



Fish Passage Center

Weekly Report #09 - 01

March 13, 2009

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Summary of Events:

Water Supply: Precipitation throughout the Columbia Basin has varied between 84% and 237% of average at individual sub-basins over the beginning of March. Precipitation above The Dalles has been 138% of average over March. Over the entire water year, precipitation has generally been near average.

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

Location	Water Year 2009 March 1-9		Water Year 2009 October 1, 2008 to March 9 2009	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	0.70	134	12.12	93
Snake River Above Ice Harbor	0.59	124	9.29	102
Columbia Above The Dalles	0.77	138	12.44	96
Kootenai	0.79	153	11.75	88
Clark Fork	0.39	111	9.25	114
Flathead	0.58	122	10.48	95
Pend Oreille/ Spokane	1.28	159	16.48	90
Central Washington	0.57	237	4.80	90
Snake River Plain	0.28	84	5.03	95
Salmon/Boise/ Payette	0.87	155	9.63	85
Clearwater	1.01	124	18.31	110
SW Washington Cascades/ Cowlitz	1.87	91	41.18	85
Willamette Valley	1.91	103	32.11	79

Snowpack within the Columbia Basin has generally been below average. Average snowpack in

the Columbia River for basins above the Snake River confluence is 80% of average, for Snake River Basins the average snowpack is 83% of average, and for lower Columbia Basins between McNary and Bonneville Dam average snowpack is 100% of average.

Table 2 displays the February Final and March Final runoff volume forecasts for multiple reservoirs. In most cases, Water Supply Forecasts have decreased between the February Final and March Final forecasts. The current forecast at The Dalles between January and July is 86200 Kaf (80% of average).

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

Location	February Final		March Final	
	% Average (1971- 2000)	Probable Runoff Volume (Kaf)	% Average (1971- 2000)	Probable Runoff Volume (Kaf)
The Dalles (Jan-July)	87	92900	80	86200
Grand Coulee (Jan-July)	91	57000	87	54900
Libby Res. Inflow, MT (Apr-Aug)	84 86*	5250 5436*	84 84*	5250 5296*
Hungry Horse Res. Inflow, MT (Jan-July)	94	2100	90	2010
Lower Granite Res. Inflow (Apr- July)	84	18000	75	16200
Brownlee Res. Inflow (Apr-July)	64	4020	53	3350
Dworshak Res. Inflow (Apr-July)	94 100*	2480 2681*	82 92*	2170 2461*

* Denotes COE Forecast

Grand Coulee Reservoir is at 1284.1 feet (3-12-09) and has refilled 0.3 feet in the last week. At the March 11, 2009 TMT Meeting the Salmon Managers and the Action agencies agreed to a DWR/GCL shift. This shift will effectively reduce Dworshak Dams flood control (FC) liability (reservoir will be operated higher than normal FC) and increase Grand Coulees FC liability (reservoir will be operated lower than normal FC). The end of March shifted FC elevation is 1281.6 feet at Grand Coulee. Outflows at Grand Coulee have ranged between 41.1 and 90.8 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2405.0 feet (3-12-09) and drafted 0.6 feet last week. The end of March VarQ FC elevation at Libby is 2442.6 feet, therefore Libby is currently 37.6 feet below the end of March VarQ FC elevation at Libby. Outflows at Libby have been 4.0 Kcfs.

Hungry Horse is currently at an elevation of 3511.2 ft (3-12-09) and has drafted 1.3 feet last week. Outflows at Hungry Horse have been 2.9-3.1 Kcfs last week; Hungry Horse has been operating to Columbia Falls Minimum outflows. Hungry Horse's end of March VarQ FC elevation is 3539.5 feet, therefore Hungry Horse is currently 28.3 feet below the end of March VarQ FC elevation at Hungry Horse.

Dworshak is currently at an elevation of 1530.0 feet (3-12-09) and drafted 2.1 feet last week; outflows at Dworshak are 1.6 Kcfs. As stated previously, there will be a DWR/GCL shift in 2009. The end of March Shifted FC elevation is 1542.7 feet at Dworshak.

The Brownlee Reservoir was at an elevation of 2052.0 feet on March 12th, 2009, drafting 3.6 feet last week. The end of March FC elevation is 2074.6 feet at Brownlee Dam, therefore Brownlee is currently 22.6 feet below its end of March FC elevation. Outflows at Brownlee Dam have been 12.3 to 20.1 Kcfs over the last week.

Smolt Monitoring:

Smolt monitoring activities began at Bonneville Dam and the Grande Ronde Trap. On March 3 the first sample of the year was worked up at Bonneville juvenile bypass. The primary fish in these early season batches were clipped yearling Chinook released from Klickitat Hatchery in late February. In addition to the hatchery Chinook, the site also reported collecting Chinook and Coho fry as well as a few steelhead smolts.

The Grande Ronde Trap, operated by the Oregon Department of Fish and Wildlife, located at river mile two in the Grande Ronde River, began

sampling March 10. Small numbers of juvenile salmonids have been captured at the Grande Ronde Trap in the first few days of sampling.

In the next few weeks more SMP sites will begin reporting data. Lower Granite Dam will begin sampling March 26 and other SMP traps will also begin marking towards the end of March. By the first week of April all SMP sites will be sampling. Sampling will occur every day at Little Goose and Lower Monumental dams beginning April 1 in 2009 unlike in other recent years when daily sampling began when transportation started in late April or early May.

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 releases of approximately 550,000 coho juveniles to the Clearwater River from Eagle Creek NFH took place on March 2nd and 4th.

There are several scheduled releases of yearling spring Chinook to this zone over the next two weeks. In all, these releases will total about 6.8 million spring Chinook juveniles. Of these, approximately 40.3% will be released to the Little Salmon River from Rapid River Hatchery, 24.3% will be released to the middle fork of the Clearwater River from Dworshak NFH and Kooskia NFH, and 27.6% will be released to the south fork of the Clearwater River from Clearwater Hatchery. The remaining 7.8% are scheduled for release into the Selway (6%) and Wallowa rivers (1.8%). In addition to the spring Chinook, approximately 1.2 million summer Chinook juveniles are scheduled for release into the Salmon River from McCall Hatchery, beginning March 16th. Finally, about 1.13 million summer steelhead are scheduled for release into the Snake River Zone over the next two weeks. Of these, 91.1% are scheduled for release into the Snake River, below Hells Canyon Dam, and 8.9% are scheduled for release into the Salmon River and its tributaries.

Mid-Columbia Zone: The Mid-Columbia Zone encompasses the area of the Columbia River and its tributaries from McNary Dam to Chief Joseph Dam. Volitional releases of approximately 772,000 spring Chinook juveniles from Cle Elem Hatchery begin on March 16th. The volitional releases from Cle Elem Hatchery are expected to run through mid-May.

Lower Columbia Zone: The Lower Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to McNary Dam. The volitional

release of 460,000 yearling spring Chinook from Imeqes Acclimation Pond began on March 1st. A volitional release of 570,000 yearling spring Chinook is scheduled to begin on March 20th. Two volitional releases of subyearling Chinook from acclimation facilities on the Umatilla River began on March 1st and will end on March 31st. In all, 480,000 subyearling Chinook will be released during these volitional releases. Finally, the volitional release of 1.5 million coho to the Umatilla River is scheduled to begin March 15th.

Adult Fish Passage:

Historically counts began at Bonneville Dam on March 15th. Using the historical counting schedule allows comparison of current year counts with historical data. We use the historical counting schedule to generate our online Annual Adult Comparison table and our Adult Salmon Passage Graph. Both the comparison table and the graph include the 10 year average counts. The graph and table will be available on the web on March 16th.

The Lower Granite Dam historical counting schedule starts on March 1st. Lower Granite Dam uses video counts from March 1st through March 31st. Bonneville Dam uses video counts from January 1st through March 31st. Video counts are used during the winter months for counting adults. Video counts can cause a delay in posting the data to the web, because the COE staff at the projects have to review the tapes. Willamette Falls Dam also uses video counts and reports adult counts year round. We collect the adult count data from these projects throughout the day, continuously updating our Adult Dam Count report linked on our homepage (www.fpc.org). The following paragraphs describe the winter counts for 2009 and compares them with 2008 counts.

Many steelhead and a few spring Chinook have been counted at Bonneville Dam this year. In the winter months steelhead begin to move through the hydro system to reach their tributaries and spawning sites. The majority of steelhead over-winter in pools and will complete their spawning trip in March through early May. At Bonneville Dam, the total steelhead count from Jan 1st through March 10th was 304. In 2008, for the same date range, the Bonneville steelhead count was 456. So far, this year's Bonneville steelhead count is only about 66.7% of the 2008 count (includes hatchery and wild fish). The 2009 wild steelhead count of 104 is 46% of the 2008 count of 226. At Lower

Granite Dam the steelhead count was 379, as of 3/7/09. This year's Lower Granite steelhead count is only 40.4% of the 2008 count of 937. At Willamette Falls Dam, the 2009 count for steelhead was 1359, as of March 10th. This year's steelhead count is only about 66.1% of the 2008 count of 2,055 at Willamette Falls Dam for the same date range.

This year, the first spring Chinook was counted at Bonneville Dam on March 2nd going upstream. In January, 4 Chinook adults were counted moving downstream past Bonneville Dam. As of March 10th, 13 spring Chinook adults had been counted at Bonneville Dam. In 2008, as of March 10th, 20 spring Chinook had crossed Bonneville Dam. One spring Chinook has passed Willamette Falls Dam so far this year.

Based on estimates made by the Technical Advisory Committee (TAC) for US v. Oregon this winter, the upriver Spring Chinook run for 2009 is expected to be 298,900. In 2008, the TAC forecasted 269,300 upriver Spring Chinook would return. On January 28, 2009, the TAC reported that 178,600 upriver Spring Chinook had returned to the river in 2008 (TAC, 2009).

An SOR was submitted by ODFW and WDFW on 3/11/09 requesting that the B2 corner collector at Bonneville Dam be opened, primarily for kelt passage. This SOR was discussed at the March 11th TMT meeting. A decision has not been made on whether to open the corner collector. This matter will be discussed again at the 3/18/09 TMT meeting.

In a local news article posted on KGW.com by Teresa Blackman on 3/12/09, it was reported that several sea lions have been trapped to protect endangered salmon and steelhead. One sea lion was euthanized. The sea lion was initially to be transferred to a zoo, but the sea lion was found to have a potentially contagious lesion during a health exam. A state veterinarian decided to euthanize the animal.

US v. Oregon Technical Advisory Committee (TAC). Columbia River Salmon and Steelhead – 2009 Forecasts: Spring Chinook, Summer Chinook and Sockeye, January 28, 2009. Oregon and Washington Departments of Fish and Wildlife, Vancouver, WA. Available at http://wdfw.wa.gov/fish/forecasts/salmon/salmon_columbia09.htm

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
02/27/2009	53.9	0.0	53.0	0.0	49.8	0.0	48.0	0.0	47.6	0.0	81.6	0.0	80.6	0.0
02/28/2009	48.4	0.0	49.0	0.0	51.9	0.0	52.5	0.0	53.5	0.0	64.7	0.0	63.3	0.0
03/01/2009	48.4	0.0	51.5	0.0	56.5	0.0	58.3	0.0	59.5	0.0	63.7	0.0	62.9	0.0
03/02/2009	69.9	0.0	65.4	0.0	68.1	0.0	64.4	0.0	64.5	0.0	61.0	0.0	62.7	0.0
03/03/2009	64.9	0.0	64.7	0.0	59.5	0.0	58.4	0.4	57.4	0.0	57.4	0.0	61.9	0.0
03/04/2009	50.4	0.0	59.1	0.0	61.1	0.0	61.2	0.9	62.7	0.0	65.1	0.0	62.0	0.0
03/05/2009	68.6	0.0	62.1	0.0	67.6	0.0	65.5	0.0	65.0	0.0	65.9	0.0	61.8	0.0
03/06/2009	67.0	0.0	65.5	0.0	69.2	0.0	75.1	0.0	76.6	0.0	75.2	0.0	66.8	0.0
03/07/2009	41.8	0.0	40.6	0.0	39.8	0.0	35.4	0.0	37.7	0.0	61.1	0.0	61.9	0.0
03/08/2009	41.1	0.0	38.8	0.0	49.7	0.0	54.4	0.0	54.6	0.0	69.2	0.0	61.5	0.0
03/09/2009	90.8	0.0	93.4	0.0	88.2	0.0	81.2	0.0	81.3	0.0	54.2	0.0	62.3	0.0
03/10/2009	85.4	0.0	88.7	0.0	93.6	0.0	90.7	0.0	90.7	0.0	69.9	0.0	62.0	0.0
03/11/2009	64.3	0.0	64.6	0.0	66.7	0.0	68.7	0.0	73.3	0.0	72.7	0.0	68.9	0.0
03/12/2009	64.3	0.0	60.8	0.0	57.2	0.0	52.3	0.0	53.9	0.0	65.8	0.0	68.8	0.0

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

Date	Dworshak		Brownlee Canyon		Hells Granite		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
02/27/2009	4.8	0.0	14.6	12.7	36.9	0.0	36.5	0.0	40.7	0.0	36.6	0.0	36.6	0.0
02/28/2009	4.8	0.0	12.6	11.2	34.0	0.0	31.9	0.0	35.2	0.0	33.3	0.0	33.3	0.0
03/01/2009	4.2	0.0	12.3	9.0	33.8	0.0	33.2	0.0	36.9	0.0	37.7	0.0	37.7	0.0
03/02/2009	2.3	0.0	13.1	12.7	27.4	0.0	29.8	0.0	32.9	0.0	32.7	0.0	32.7	0.0
03/03/2009	1.6	0.0	15.5	13.7	42.7	0.0	39.4	0.0	43.3	0.0	43.7	0.0	43.7	0.0
03/04/2009	1.6	0.0	18.7	17.0	50.0	0.0	50.5	0.0	54.2	0.0	54.2	0.0	54.2	0.0
03/05/2009	1.6	0.0	16.5	18.4	34.7	0.0	39.1	0.0	46.0	0.0	48.4	0.0	48.4	0.0
03/06/2009	1.6	0.0	15.6	16.4	45.8	0.0	37.9	0.0	40.0	0.0	40.9	0.0	40.9	0.0
03/07/2009	1.6	0.0	15.0	19.6	38.8	0.0	37.3	0.0	39.6	0.0	38.5	0.0	38.5	0.0
03/08/2009	1.6	0.0	13.2	12.9	35.0	0.0	35.0	0.0	36.7	0.0	37.3	0.0	37.3	0.0
03/09/2009	1.6	0.0	13.3	16.6	33.8	0.0	32.6	0.0	36.0	0.0	37.8	0.0	37.8	0.0
03/10/2009	1.6	0.0	13.1	20.6	32.5	0.0	30.6	0.0	31.5	0.0	31.8	0.0	31.8	0.0
03/11/2009	1.6	0.0	12.2	18.2	38.2	0.0	36.2	0.5	39.5	0.0	39.5	0.0	39.5	0.0
03/12/2009	1.6	0.0	---	---	35.4	0.0	35.4	0.0	37.4	0.0	36.8	0.0	36.8	0.0

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

Date	McNary		John Day		The Dalles		Bonneville			
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
02/27/2009	139.5	0.0	140.3	0.0	140.6	0.0	156.5	0.6	54.7	97.0
02/28/2009	103.1	0.0	107.7	0.0	110.1	0.0	136.4	0.7	48.9	81.4
03/01/2009	104.1	0.0	110.2	0.0	112.9	0.0	125.1	1.2	20.6	96.5
03/02/2009	102.6	0.0	108.8	0.0	112.0	0.0	124.8	1.3	21.7	95.4
03/03/2009	105.0	0.0	107.9	0.0	108.6	0.0	118.4	1.3	13.8	96.9
03/04/2009	118.1	0.0	119.4	0.0	124.7	0.0	136.6	1.3	27.3	100.8
03/05/2009	118.3	0.0	120.7	0.0	118.1	0.0	128.5	1.3	19.7	101.0
03/06/2009	110.4	0.0	130.0	0.0	134.4	0.0	157.8	1.3	41.7	108.4
03/07/2009	106.5	0.0	100.6	0.0	102.9	0.0	114.2	1.4	7.2	99.6
03/08/2009	108.3	0.0	114.1	0.0	113.4	0.0	119.0	1.4	8.6	103.0
03/09/2009	100.8	0.0	106.9	0.0	108.4	0.0	121.7	1.3	17.1	97.3
03/10/2009	101.2	0.0	108.1	0.0	110.6	0.0	122.5	1.3	18.7	96.4
03/11/2009	107.4	0.0	108.5	0.0	111.1	0.0	125.0	1.4	49.8	67.8
03/12/2009	108.3	0.0	119.1	0.0	117.9	0.0	127.1	1.8	49.8	69.6

Hatchery Releases Last Two Weeks

Hatchery Release Summary

From: 2/27/2009 to 03/12/09

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Nez Perce Tribe	Eagle Creek NFH	CO	UN	2009	275,000	03-02-09	03-02-09	Clear Creek	Clearwater River M F
Nez Perce Tribe	Eagle Creek NFH	CO	UN	2009	275,000	03-04-09	03-04-09	Lapwai Creek	Clearwater River M F
Nez Perce Tribe Total					550,000				
Umatilla Tribe	Bonneville Hatchery	CH0	FA	2009	240,000	03-01-09	03-31-09	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Bonneville Hatchery	CH0	FA	2009	240,000	03-01-09	03-31-09	Thornhollow Acclim Pon	Umatilla River
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2009	460,000	03-01-09	04-15-09	Imeques Acclim Pond	Umatilla River
Umatilla Tribe Total					940,000				
Grand Total					1,490,000				

Hatchery Releases Next Two Weeks

Hatchery Release Summary

From: 3/13/2009 to 3/26/2009

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2009	333,914	03-15-09	04-15-09	Lochsa River	Clearwater River M F
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2009	404,155	03-15-09	04-15-09	Lochsa River	Clearwater River M F
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2009	404,989	03-15-09	04-15-09	Red River	S Fk Clearwater River
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2009	703,326	03-15-09	04-15-09	Crooked River	S Fk Clearwater River
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2009	1,106,000	03-23-09	03-26-09	S Fk Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2009	525,000	03-23-09	04-01-09	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2009	200,000	03-20-09	03-20-09	Little Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2009	2,500,000	03-16-09	04-02-09	Rapid River Hatchery	Little Salmon River
Idaho Dept. of Fish and Game	Rapid River Hatchery	ST	SU	2009	500,000	03-16-09	03-19-09	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game Total					6,677,384				
Nez Perce Tribe	Clearwater Hatchery	CH1	SP	2009	399,953	03-15-09	04-15-09	Selway River	Clearwater River M F
Nez Perce Tribe	Kooskia NFH	CH1	SP	2009	162,000	03-24-09	04-04-09	Kooskia Hatchery	Clearwater River M F
Nez Perce Tribe	Kooskia NFH	CH1	SP	2009	443,000	03-24-09	04-04-09	Kooskia Hatchery	Clearwater River M F
Nez Perce Tribe	Lookingglass Hatchery	CH1	SP	2009	124,500	03-18-09	03-31-09	Lostine Accim Pond	Wallowa River
Nez Perce Tribe	McCall Hatchery	CH1	SU	2009	91,150	03-16-09	03-20-09	Johnson Cr Idaho	South Fork Salmon Rive
Nez Perce Tribe Total					1,220,603				
U.S. Fish and Wildlife Service	Dworshak NFH	CH1	SP	2009	1,025,000	03-21-09	04-09-09	Dworshak Hatchery	Clearwater River M F
U.S. Fish and Wildlife Service	Hagerman NFH	ST	SU	2009	100,000	03-25-09	03-27-09	Little Salmon River	Salmon River (ID)
U.S. Fish and Wildlife Service	Warm Springs NFH	CH1	SP	2009	570,000	03-20-09	04-20-09	Warm Springs Hatchery	Deschutes River
U.S. Fish and Wildlife Service Total					1,695,000				
Umatilla Tribe	Bonneville Hatchery	CH0	FA	2009	240,000	03-01-09	03-31-09	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Bonneville Hatchery	CH0	FA	2009	240,000	03-01-09	03-31-09	Thornhollow Acclim Pon	Umatilla River
Umatilla Tribe	Cascade Hatchery	CO	UN	2009	1,000,000	03-15-09	04-15-09	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Oxbow-Oregon	CO	UN	2009	500,000	03-15-09	03-15-09	Umatilla River	Umatilla River
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2009	460,000	03-01-09	04-15-09	Imeques Acclim Pond	Umatilla River
Umatilla Tribe Total					2,440,000				
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2009	251,067	03-16-09	05-15-09	Jack Creek Acclim Ponc	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 Total					772,000				
Grand Total					12,804,987				

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>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		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High	
2/27	---	---	---	0	101	101	102	24	99	99	99	24	101	101	103	24	---	---	---	0
2/28	---	---	---	0	100	101	102	23	99	100	100	24	101	102	102	23	---	---	---	0
3/1	---	---	---	0	102	102	103	20	100	101	101	24	103	103	104	20	---	---	---	0
3/2	---	---	---	0	103	104	104	23	101	101	102	24	103	104	106	23	---	---	---	0
3/3	---	---	---	0	108	109	110	22	101	102	102	24	104	104	105	22	---	---	---	0
3/4	---	---	---	0	109	109	110	23	101	102	102	24	103	103	104	23	---	---	---	0
3/5	---	---	---	0	108	109	110	22	102	102	102	24	104	104	106	22	---	---	---	0
3/6	---	---	---	0	106	107	108	23	100	101	101	24	102	103	104	23	---	---	---	0
3/7	---	---	---	0	108	108	108	23	101	102	102	24	104	106	107	23	---	---	---	0
3/8	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/9	---	---	---	0	106	107	107	24	101	102	102	24	103	104	105	24	---	---	---	0
3/10	---	---	---	0	103	104	106	24	100	101	101	24	102	102	104	24	99	99	99	15
3/11	---	---	---	0	101	102	102	24	100	100	100	24	101	102	103	24	99	100	100	24
3/12	---	---	---	0	101	102	103	22	100	100	100	24	102	102	103	22	99	99	100	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>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		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High	
2/27	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/28	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/1	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/2	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/3	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/4	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/5	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/6	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/7	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/8	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/9	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/10	104	104	104	1	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/11	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/12	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0

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>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		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High	
2/27	---	---	---	0	---	---	---	0	98	98	99	24	99	99	100	24	99	99	100	24
2/28	---	---	---	0	---	---	---	0	98	99	99	24	99	100	100	24	99	100	100	24
3/1	---	---	---	0	---	---	---	0	99	100	100	24	100	101	101	24	101	101	102	24
3/2	---	---	---	0	---	---	---	0	101	101	101	24	101	102	102	24	102	102	103	24
3/3	---	---	---	0	---	---	---	0	101	101	102	24	102	102	102	24	102	102	103	24
3/4	---	---	---	0	---	---	---	0	102	102	103	24	101	102	102	24	102	102	103	24
3/5	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/6	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/7	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/8	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/9	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/10	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/11	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/12	---	---	---	0	---	---	---	0	---	---	---	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	Priest R. Dnst			Pasco			Dworshak			Clrwtr-Peck			Anatone			#				
	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High		# hr			
2/27	99	100	100	24	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/28	100	100	100	24	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/1	101	101	102	24	---	---	---	0	96	96	97	15	---	---	---	0	---	---	---	0
3/2	102	102	103	24	---	---	---	0	98	98	99	24	---	---	---	0	---	---	---	0
3/3	102	103	103	24	---	---	---	0	101	102	102	24	---	---	---	0	---	---	---	0
3/4	102	103	103	24	---	---	---	0	101	102	103	24	---	---	---	0	---	---	---	0
3/5	---	---	---	0	---	---	---	0	100	101	102	24	---	---	---	0	---	---	---	0
3/6	---	---	---	0	---	---	---	0	99	100	101	24	---	---	---	0	---	---	---	0
3/7	---	---	---	0	---	---	---	0	100	101	101	24	---	---	---	0	---	---	---	0
3/8	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/9	---	---	---	0	---	---	---	0	100	101	101	24	---	---	---	0	---	---	---	0
3/10	---	---	---	0	---	---	---	0	99	100	100	24	---	---	---	0	---	---	---	0
3/11	---	---	---	0	---	---	---	0	99	100	101	24	---	---	---	0	---	---	---	0
3/12	---	---	---	0	---	---	---	0	99	100	101	24	---	---	---	0	---	---	---	0

Total Dissolved Gas Saturation Data at Snake River Sites

Date	Clrwtr-Lewiston			Lower Granite			L. Granite Tlwr			Little Goose			L. Goose Tlwr			#				
	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High		# hr			
2/27	---	---	---	0	---	---	---	0	101	101	101	24	---	---	---	0	100	100	100	24
2/28	---	---	---	0	---	---	---	0	101	101	102	24	---	---	---	0	100	101	101	24
3/1	---	---	---	0	---	---	---	0	101	101	101	24	---	---	---	0	101	102	102	24
3/2	---	---	---	0	---	---	---	0	101	101	102	24	---	---	---	0	102	102	103	24
3/3	---	---	---	0	---	---	---	0	101	101	102	24	---	---	---	0	102	103	103	24
3/4	---	---	---	0	---	---	---	0	101	101	102	24	---	---	---	0	102	103	103	24
3/5	---	---	---	0	---	---	---	0	102	103	103	24	---	---	---	0	103	103	103	24
3/6	---	---	---	0	---	---	---	0	101	101	102	24	---	---	---	0	101	101	102	24
3/7	---	---	---	0	---	---	---	0	101	101	102	24	---	---	---	0	101	101	102	24
3/8	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/9	---	---	---	0	---	---	---	0	100	100	101	24	---	---	---	0	100	100	100	24
3/10	---	---	---	0	---	---	---	0	99	99	100	24	---	---	---	0	98	99	99	24
3/11	---	---	---	0	---	---	---	0	98	98	99	24	---	---	---	0	99	100	105	24
3/12	---	---	---	0	---	---	---	0	99	99	99	24	---	---	---	0	98	99	99	24

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

Date	Lower Mon.			L. Mon. Tlwr			Ice Harbor			Ice Harbor Tlwr			McNary-Oregon			#				
	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High		# hr			
2/27	---	---	---	0	101	101	101	24	---	---	---	0	100	101	101	24	---	---	---	0
2/28	---	---	---	0	101	101	102	24	---	---	---	0	101	101	102	24	---	---	---	0
3/1	---	---	---	0	102	102	103	24	---	---	---	0	102	102	102	24	---	---	---	0
3/2	---	---	---	0	102	102	103	24	---	---	---	0	103	103	103	24	---	---	---	0
3/3	---	---	---	0	103	103	103	24	---	---	---	0	103	104	104	24	---	---	---	0
3/4	---	---	---	0	102	103	103	24	---	---	---	0	103	103	104	24	---	---	---	0
3/5	---	---	---	0	103	103	103	24	---	---	---	0	103	103	104	24	---	---	---	0
3/6	---	---	---	0	101	101	102	24	---	---	---	0	101	102	102	24	---	---	---	0
3/7	---	---	---	0	102	102	102	24	---	---	---	0	102	102	103	24	---	---	---	0
3/8	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/9	---	---	---	0	101	101	102	24	---	---	---	0	102	102	102	24	---	---	---	0
3/10	---	---	---	0	100	100	101	24	---	---	---	0	101	101	101	24	---	---	---	0
3/11	---	---	---	0	99	100	100	24	---	---	---	0	100	100	101	24	---	---	---	0
3/12	---	---	---	0	99	99	100	24	---	---	---	0	100	100	100	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>	#	<u>24h</u>	<u>12h</u>	#					
	Avg	Avg		High	Avg		Avg	High		Avg	Avg		High	Avg			AVG	High		
2/27	---	---	---	0	100	101	101	24	---	---	---	0	101	101	102	24	---	---	---	0
2/28	---	---	---	0	101	101	101	24	---	---	---	0	102	102	103	24	---	---	---	0
3/1	---	---	---	0	101	102	102	24	---	---	---	0	103	103	103	24	---	---	---	0
3/2	---	---	---	0	102	102	103	24	---	---	---	0	104	104	104	24	---	---	---	0
3/3	---	---	---	0	102	103	103	24	---	---	---	0	104	104	104	24	---	---	---	0
3/4	---	---	---	0	102	103	103	24	---	---	---	0	104	104	104	24	---	---	---	0
3/5	---	---	---	0	103	103	103	24	---	---	---	0	104	104	104	24	---	---	---	0
3/6	---	---	---	0	102	102	102	24	---	---	---	0	103	103	103	24	---	---	---	0
3/7	---	---	---	0	102	103	103	24	---	---	---	0	104	104	104	24	---	---	---	0
3/8	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/9	---	---	---	0	102	102	102	24	---	---	---	0	102	102	103	24	---	---	---	0
3/10	---	---	---	0	100	100	101	24	---	---	---	0	101	102	103	24	---	---	---	0
3/11	---	---	---	0	100	100	100	24	---	---	---	0	101	101	102	24	---	---	---	0
3/12	---	---	---	0	100	100	100	24	---	---	---	0	100	101	102	24	---	---	---	0

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>The Dalles Dnst</u>			<u>Bonneville</u>			<u>Warrendale</u>			<u>Camas/Washougal</u>			<u>Cascade Island</u>			#		
	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24h</u>	<u>12h</u>	#	<u>24h</u>	<u>12h</u>	#	<u>24h</u>	<u>12h</u>	#			
	Avg	Avg		High	Avg		Avg	High		Avg	Avg		High	Avg			AVG	High
2/27	101	101	102	24	---	---	0	101	101	102	24	---	---	0	---	---	---	0
2/28	101	102	102	24	---	---	0	102	102	102	24	---	---	0	---	---	---	0
3/1	103	104	104	24	---	---	0	103	103	103	24	---	---	0	---	---	---	0
3/2	104	104	105	24	---	---	0	104	105	105	24	---	---	0	---	---	---	0
3/3	105	105	105	24	---	---	0	105	105	106	24	---	---	0	---	---	---	0
3/4	104	104	105	24	---	---	0	106	107	108	24	---	---	0	---	---	---	0
3/5	104	104	104	24	---	---	0	105	105	106	24	---	---	0	---	---	---	0
3/6	103	103	103	24	---	---	0	104	104	104	24	---	---	0	---	---	---	0
3/7	104	104	104	24	---	---	0	104	104	105	24	---	---	0	---	---	---	0
3/8	---	---	---	0	---	---	0	---	---	---	0	---	---	0	---	---	---	0
3/9	103	103	104	24	---	---	0	104	104	104	24	---	---	0	---	---	---	0
3/10	102	102	103	24	---	---	0	103	103	104	24	---	---	0	---	---	---	0
3/11	102	102	103	24	---	---	0	103	103	104	24	---	---	0	---	---	---	0
3/12	102	102	103	24	---	---	0	102	103	103	24	---	---	0	---	---	---	0

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)
02/27/2009	---	---	---	---	---	---	---	---	---	---	---
02/28/2009	---	---	---	---	---	---	---	---	---	---	---
03/01/2009	---	---	---	---	---	---	---	---	---	---	---
03/02/2009	---	---	---	---	---	---	---	---	---	---	---
03/03/2009	---	---	---	---	---	---	---	---	---	---	0
03/04/2009	---	---	---	---	---	---	---	---	---	---	0
03/05/2009	---	---	---	---	---	---	---	---	---	---	0
03/06/2009	---	---	---	---	---	---	---	---	---	---	0
03/07/2009	---	---	---	---	---	---	---	---	---	---	0
03/08/2009	---	---	---	---	---	---	---	---	---	---	4
03/09/2009	---	---	---	---	---	---	---	---	---	---	0
03/10/2009	---	---	0	---	---	---	---	---	---	---	0
03/11/2009	---	---	0	---	---	---	---	---	---	---	0
03/12/2009	---	---	0	---	---	---	---	---	---	---	0
03/13/2009	---	---	---	---	---	---	---	---	---	---	---
Total:	0	0	0	0	0	0	0	0	0	0	4
# Days:	0	0	3	0	0	0	0	0	0	0	10
Average:	0	0	0	0	0	0	0	0	0	0	0
YTD	0	0	0	0	0	0	0	0	0	0	4

* 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.