.0	122.9	0.0	128.8	8.2	121.0	0.0	124.2	10.5	102.1	18.6	97.0	22.0
05/09/2009	108.0	0.0	107.9	0.0	119.4	8.2	120.9	0.0	128.4	11.5	130.8	20.5	123.0	24.5
05/10/2009	97.2	0.0	96.9	0.0	103.2	7.0	98.1	0.0	103.7	10.1	117.8	20.0	118.9	24.0
05/11/2009	115.9	0.0	117.0	0.0	122.6	8.3	118.4	0.0	121.1	11.0	122.9	19.4	123.9	19.3
05/12/2009	113.2	0.0	109.5	0.0	126.3	8.6	124.1	0.0	129.2	9.8	141.5	18.9	131.4	21.6
05/13/2009	124.3	0.0	124.5	0.0	131.2	8.7	125.9	0.0	132.4	23.6	145.8	18.8	142.4	22.8
05/14/2009	117.9	0.0	121.9	0.0	127.3	9.0	119.4	0.0	123.1	23.5	128.1	18.2	129.1	22.0

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

Date	Dworshak		Hells Canyon		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
05/01/2009	10.0	0.0	25.3	25.4	78.9	20.5	74.9	22.3	77.2	36.2	78.7	23.7
05/02/2009	10.0	0.0	25.4	24.5	74.9	20.5	73.5	22.0	74.3	30.9	75.6	46.9
05/03/2009	10.0	0.0	26.9	25.8	77.1	20.5	73.6	22.0	74.3	28.9	75.8	55.2
05/04/2009	10.0	0.0	27.9	26.1	86.0	22.8	83.9	25.2	85.9	33.7	88.1	36.0
05/05/2009	9.8	0.0	30.7	29.1	89.0	20.4	84.8	25.4	84.8	37.0	85.7	25.7
05/06/2009	7.9	0.0	33.7	31.0	109.2	20.6	104.5	30.8	109.7	27.2	112.0	54.3
05/07/2009	1.6	0.0	35.9	27.1	107.1	20.7	104.4	30.9	108.1	25.5	109.4	69.9
05/08/2009	1.6	0.0	35.2	25.9	107.3	20.5	103.4	31.2	108.8	33.9	109.5	46.8
05/09/2009	1.7	0.0	34.1	24.1	98.4	20.6	91.9	27.4	93.9	33.5	95.2	28.5
05/10/2009	1.7	0.0	30.1	13.0	87.2	20.5	85.8	25.7	88.9	35.1	90.5	27.2
05/11/2009	1.7	0.0	29.1	15.9	78.5	20.4	76.0	22.8	77.2	34.4	76.8	22.7
05/12/2009	1.7	0.0	28.6	13.7	82.5	20.6	77.7	23.1	81.0	26.9	81.8	47.7
05/13/2009	2.2	0.0	28.4	18.9	84.5	20.3	83.5	25.0	84.6	24.9	85.6	56.7
05/14/2009	7.7	0.0	---	---	90.1	20.5	85.5	25.5	87.1	31.8	89.1	37.8

**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		
05/01/2009	220.4	88.2	226.8	86.4	216.9	86.6	233.9	101.3	27.6	93.6
05/02/2009	229.2	91.6	211.4	84.5	204.0	81.8	226.8	101.4	21.6	92.5
05/03/2009	188.5	75.5	183.8	73.5	178.3	71.7	205.2	101.3	9.6	82.9
05/04/2009	190.5	76.3	195.4	78.0	186.6	74.7	201.7	97.5	14.7	78.1
05/05/2009	195.9	78.4	196.0	63.1	192.1	76.8	215.9	96.5	29.2	78.9
05/06/2009	237.9	95.6	247.8	74.3	236.4	94.1	245.5	101.2	50.0	82.9
05/07/2009	223.5	89.4	241.8	91.5	240.7	96.1	283.7	100.9	74.2	97.2
05/08/2009	214.4	85.9	221.6	88.6	217.9	87.3	251.9	99.5	46.6	94.3
05/09/2009	240.1	96.2	242.6	78.5	237.5	95.0	244.3	97.6	45.0	90.3
05/10/2009	215.1	86.0	210.2	63.2	203.2	81.5	224.5	94.7	39.4	79.0
05/11/2009	226.8	91.0	232.0	87.6	224.6	80.9	234.8	91.6	54.2	77.6
05/12/2009	252.0	100.8	244.9	98.2	234.2	86.8	252.0	94.6	64.5	81.5
05/13/2009	248.4	99.5	264.0	85.0	260.5	102.5	273.6	100.5	63.2	98.5
05/14/2009	223.9	89.7	222.7	66.6	217.0	86.8	247.4	99.9	45.9	90.2

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

Site	Date	Species	Number of Fish	Number w GBT signs	Number w Fin Signs	% Fin GBT	% Severe Fin GBT	Number of Fish with Fin GBT Listed by Highest Rank			
								Rank 1	Rank 2	Rank 3	Rank 4
<b>Lower Granite Dam</b>											
	05/04/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/11/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Little Goose Dam</b>											
	05/04/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/11/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Lower Monumental Dam</b>											
	05/06/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/13/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>McNary Dam</b>											
	05/04/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/08/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Bonneville Dam</b>											
	05/05/09	Chinook + Steelhead	108	2	2	1.85%	0.00%	2	0	0	0
	05/09/09	Chinook + Steelhead	106	1	1	0.94%	0.00%	1	0	0	0
	05/12/09	Chinook + Steelhead	108	1	1	0.92%	0.00%	1	0	0	0
<b>Rock Island Dam</b>											
	05/05/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/07/09	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	05/12/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0

### Hatchery Releases Last Two Weeks

Hatchery Release Summary									
From:		5/1/2009		to		05/14/09			
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2009	178,849	04-09-09	05-04-09	Little Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2009	825,525	04-13-09	05-03-09	Pahsimeroi River	Pahsimeroi River
Idaho Dept. of Fish and Game	Oxbow-Idaho	CH0	FA	2009	192,471	05-06-09	05-06-09	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game	Oxbow-Oregon	SO	UN	2009	74,000	05-07-09	05-07-09	Redfish Lake	Salmon River (ID)
Idaho Dept. of Fish and Game	Sawtooth Hatchery	SO	UN	2009	99,000	05-07-09	05-07-09	Salmon River (ID)	Salmon River (ID)
<b>Idaho Dept. of Fish and Game Total</b>					1,369,845				
National Marine Fisheries Service	Lyons Ferry Hatchery	CH0	FA	2009	202,369	05-11-09	05-29-09	Couse Creek	Snake River
<b>National Marine Fisheries Service Total</b>					202,369				
Nez Perce Tribe	Dworshak NFH	CO	UN	2010	60,000	05-01-09	05-31-09	Lapwai Creek	Clearwater River M F
Nez Perce Tribe	Dworshak NFH	CO	UN	2010	500,000	05-01-09	05-31-09	Clear Creek	Clearwater River M F
<b>Nez Perce Tribe Total</b>					560,000				
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2009	112,000	05-07-09	05-07-09	Wallowa Acclim Pond	Wallowa River
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2009	156,000	05-11-09	05-11-09	Big Canyon Acclim.Pd (Grande Ronde)	Grande Ronde River
Oregon Dept. of Fish and Wildlife	Umatilla Hatchery	CH0	FA	2009	770,350	05-07-09	05-10-09	Hells Canyon Dam	Snake River
<b>Oregon Dept. of Fish and Wildlife Total</b>					1,038,350				
U.S. Fish and Wildlife Service	Hagerman NFH	ST	SU	2009	150,000	05-01-09	05-11-09	Yankee Fk (Salmon R)	Salmon River (ID)
U.S. Fish and Wildlife Service	Hagerman NFH	ST	SU	2009	152,000	05-01-09	05-11-09	Yankee Fk (Salmon R)	Salmon River (ID)
<b>U.S. Fish and Wildlife Service Total</b>					302,000				
Warm Springs Tribe	Oak Springs Hatchery	ST	SU	2009	20,000	05-02-09	05-02-09	Blackberry Acclim Pond	Hood River
Warm Springs Tribe	Oak Springs Hatchery	ST	WI	2009	12,500	05-14-09	05-14-09	Parkdale Acclim Pond	Hood River
<b>Warm Springs Tribe Total</b>					32,500				
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2009	296,000	05-01-09	05-15-09	Chiwawa River	Wenatchee River
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	CH1	SP	2009	140,000	05-01-09	05-31-09	Lake Wenatchee	Wenatchee River
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	CH1	SU	2009	520,000	04-15-09	05-07-09	Similkameen Acclim Pd	Okanogan River
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	SU	2009	90,000	05-01-09	05-15-09	Klickitat River	Klickitat River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	CH1	SU	2009	61,000	05-01-09	05-15-09	Turtle Rock Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	CH1	SU	2009	116,000	04-15-09	05-15-09	Chelan Falls	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	11,000	04-15-09	05-15-09	Chiwawa River	Wenatchee River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	30,500	04-15-09	05-15-09	Chiwawa River	Wenatchee River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	50,000	04-15-09	05-15-09	Wenatchee River	Wenatchee River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	50,500	04-15-09	05-15-09	Wenatchee River	Wenatchee River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	68,000	04-15-09	05-15-09	Wenatchee River	Wenatchee River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	117,000	04-15-09	05-15-09	Nason Creek	Wenatchee River
Washington Dept. of Fish and Wildlife	Wells Hatchery	CH1	SU	2009	318,000	04-13-09	05-15-09	Wells Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2009	110,000	04-20-09	05-31-09	Methow River	Methow River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2009	110,000	04-20-09	05-31-09	Twisp River	Methow River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2009	110,000	05-01-09	05-31-09	Chewuch River	Methow River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2009	130,000	04-20-09	05-31-09	Okanogan River	Okanogan River
<b>Washington Dept. of Fish and Wildlife Total</b>					2,328,000				



Hatchery Releases Last Two Weeks - Continued

Yakama Tribe	Cascade Hatchery	CO	UN	2009	64,590	05-01-09	05-15-09	Wenatchee River	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2009	77,658	05-01-09	05-15-09	Rolfings Acclim Pond	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2009	77,734	05-01-09	05-15-09	Coulter Creek	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2009	116,624	05-01-09	05-15-09	Butcher Creek Acclim. Pond	Wenatchee River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2009	251,067	03-16-09	05-15-09	Jack Creek Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2009	254,889	03-16-09	05-15-09	Easton Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2009	266,044	03-16-09	05-15-09	Clark Flat Acclim Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2009	50,000	04-06-09	05-15-09	Boone Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2009	72,000	04-06-09	05-15-09	Easton Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2009	97,000	04-06-09	05-15-09	Lost Creek Acclim Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2009	150,000	04-06-09	05-15-09	Holmes Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2009	170,000	04-06-09	05-15-09	Stiles Pond	Yakima River
Yakama Tribe	Klickitat Hatchery	CO	NO	2009	1,000,000	05-10-09	05-15-09	Klickitat Hatchery	Klickitat River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2009	37,659	04-06-09	05-15-09	Easton Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2009	68,473	04-06-09	05-15-09	Lost Creek Acclim Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2009	73,217	04-06-09	05-15-09	Holmes Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2009	74,124	04-06-09	05-15-09	Stiles Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2009	109,549	04-06-09	05-15-09	Prosser Acclim Pond	Yakima River
Yakama Tribe	Washougal Hatchery	CO	UN	2009	120,000	04-06-09	05-15-09	Prosser Acclim Pond	Yakima River
Yakama Tribe	Willard Hatchery	CO	UN	2009	19,352	05-01-09	05-15-09	Wenatchee River	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2009	21,388	05-01-09	05-15-09	Butcher Creek Acclim. Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2009	26,782	05-01-09	05-15-09	Rolfings Acclim Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2009	48,664	05-01-09	05-15-09	Winthrop Hatchery	Methow River
Yakama Tribe	Willard Hatchery	CO	UN	2009	352,140	05-04-09	05-04-09	Icicle Creek	Wenatchee River
Yakama Tribe	Winthrop NFH	CO	UN	2009	50,445	05-01-09	05-15-09	Twisp Acclim Pond	Methow River
<b>Yakama Tribe Total</b>					<b>3,649,399</b>				
<b>Grand Total</b>					<b>9,482,463</b>				

### Hatchery Releases Next Two Weeks

Hatchery Release Summary									
		From:	5/15/2009	to	5/28/2009				
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
National Marine Fisheries Service	Lyons Ferry Hatchery	CH0	FA	2009	202,369	05-11-09	05-29-09	Couse Creek	Snake River
<b>National Marine Fisheries Service Total</b>					202,369				
Nez Perce Tribe	Dworshak NFH	CO	UN	2010	60,000	05-01-09	05-31-09	Lapwai Creek	Clearwater River M F
Nez Perce Tribe	Dworshak NFH	CO	UN	2010	500,000	05-01-09	05-31-09	Clear Creek	Clearwater River M F
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2009	400,000	05-26-09	05-27-09	Pittsburg Landing Acclim Pond	Snake River
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2009	500,000	05-26-09	05-26-09	Cpt John Acclim Pond	Snake River
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2009	500,000	05-27-09	05-27-09	Big Canyon (Clearwater River)	Clearwater River M F
<b>Nez Perce Tribe Total</b>					1,960,000				
Oregon Dept. of Fish and Wildlife	Umatilla Hatchery	CH0	FA	2009	600,000	05-16-09	05-16-09	Umatilla River	Umatilla River
<b>Oregon Dept. of Fish and Wildlife Total</b>					600,000				
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2009	296,000	05-01-09	05-15-09	Chiwawa River	Wenatchee River
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	CH1	SP	2009	140,000	05-01-09	05-31-09	Lake Wenatchee	Wenatchee River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH0	FA	2009	200,000	05-15-09	06-01-09	Couse Creek	Snake River
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	SU	2009	90,000	05-01-09	05-15-09	Klickitat River	Klickitat River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	CH1	SU	2009	61,000	05-01-09	05-15-09	Turtle Rock Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	CH1	SU	2009	116,000	04-15-09	05-15-09	Chelan Falls	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	11,000	04-15-09	05-15-09	Chiwawa River	Wenatchee River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	30,500	04-15-09	05-15-09	Chiwawa River	Wenatchee River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	50,000	04-15-09	05-15-09	Wenatchee River	Wenatchee River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	50,500	04-15-09	05-15-09	Wenatchee River	Wenatchee River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	68,000	04-15-09	05-15-09	Wenatchee River	Wenatchee River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	ST	SU	2009	117,000	04-15-09	05-15-09	Nason Creek	Wenatchee River
Washington Dept. of Fish and Wildlife	Wells Hatchery	CH1	SU	2009	318,000	04-13-09	05-15-09	Wells Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Wells Hatchery	CH0	SU	2009	453,000	05-15-09	05-31-09	Wells Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2009	110,000	04-20-09	05-31-09	Methow River	Methow River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2009	110,000	04-20-09	05-31-09	Twisp River	Methow River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2009	110,000	05-01-09	05-31-09	Chewuch River	Methow River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2009	130,000	04-20-09	05-31-09	Okanogan River	Okanogan River
<b>Washington Dept. of Fish and Wildlife Total</b>					2,461,000				

## Hatchery Releases Next Two Weeks - Continued

Yakama Tribe	Cascade Hatchery	CO	UN	2009	64,590	05-01-09	05-15-09	Wenatchee River	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2009	77,658	05-01-09	05-15-09	Rolfings Acclim Pond	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2009	77,734	05-01-09	05-15-09	Coulter Creek	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2009	116,624	05-01-09	05-15-09	Butcher Creek Acclim. Pond	Wenatchee River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2009	251,067	03-16-09	05-15-09	Jack Creek Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2009	254,889	03-16-09	05-15-09	Easton Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2009	266,044	03-16-09	05-15-09	Clark Flat Acclim Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2009	50,000	04-06-09	05-15-09	Boone Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2009	72,000	04-06-09	05-15-09	Easton Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2009	97,000	04-06-09	05-15-09	Lost Creek Acclim Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2009	150,000	04-06-09	05-15-09	Holmes Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2009	170,000	04-06-09	05-15-09	Stiles Pond	Yakima River
Yakama Tribe	Klickitat Hatchery	CO	NO	2009	1,000,000	05-10-09	05-15-09	Klickitat Hatchery	Klickitat River
Yakama Tribe	Prosser Acclim. Pond	CH0	SU	2009	200,000	05-16-09	05-16-09	Stiles Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2009	37,659	04-06-09	05-15-09	Easton Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2009	68,473	04-06-09	05-15-09	Lost Creek Acclim Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2009	73,217	04-06-09	05-15-09	Holmes Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2009	74,124	04-06-09	05-15-09	Stiles Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2009	109,549	04-06-09	05-15-09	Prosser Acclim Pond	Yakima River
Yakama Tribe	Washougal Hatchery	CO	UN	2009	120,000	04-06-09	05-15-09	Prosser Acclim Pond	Yakima River
Yakama Tribe	Willard Hatchery	CO	UN	2009	19,352	05-01-09	05-15-09	Wenatchee River	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2009	21,388	05-01-09	05-15-09	Butcher Creek Acclim. Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2009	26,782	05-01-09	05-15-09	Rolfings Acclim Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2009	48,664	05-01-09	05-15-09	Winthrop Hatchery	Methow River
Yakama Tribe	Winthrop NFH	CO	UN	2009	50,445	05-01-09	05-15-09	Twisp Acclim Pond	Methow River
<b>Yakama Tribe Total</b>					<b>3,497,259</b>				
<b>Grand Total</b>					<b>8,720,628</b>				

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

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

Date	<u>Hungry H. Dnst</u>			<u>Boundary</u>			<u>Grand Coulee</u>			<u>Grand C. Tlwr</u>			<u>Chief Joseph</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High					
5/1	97	97	98	24	110	112	113	23	109	110	111	24	107	107	108	23	106	107	107	24
5/2	98	98	98	24	110	111	112	23	110	111	112	24	108	108	110	23	107	108	108	24
5/3	99	99	99	24	110	111	112	23	111	112	113	24	108	109	109	23	107	108	108	24
5/4	99	99	100	24	108	109	111	22	111	112	113	24	108	109	110	22	108	108	109	24
5/5	100	100	101	24	107	108	109	22	111	112	112	24	109	109	110	22	108	109	109	24
5/6	99	99	100	24	108	109	111	20	110	110	110	24	107	107	109	20	109	109	109	24
5/7	99	99	99	24	107	108	108	24	109	109	110	24	108	109	110	24	108	108	109	23
5/8	98	98	99	24	107	107	108	24	108	108	108	24	108	109	110	24	107	107	108	24
5/9	98	98	98	24	109	110	111	23	108	108	109	24	108	108	109	23	108	108	109	24
5/10	98	98	98	24	111	112	112	24	109	109	109	24	108	109	110	24	108	108	109	24
5/11	98	98	99	24	111	111	115	21	110	111	111	24	110	110	111	21	108	108	108	15
5/12	99	99	99	24	112	113	118	24	110	110	111	24	109	110	112	24	108	109	109	20
5/13	99	99	99	24	114	118	119	23	109	109	110	24	109	109	110	23	108	108	108	16
5/14	100	100	100	24	112	114	118	24	109	110	110	24	109	110	112	24	108	108	108	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>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High					
5/1	110	114	117	24	110	111	112	24	111	113	113	24	109	109	110	24	106	107	107	24
5/2	107	108	108	24	110	111	111	24	111	112	112	24	111	111	111	24	108	108	109	24
5/3	108	109	110	24	109	110	110	24	111	111	112	24	111	112	112	24	108	108	109	24
5/4	107	108	109	24	108	109	109	24	110	110	111	24	112	112	113	24	110	111	111	24
5/5	109	109	109	24	108	109	109	24	110	110	111	24	111	112	112	24	109	110	111	24
5/6	108	109	110	24	107	107	107	24	108	108	109	24	109	110	110	24	107	108	108	24
5/7	107	108	109	23	106	107	107	24	108	108	109	24	108	109	109	24	106	107	107	24
5/8	106	107	108	24	107	108	108	24	109	109	110	24	107	108	108	24	106	107	107	24
5/9	107	108	109	24	107	108	108	24	109	110	110	24	108	109	110	24	106	106	107	24
5/10	107	108	109	24	108	109	110	24	110	111	112	24	110	110	110	24	107	107	108	24
5/11	108	108	108	15	109	109	110	24	111	111	111	24	111	111	111	24	108	109	109	24
5/12	107	108	108	20	108	108	108	24	110	110	110	24	110	111	111	24	108	108	108	24
5/13	106	107	107	16	106	107	107	23	108	109	109	23	108	109	109	24	106	107	107	24
5/14	107	107	108	24	107	107	108	24	109	109	110	24	108	109	109	24	106	107	107	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>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High					
5/1	108	109	110	24	110	112	112	24	109	110	111	24	111	111	112	24	111	111	112	24
5/2	110	110	111	24	112	113	113	24	110	111	112	24	112	112	112	24	111	111	112	24
5/3	110	111	111	24	108	113	115	24	110	110	111	24	111	111	112	24	110	111	111	24
5/4	111	112	112	24	109	114	114	24	110	112	112	24	112	113	114	24	111	112	113	24
5/5	110	111	112	24	113	114	117	24	111	111	112	24	113	113	114	24	110	111	112	24
5/6	109	109	110	24	112	113	115	24	111	112	112	24	112	113	113	24	111	112	112	24
5/7	108	108	109	24	108	111	111	24	---	---	---	0	---	---	---	0	---	---	---	0
5/8	107	108	108	24	110	111	115	24	---	---	---	0	---	---	---	0	---	---	---	0
5/9	108	108	109	24	110	111	111	24	---	---	---	0	---	---	---	0	---	---	---	0
5/10	109	110	110	24	112	113	114	24	---	---	---	0	---	---	---	0	---	---	---	0
5/11	110	111	111	24	112	113	114	24	---	---	---	0	---	---	---	0	---	---	---	0
5/12	109	110	110	24	112	113	115	24	---	---	---	0	---	---	---	0	---	---	---	0
5/13	108	108	109	24	112	113	114	24	---	---	---	0	---	---	---	0	---	---	---	0
5/14	108	108	108	24	113	113	114	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>Clrwtr-Peck</u>			#	<u>Anatone</u>			#
	<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High	
	Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg		
5/1	113	113	114	24	108	110	110	24	97	97	98	24	101	102	102	24	103	103	104	24
5/2	113	113	114	24	109	109	110	24	97	98	98	24	102	102	102	24	102	102	102	24
5/3	112	113	113	24	108	109	109	24	96	97	97	24	101	101	101	24	101	102	102	24
5/4	112	113	114	24	108	108	109	24	97	98	98	24	101	102	102	24	102	103	103	24
5/5	112	113	113	24	107	107	108	24	98	98	99	24	101	102	102	24	102	102	102	24
5/6	112	113	114	24	107	109	112	24	98	99	99	24	101	101	102	24	102	103	103	24
5/7	---	---	---	0	107	108	108	24	101	102	103	24	101	102	102	24	102	102	103	24
5/8	---	---	---	0	109	110	111	24	104	107	110	24	102	103	104	24	102	103	104	24
5/9	---	---	---	0	110	112	112	24	106	107	108	24	103	104	104	24	102	103	104	24
5/10	---	---	---	0	111	112	113	24	107	108	109	24	103	104	104	24	102	103	104	24
5/11	---	---	---	0	111	111	112	24	107	108	109	24	103	103	104	24	102	103	104	24
5/12	---	---	---	0	108	109	110	24	105	106	106	24	102	102	103	24	102	102	104	24
5/13	---	---	---	0	107	109	109	24	105	108	113	24	102	104	104	24	102	104	104	24
5/14	---	---	---	0	108	108	108	24	100	101	103	24	101	102	103	24	102	103	103	24

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

Date	<u>Clrwtr-Lewiston</u>			#	<u>Lower Granite</u>			#	<u>L. Granite Tlwr</u>			#	<u>Little Goose</u>			#	<u>L. Goose Tlwr</u>			#
	<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High	
	Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg		
5/1	101	103	104	24	102	103	104	24	109	109	109	24	107	108	108	24	112	113	113	24
5/2	101	101	102	24	104	104	105	24	109	109	110	24	108	109	109	24	113	113	113	24
5/3	100	101	102	24	103	103	103	24	109	109	109	24	108	109	109	24	113	113	113	24
5/4	101	102	104	24	103	103	104	24	110	111	121	24	109	109	110	24	113	114	114	24
5/5	101	101	102	24	102	102	103	24	109	109	109	24	109	109	110	24	113	113	113	24
5/6	100	101	102	24	102	102	102	24	109	109	110	24	108	109	109	24	113	114	114	24
5/7	101	101	102	24	101	101	101	24	108	109	109	24	105	106	106	24	113	113	113	24
5/8	102	103	104	24	101	101	102	24	108	109	109	24	104	104	105	24	112	113	113	24
5/9	102	104	105	24	102	102	102	24	109	109	110	24	104	105	106	24	112	112	113	24
5/10	102	104	105	24	103	104	104	24	109	110	110	24	106	106	107	24	113	113	113	24
5/11	102	103	104	24	104	105	105	24	110	110	110	24	108	108	108	24	112	113	113	24
5/12	101	101	101	24	104	104	105	24	109	110	110	24	107	107	108	24	112	113	113	24
5/13	102	104	106	24	103	103	104	24	109	109	110	24	106	107	108	24	113	113	113	24
5/14	102	103	104	24	102	103	103	24	109	109	109	24	107	107	107	24	112	112	113	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>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High	
	Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg		
5/1	113	114	114	24	115	115	116	24	114	115	116	24	115	115	115	24	---	---	---	0
5/2	114	114	114	24	118	119	120	24	116	116	116	24	116	116	116	24	---	---	---	0
5/3	112	113	113	24	119	119	119	24	115	115	115	24	116	116	117	24	---	---	---	0
5/4	113	113	114	24	116	117	119	24	115	116	116	24	116	117	117	24	---	---	---	0
5/5	113	113	114	24	116	116	117	24	115	116	116	24	115	116	117	24	---	---	---	0
5/6	111	112	112	24	117	118	119	24	113	113	113	24	117	118	120	24	---	---	---	0
5/7	111	111	111	24	118	118	118	24	111	111	112	24	118	120	122	24	---	---	---	0
5/8	110	110	111	24	116	117	118	24	110	111	112	24	117	118	122	24	---	---	---	0
5/9	111	112	112	24	115	116	116	24	113	113	114	24	116	116	116	24	---	---	---	0
5/10	113	113	114	24	115	116	117	24	114	115	115	24	116	116	117	24	---	---	---	0
5/11	113	114	114	24	115	115	116	24	115	115	116	24	115	115	116	24	---	---	---	0
5/12	112	113	113	24	117	118	119	24	113	114	115	24	115	116	117	24	---	---	---	0
5/13	110	110	110	24	117	118	118	24	111	111	112	24	116	116	117	24	---	---	---	0
5/14	110	110	110	24	116	116	118	24	112	112	112	24	115	116	117	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>24 h</u>		<u>12 h</u>		#	<u>24h</u>		<u>12h</u>		#	<u>24h</u>		<u>12h</u>		#
	Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr	
5/1	112	112	113	24	115	116	117	24	111	112	113	24	115	117	117	24	113	113	115	24
5/2	112	112	113	24	115	116	117	24	112	112	113	24	114	115	116	24	114	115	115	24
5/3	112	112	112	24	114	114	116	24	110	111	111	24	114	115	116	24	113	113	114	24
5/4	113	113	114	24	114	115	116	24	111	112	113	24	115	115	115	24	113	114	115	24
5/5	112	112	113	24	114	115	115	24	112	112	113	24	114	114	115	24	113	114	115	24
5/6	111	111	112	24	115	116	116	24	111	111	112	24	115	115	116	24	112	112	112	24
5/7	108	109	110	24	115	115	117	24	109	109	110	24	116	116	117	24	110	111	112	24
5/8	107	108	110	24	114	115	116	24	108	108	108	24	115	116	117	24	111	112	113	24
5/9	110	112	115	24	115	115	116	24	109	109	109	24	115	115	115	24	113	113	114	24
5/10	113	114	115	24	115	116	116	24	110	110	111	24	115	115	115	24	112	112	113	24
5/11	113	113	113	24	115	116	116	24	109	110	110	24	116	116	117	24	111	112	112	24
5/12	110	112	113	24	115	116	116	24	108	108	109	24	116	117	117	24	110	111	111	24
5/13	107	108	108	24	115	116	117	24	108	109	110	24	115	115	116	24	111	112	113	24
5/14	108	108	108	24	115	116	117	24	108	109	109	24	114	115	115	24	111	112	113	24

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

Date	<u>The Dalles Dnst</u>				<u>Bonneville</u>				<u>Warrendale</u>				<u>Camas\Washougal</u>				<u>Cascade Island</u>			
	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24h</u>		<u>12h</u>		#	<u>24h</u>		<u>12h</u>		#
	Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr	
5/1	117	117	118	24	115	116	116	24	---	---	---	0	113	114	115	24	118	119	119	24
5/2	117	117	118	24	116	116	116	24	---	---	---	0	114	114	115	24	118	118	119	24
5/3	115	116	116	24	115	115	115	24	---	---	---	0	115	116	117	24	118	118	119	24
5/4	116	117	117	24	115	115	115	24	---	---	---	0	114	115	116	24	117	117	118	24
5/5	116	116	116	24	113	113	114	24	---	---	---	0	112	113	113	24	117	118	118	24
5/6	116	116	117	24	113	113	113	24	---	---	---	0	113	114	114	24	118	119	119	24
5/7	115	116	116	24	112	112	113	24	---	---	---	0	112	113	114	24	119	119	120	24
5/8	116	117	117	24	113	113	114	24	---	---	---	0	114	115	116	24	119	120	120	24
5/9	117	117	118	24	114	115	116	24	---	---	---	0	115	116	117	24	118	119	119	24
5/10	116	116	117	24	116	117	117	24	---	---	---	0	116	117	118	24	118	118	119	24
5/11	115	116	116	24	115	116	117	24	---	---	---	0	116	116	116	24	117	118	118	24
5/12	115	115	116	24	111	112	113	24	---	---	---	0	112	112	113	24	117	118	118	24
5/13	116	117	117	24	111	112	114	24	---	---	---	0	112	112	113	24	118	119	119	24
5/14	116	117	118	24	113	114	114	24	---	---	---	0	112	113	114	24	118	119	119	24

Two-Week Summary of Passage Indices

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)
05/01/2009 *	91	146	419	75	62,703	70,657	121	203	34,390	23,716	21,919
05/02/2009 *	32	112	325	57	36,195	72,046	161	144	---	16,807	19,258
05/03/2009 *	33	72	355	35	63,624	75,912	461	122	64,776	14,944	24,094
05/04/2009 *	30	85	510	78	87,489	78,166	789	119	---	11,752	14,121
05/05/2009 *	9	62	462	123	89,343	79,313	562	98	87,868	10,863	12,681
05/06/2009 *	39	47	604	724	104,134	100,257	339	115	---	18,262	19,702
05/07/2009 *	49	0	419	1,348	105,266	80,116	410	104	155,507	34,907	22,561
05/08/2009 *	25	---	375	639	91,852	90,708	9,083	175	---	30,454	35,994
05/09/2009	18	39	246	683	90,551	57,017	26,566	318	125,605	22,799	30,095
05/10/2009 *	13	35	238	466	55,642	40,633	22,419	343	---	24,589	38,598
05/11/2009	8	32	300	129	32,948	33,012	13,304	187	150,252	17,285	33,936
05/12/2009 *	7	37	468	146	77,089	50,156	9,370	315	---	15,876	42,513
05/13/2009	33	99	496	122	---	47,178	16,886	358	213,150	21,180	47,858
05/14/2009 *	23	---	305	232	156,651	30,463	24,212	340	---	21,022	40,146
<b>Total:</b>	<b>410</b>	<b>766</b>	<b>5,522</b>	<b>4,857</b>	<b>1,053,487</b>	<b>905,634</b>	<b>124,683</b>	<b>2,941</b>	<b>831,548</b>	<b>284,456</b>	<b>403,476</b>
<b># Days:</b>	<b>14</b>	<b>12</b>	<b>14</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>	<b>29</b>	<b>64</b>	<b>394</b>	<b>347</b>	<b>81,037</b>	<b>64,688</b>	<b>8,906</b>	<b>210</b>	<b>118,793</b>	<b>20,318</b>	<b>28,820</b>
<b>YTD</b>	<b>37,611</b>	<b>44,095</b>	<b>17,491</b>	<b>24,620</b>	<b>2,254,163</b>	<b>1,610,009</b>	<b>132,902</b>	<b>4,695</b>	<b>1,212,413</b>	<b>487,030</b>	<b>830,991</b>

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)
05/01/2009 *	0	0	0	1	4,306	290	0	5	85	0	1,241
05/02/2009 *	0	0	0	2	1,361	286	0	3	---	0	35,227
05/03/2009 *	0	0	0	0	275	4	0	0	84	67	390,742
05/04/2009 *	0	0	0	0	849	0	0	1	---	234	129,440
05/05/2009 *	0	0	0	5	0	0	0	3	2	0	35,151
05/06/2009 *	0	0	0	1	0	0	0	1	---	42	14,977
05/07/2009 *	0	0	0	0	0	0	0	4	338	0	14,767
05/08/2009 *	0	---	0	1	0	286	0	1	---	0	11,340
05/09/2009	0	0	0	0	248	286	0	3	0	0	5,110
05/10/2009 *	0	0	0	0	0	0	49	4	---	0	2,719
05/11/2009	0	0	1	2	0	0	0	2	1,186	0	2,516
05/12/2009 *	0	0	0	4	271	1	0	1	---	112	2,655
05/13/2009	0	1	0	6	---	0	0	11	0	0	4,779
05/14/2009 *	0	---	0	6	0	0	0	1	---	0	6,822
<b>Total:</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>28</b>	<b>7,310</b>	<b>1,153</b>	<b>49</b>	<b>40</b>	<b>1,695</b>	<b>455</b>	<b>657,486</b>
<b># Days:</b>	<b>14</b>	<b>12</b>	<b>14</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>562</b>	<b>82</b>	<b>4</b>	<b>3</b>	<b>242</b>	<b>33</b>	<b>46,963</b>
<b>YTD</b>	<b>0</b>	<b>7</b>	<b>14</b>	<b>277</b>	<b>25,761</b>	<b>6,943</b>	<b>49</b>	<b>271</b>	<b>2,270</b>	<b>661</b>	<b>1,938,141</b>

Two-Week Summary of Passage Indices

COMBINED COHO											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
05/01/2009 *	0	0	0	1	807	579	0	18	255	577	2,218
05/02/2009 *	0	0	0	0	0	286	0	32	---	167	2,185
05/03/2009 *	0	0	0	3	275	286	2	24	253	200	3,143
05/04/2009 *	0	0	0	2	283	286	2	20	---	67	1,344
05/05/2009 *	0	0	0	2	0	287	2	19	424	167	1,750
05/06/2009 *	0	0	0	4	510	286	0	30	---	371	1,602
05/07/2009 *	0	0	0	8	738	0	4	20	847	836	3,514
05/08/2009 *	0	---	0	8	495	572	1	33	---	335	6,142
05/09/2009	0	0	0	7	248	0	231	53	1,019	830	7,057
05/10/2009 *	0	0	0	3	256	286	0	60	---	1,095	7,714
05/11/2009	0	0	0	0	1,063	431	175	54	2,394	1,252	4,228
05/12/2009 *	0	0	0	1	1,086	719	163	182	---	2,841	6,429
05/13/2009	0	0	0	1	---	286	215	180	3,377	3,715	8,688
05/14/2009 *	0	---	0	24	1,050	286	76	289	---	3,949	8,528
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>64</b>	<b>6,811</b>	<b>4,590</b>	<b>871</b>	<b>1,014</b>	<b>8,569</b>	<b>16,402</b>	<b>64,542</b>
<b># Days:</b>	<b>14</b>	<b>12</b>	<b>14</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>524</b>	<b>328</b>	<b>62</b>	<b>72</b>	<b>1,224</b>	<b>1,172</b>	<b>4,610</b>
<b>YTD</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>126</b>	<b>10,695</b>	<b>6,940</b>	<b>874</b>	<b>1,160</b>	<b>15,656</b>	<b>21,365</b>	<b>129,320</b>

COMBINED STEELHEAD											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
05/01/2009 *	89	459	384	86	76,428	79,634	273	105	66,939	21,914	4,436
05/02/2009 *	57	309	197	142	49,258	50,888	388	97	---	20,654	7,489
05/03/2009 *	89	242	157	127	54,259	63,018	704	85	57,259	29,486	23,397
05/04/2009 *	100	417	291	149	44,452	55,832	337	102	---	15,468	26,561
05/05/2009 *	106	385	224	388	58,971	47,683	505	173	49,549	17,548	3,858
05/06/2009 *	179	588	323	560	81,163	57,004	561	166	---	24,562	18,474
05/07/2009 *	37	0	230	604	84,115	69,320	158	211	109,286	50,848	22,051
05/08/2009 *	37	---	328	432	157,213	48,640	8,513	381	---	40,493	30,515
05/09/2009	43	333	166	269	147,115	59,592	52,443	350	61,991	60,928	45,265
05/10/2009 *	33	401	183	124	134,873	59,236	47,547	293	---	44,877	28,581
05/11/2009	27	474	119	51	115,584	33,298	30,459	301	38,695	42,563	48,187
05/12/2009 *	22	930	132	147	164,848	54,394	27,051	455	---	33,480	41,142
05/13/2009	36	1,072	212	208	---	52,037	23,183	562	27,220	31,355	31,746
05/14/2009 *	47	---	120	387	53,266	31,173	19,491	682	---	23,546	9,184
<b>Total:</b>	<b>902</b>	<b>5,610</b>	<b>3,066</b>	<b>3,674</b>	<b>1,221,545</b>	<b>761,749</b>	<b>211,613</b>	<b>3,963</b>	<b>410,939</b>	<b>457,722</b>	<b>340,886</b>
<b># Days:</b>	<b>14</b>	<b>12</b>	<b>14</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>	<b>64</b>	<b>468</b>	<b>219</b>	<b>262</b>	<b>93,965</b>	<b>54,411</b>	<b>15,115</b>	<b>283</b>	<b>58,706</b>	<b>32,694</b>	<b>24,349</b>
<b>YTD</b>	<b>1,762</b>	<b>14,963</b>	<b>8,440</b>	<b>7,402</b>	<b>3,393,399</b>	<b>2,566,355</b>	<b>216,918</b>	<b>4,443</b>	<b>607,376</b>	<b>628,541</b>	<b>405,836</b>



## 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)
05/01/2009 *	0	0	0	0	538	0	0	30	3,738	360	88
05/02/2009 *	0	0	0	0	544	572	2	23	---	84	0
05/03/2009 *	0	0	0	0	275	0	2	25	6,842	0	350
05/04/2009 *	0	0	0	0	566	573	2	10	---	0	0
05/05/2009 *	0	0	0	0	262	861	0	36	6,358	167	0
05/06/2009 *	0	0	0	1	255	573	0	80	---	718	160
05/07/2009 *	0	0	0	0	246	1,420	4	22	8,119	1,758	0
05/08/2009 *	0	---	0	0	248	1,431	1	86	---	2,008	567
05/09/2009	0	0	0	0	248	286	232	75	6,771	3,984	569
05/10/2009 *	0	0	0	2	256	1	528	95	---	3,260	721
05/11/2009	2	0	0	1	266	145	0	57	3,063	2,167	662
05/12/2009 *	52	0	0	0	271	719	0	47	---	1,783	2,058
05/13/2009	49	0	0	8	---	0	143	30	4,902	3,655	1,474
05/14/2009 *	17	---	0	81	0	143	76	60	---	1,912	394
<b>Total:</b>	<b>120</b>	<b>0</b>	<b>0</b>	<b>93</b>	<b>3,975</b>	<b>6,724</b>	<b>990</b>	<b>676</b>	<b>39,793</b>	<b>21,856</b>	<b>7,043</b>
<b># Days:</b>	<b>14</b>	<b>12</b>	<b>14</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>306</b>	<b>480</b>	<b>71</b>	<b>48</b>	<b>5,685</b>	<b>1,561</b>	<b>503</b>
<b>YTD</b>	<b>154</b>	<b>0</b>	<b>0</b>	<b>93</b>	<b>14,495</b>	<b>13,076</b>	<b>1,166</b>	<b>856</b>	<b>51,826</b>	<b>24,804</b>	<b>8,030</b>

\* 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: 5/15/09 10:57 AM

05/01/09 TO 05/15/09

		Species					
Site	Data	CH0	CH1	CO	ST	SO	Grand Total
<b>LGR</b>	Sum of NumberCollected	5,400	808,263	5,200	940,737	3,000	1,762,600
	Sum of NumberBarged	3,079	703,539	4,762	891,214	2,668	1,605,262
	Sum of NumberBypassed	2,301	103,116	433	49,387	285	155,522
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	22	0	9	0	31
	Sum of FacilityMorts	20	1,147	5	121	47	1,340
	Sum of ResearchMorts	0	569	0	6	0	575
	Sum of TotalProjectMorts	20	1,738	5	136	47	1,946
<b>LGS</b>	Sum of NumberCollected	804	632,311	3,200	531,697	4,702	1,172,714
	Sum of NumberBarged	398	369,600	2,000	324,347	3,300	699,645
	Sum of NumberBypassed	402	262,563	1,200	207,299	1,400	472,864
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	6	0	1	0	7
	Sum of FacilityMorts	4	139	0	50	2	195
	Sum of ResearchMorts	0	3	0	0	0	3
	Sum of TotalProjectMorts	4	148	0	51	2	205
<b>LMN</b>	Sum of NumberCollected	30	68,351	406	117,480	528	186,795
	Sum of NumberBarged	30	65,765	397	114,235	517	180,944
	Sum of NumberBypassed	0	2,545	7	3,191	7	5,750
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	2	0	2	0	4
	Sum of FacilityMorts	0	35	2	49	2	88
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	0	37	2	51	2	92
<b>MCN</b>	Sum of NumberCollected	1,001	491,499	5,066	242,736	23,513	763,815
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	1,000	491,036	5,050	242,656	23,500	763,242
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	39	0	4	0	43
	Sum of FacilityMorts	1	417	16	75	13	522
	Sum of ResearchMorts	0	7	0	1	0	8
	Sum of TotalProjectMorts	1	463	16	80	13	573
Total Sum of NumberCollected		7,235	2,000,424	13,872	1,832,650	31,743	3,885,924
Total Sum of NumberBarged		3,507	1,138,904	7,159	1,329,796	6,485	2,485,851
Total Sum of NumberBypassed		3,703	859,260	6,690	502,533	25,192	1,397,378
Total Sum of Numbertrucked		0	0	0	0	0	0
Total Sum of SampleMorts		0	69	0	16	0	85
Total Sum of FacilityMorts		25	1,738	23	295	64	2,145
Total Sum of ResearchMorts		0	579	0	7	0	586
Total Sum of TotalProjectMorts		25	2,386	23	318	64	2,816

### YTD Transportation Summary

Source: Fish Passage Center

Updated: 5/15/09 10:57 AM

TO: 05/15/09

		Species					
Site	Data	CH0	CH1	CO	SO	ST	Grand Total
<b>LGR</b>	Sum of NumberCollected	19,490	1,617,995	7,050	10,810	2,584,170	4,239,515
	Sum of NumberBarged	4,421	796,132	5,094	3,679	1,009,918	1,819,244
	Sum of NumberBypassed	15,038	820,096	1,948	7,038	1,574,089	2,418,209
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	11	75	0	17	16	119
	Sum of FacilityMorts	20	1,253	8	76	141	1,498
	Sum of ResearchMorts	0	569	0	0	6	575
	Sum of TotalProjectMorts	31	1,897	8	93	163	2,192
<b>LGS</b>	Sum of NumberCollected	4,844	1,121,387	4,825	9,136	1,784,175	2,924,367
	Sum of NumberBarged	398	369,600	2,000	3,300	324,347	699,645
	Sum of NumberBypassed	4,442	716,382	2,825	5,426	1,307,545	2,036,620
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	31	0	3	6	40
	Sum of FacilityMorts	4	170	0	7	77	258
	Sum of ResearchMorts	0	4	0	0	0	4
	Sum of TotalProjectMorts	4	205	0	10	83	302
<b>LMN</b>	Sum of NumberCollected	30	73,951	408	639	121,191	196,219
	Sum of NumberBarged	30	65,765	397	517	114,235	180,944
	Sum of NumberBypassed	0	8,105	9	114	6,890	15,118
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	9	0	2	3	14
	Sum of FacilityMorts	0	35	2	2	49	88
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	0	44	2	4	52	102
<b>MCN</b>	Sum of NumberCollected	1,246	584,948	7,213	25,109	342,068	960,584
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	1,243	584,430	7,195	25,094	341,959	959,921
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	1	62	0	1	7	71
	Sum of FacilityMorts	1	436	18	14	99	568
	Sum of ResearchMorts	1	20	0	0	3	24
	Sum of TotalProjectMorts	3	518	18	15	109	663
Total Sum of NumberCollected		25,610	3,398,281	19,496	45,694	4,831,604	8,320,685
Total Sum of NumberBarged		4,849	1,231,497	7,491	7,496	1,448,500	2,699,833
Total Sum of NumberBypassed		20,723	2,129,013	11,977	37,672	3,230,483	5,429,868
Total Sum of NumberTrucked		0	0	0	0	0	0
Total Sum of SampleMorts		12	177	0	23	32	244
Total Sum of FacilityMorts		25	1,894	28	99	366	2,412
Total Sum of ResearchMorts		1	593	0	0	9	603
Total Sum of TotalProjectMorts		38	2,664	28	122	407	3,259

Cumulative Adult Passage at Mainstem Dams Through: 05/14

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	05/14	77251	33481	95819	8557	137520	7154	0	0	0	0	0	0	0	0	0	0	0	0
TDA	05/14	52406	22921	64670	5682	91486	4583	0	0	0	0	0	0	0	0	0	0	0	0
JDA	05/14	40991	19298	47339	3757	72971	3342	0	0	0	0	0	0	0	0	0	0	0	0
MCN	05/14	30526	11547	32705	2346	62273	2602	0	0	0	0	0	0	0	0	0	0	0	0
IHR	05/14	21936	6268	23172	1235	39326	1426	0	0	0	0	0	0	0	0	0	0	0	0
LMN	05/14	18410	2684	17990	754	35582	1108	0	0	0	0	0	0	0	0	0	0	0	0
LGS	05/14	11609	2034	14212	527	32065	973	0	0	0	0	0	0	0	0	0	0	0	0
LGR	05/14	9033	1612	11442	432	30360	879	0	0	0	0	0	0	0	0	0	0	0	0
PRD	05/12	2019	173	3707	70	11541	45	0	0	0	0	0	0	0	0	0	0	0	0
RIS	05/13	1139	135	2627	13	6931	88	0	0	0	0	0	0	0	0	0	0	0	0
RRH	05/13	255	19	471	1	2244	6	0	0	0	0	0	0	0	0	0	0	0	0
WEL	05/13	4	0	73	1	894	1	0	0	0	0	0	0	0	0	0	0	0	0
WFA	05/12	6214	134	2720	18	-	-	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	0	0	0	2891	2461	2804	821
TDA	0	0	0	0	0	0	0	0	0	1095	1251	1043	464
JDA	0	0	0	0	0	0	0	0	0	2790	2797	2683	1665
MCN	0	0	0	0	0	0	0	0	0	2319	2287	1698	1083
IHR	0	0	0	0	0	0	1	0	0	3064	3157	2012	1069
LMN	0	0	0	0	0	0	0	0	0	4633	3971	2145	2194
LGS	0	0	0	0	0	0	0	0	0	5273	2539	2211	2127
LGR	0	0	0	0	0	0	0	0	0	10668	7651	7716	3291
PRD	0	0	0	0	0	0	0	0	0	34	54	6	0
RIS	0	0	0	0	0	0	0	0	0	76	194	48	38
RRH	0	0	0	0	0	0	0	0	0	361	372	151	169
WEL	0	0	0	0	0	0	0	0	0	39	62	26	22
WFA	0	0	0	0	-	-	0	0	-	5111	7350	-	-

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: 03/27/09

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