



# Fish Passage Center Weekly Report #08 - 1

March 7, 2008

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## Summary of Events:

**Water Supply:** Precipitation throughout the Columbia Basin has varied between 46% and 109% of average at individual sub-basins over February. Precipitation above The Dalles has been 92% of average over February. Over the entire water year, precipitation has generally been near or above average.

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

Location	Water Year 2008 February 1-25		Water Year 2008 October 1, 2007 to February 25, 2008	
	Observed (inches)	% Average	Observed (inches)	% Average
	Columbia Above Coulee	1.59	92	13.35
SNAKE RIVER ABOVE ICE HARBOR	1.34	97	9.64	114
Columbia Above The Dalles	1.67	92	13.25	110
Kootenai	1.59	95	13.11	105
Clark Fork	1.07	95	8.45	111
Flathead	1.53	101	10.58	103
Pend Oreille/Spokane	2.06	78	19.22	113
Central Washington	0.34	46	3.94	79
SNAKE RIVER PLAIN	0.68	90	4.75	98
Salmon/Boise/Payette	1.60	90	12.45	118
Clearwater	2.71	109	16.60	108
SW Washington Cascades/Cowlitz	6.42	88	43.43	96
Willamette Valley	4.12	66	40.80	108

Snowpack within the Columbia Basin is above average. Average snowpack in the Columbia River for basins above the Snake River confluence is 107% of average, for Snake River Basins the average snowpack is 103% of average, and for lower

Columbia Basins between McNary and Bonneville Dam average snowpack is 144% of average.

Table 2 displays the February Final and March Early runoff volume forecasts for multiple reservoirs. Water Supply Forecasts have held steady between the February Final and March Early forecasts in Columbia Basins; however, they have increased several percent in Snake Basins. The current forecast at The Dalles between January and July is 103000 Kaf (96% of average).

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

Location	February Final		March Early	
	% Average (1971- 2000)	Probable Runoff Volume (Kaf)	% Average (1971- 2000)	Probable Runoff Volume (Kaf)
The Dalles (Jan-July)	96	103000	96	103000
Grand Coulee (Jan-July)	97	61100	98	61700
Libby Res. Inflow, MT (Jan-July)	95	5960	95	5960
Hungry Horse Res. Inflow, MT (Jan-July)	92	2050	96	2130
Lower Granite Res. Inflow (Apr- July)	103	22200	106	22900
Brownlee Res. Inflow (Apr-July)	83	5260	85	5390
Dworshak Res. Inflow (Apr-July)	105	2780	112	2960

Grand Coulee Reservoir is at 1256.8 feet (3-6-08) and has drafted 2.6 feet in the last week. Outflows at Grand Coulee have ranged between 61.7 and 95.2 Kcfs over the last week. The end of March Flood Control (FC) elevation is 1267.2 feet at Grand Coulee and the estimated April 10th (interpolated between the March 31st and April 15th Flood control elevations) elevation is 1255.2 feet at Grand Coulee.

The Libby Reservoir is currently at elevation 2398.4 feet (3-6-08) and drafted 0.8 feet last week. The end of March VarQ FC elevation at Libby is 2396.4 feet, the estimated April 10th elevation is 2396.4 feet at Libby. Outflows at Libby have been 4.6 Kcfs.

Hungry Horse is currently at an elevation of 3512.2 ft (3-6-08) and has drafted 1.3 feet last week. Outflows at Hungry Horse have been 2.8 Kcfs last week; Hungry Horse has been operating to Columbia Falls Minimum outflows. Hungry Horse's end of March VarQ FC elevation is 3531.4 feet, the estimated April 10th elevation is 3529.3 feet at Hungry Horse.

Dworshak is currently at an elevation of 1520.1 feet (3-6-08) and drafted 1.7 feet last week; outflows at Dworshak are 6.3 Kcfs. The end of March system FC elevation is 1507.8 feet; the estimated April 10th system FC elevation is 1497.6 feet at Dworshak.

The Brownlee Reservoir was at an elevation of 2032.0 feet on March 6th, 2008, drafting one foot last week. The end of March FC elevation is 2042.4 feet, the estimated April 10th elevation is 2039.9 feet at Brownlee Dam. Outflows at Brownlee Dam have been 9.3 to 16.5 Kcfs over the last week.

**Spill:** The March release of juvenile tule fall Chinook from Spring Creek NFH is an important component of Columbia River treaty Indian and non Indian sport and commercial fisheries and provides a significant benefit for West Coast fisheries, outside the Columbia River, including Canada and Alaska. System Operation Request 2008-1 was submitted by the State fish and wildlife agencies (Idaho, Oregon and Washington) and the Shoshone Bannock Tribe, with support for the biological justification from the Columbia River Inter-tribal

Fish Commission and the Nez Perce Tribe because of the region-wide importance of this stock. The SOR requested specific operation criteria for Bonneville Dam, including operating the turbine units at the low end of the 1% operating range as well as 100 Kcfs of spill at Bonneville Dam for four days following the Spring Creek NFH release of tule fall Chinook migrants beginning on March 5, 2008.

Spill was included in the request based on the high level of mortality observed for this release when it passed the project in 2007, and on data collected from a study in 2004 that compared survival to adulthood of Spring Creek NFH juvenile fall Chinook that passed Bonneville Dam under a spill operation versus a corner collector operation. The study showed a higher smolt to adult return rate for the fish released during the spill operation versus fish released during the corner collector operation. While the results of the study were not statistically significant, since it was only conducted for one year and test conditions did not provide the spill levels required by the study design, the trend in survival and the importance of this stock warrants prudent protection.

The March and April 2007 releases of juvenile fish from the Spring Creek NFH suffered higher than historically observed mortality rates during passage through the Bonneville Project. Concern was that fish were suffering increased mortality in the gatewells of the turbine units equipped with gap closure devices in 2007. More units are equipped with the gap closure devices this year. In 2007 the turbine units equipped with gap closure devices were operated at the low end of the 1% efficiency range for the May release from Spring Creek NFH and mortality was not as high. Before committing to operate the turbine units at the low end of the 1% efficiency range this year, the Action Agencies conducted a pilot study this past week using Spring Creek Hatchery fish, operating turbine units at the lower, mid and upper 1% range (more complete turbine gateway tests are scheduled for this spring). Two tests were conducted on March 4th and March 5th and the preliminary results are as follows:

Operation	Mortality Rate	
	March 4 Test	March 5 Test
Lower 1%	2.9	0.8
Mid 1%	21.5	6.9
Upper 1%	46.8	17.7

The SOR request was discussed at The Technical Management Team on February 27, but consensus could not be reached on implementation. The US Army Corps of Engineers representative advised that the direction received from the federal executives was to proceed with an operation that did not include spill. Consequently, the SOR was raised to the Implementation Team (IT) for policy level discussions on February 28, 2008. Agreement was not achieved at the IT level and the issue was raised to the Executive Committee for discussion. The Executive Committee met on March 5 and decided on an operation, including a modified level of spill, for the Spring Creek NFH March release.

Meanwhile, the preliminary data collected from the gatewell studies over the two days this week prompted the Corps to propose to operate PH2 main units at the lower 1% range at approximately 50MW or 11.7kcfs for the 96 hours following the release.

Approximately 3.75 million subyearling tule fall Chinook were released from Spring Creek NFH by 0920 hours on the morning of March 5th and another 3.75 million subyearling tule fall Chinook were released by 0945 hours on the morning of March 6th. The corner collector at Bonneville Dam is in full operation. Turbine units will be operated at the low end of the 1% efficiency range from 0600 hours on March 6th through 0600 hours on March 10th. In accordance with the Executive Committee agreement spill commenced at 2400 hours on March 6th at a level of 35 Kcfs and is scheduled to continue until 0600 on March 10th.

**Smolt Monitoring:** Smolt monitoring activities began at Bonneville Dam and the Grande Ronde Trap this week. On March 3 sampling began at Bonneville juvenile bypass in anticipation of arrival of subyearling chinook salmon released from Spring Creek Hatchery. Approximately 3.7 million subyearling Chinook were released by 0920 hours

on the morning of March 5th and another 3.75 million subyearling tule fall Chinook were released by 0945 hours on the morning of March 6th. According to Smolt Monitoring personnel the fish began arriving on March 6 at about 1900 hours. The SMP crew at Bonneville reported that mortality rate for the first sample of Spring Creek fish was 0.4%; this is a relatively low rate compared to historic mortality rate for these fish--which has typically ranged between 1 and 1.5%. In addition to the hatchery Chinook, the site also reported collecting Chinook and Coho fry as well.

Smolt Monitoring traps have begun or will begin sampling in the next few days. 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 4. Small numbers of juvenile salmonids have been captured at the Grande Ronde Trap in the first few days of sampling.

**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. Several releases of yearling spring Chinook were scheduled to begin over the past week in this zone. In all, these releases will total approximately 4.05 million spring Chinook juveniles. Of these, about 2.5 million will be volitionally released to the Little Salmon River from Rapid River Hatchery, beginning March 1. Also scheduled for March 1 are three releases totaling about 1.13 million spring Chinook juveniles to tributaries of the south fork Clearwater River from Clearwater Hatchery. Finally, approximately 415,900 spring Chinook juveniles from Clearwater Hatchery were scheduled for release into the Lochsa River. There were no other scheduled releases of salmonid juveniles to the Snake River Zone over the past week.

There are several scheduled releases of yearling spring Chinook to the Snake River Zone over the next two weeks. In all, these releases will total about 2.07 million juveniles. Of these, approximately 46% will be released to the Clearwater River, 24% will be released to the Snake River at



Hells Canyon Dam, 17% will be released to the River over the next two weeks. Finally, about 525,000 summer steelhead juveniles are scheduled for release into the Snake River at Hells Canyon Dam, beginning March 17th.

**Mid-Columbia Zone:** The Mid-Columbia Zone encompasses the area of the Columbia River and its tributaries from McNary Dam to Chief Joseph Dam. Approximately 8,300 subyearling fall Chinook were scheduled for release into the Yakima River on or around March 7th. There were no other scheduled releases of juvenile salmonids to this zone over the past week.

Beginning March 15th, approximately 650,000 yearling spring Chinook will be released to the Yakima River from the various acclimation facilities of Cle Elem Hatchery. These are volitional releases and are expected to run through mid-May. These are the only releases that are currently scheduled to begin over the next two weeks in this zone.

**Lower Columbia Zone:** The Lower Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to McNary Dam. On January 22nd, 155,991 yearling spring Chinook were released from the Imeques Acclimation Pond into the Umatilla River. In addition, a volitional release of about 400,000 yearling spring Chinook from Imeques Acclimation Pond began on March 4th. This volitional release is expected to run through March 11th. On March 5th, Klickitat Hatchery had a planned release of about 600,000 yearling Chinook to the Klickitat River. Approximately 7.42 million subyearling Tule fall Chinook were released from Spring Creek National Fish Hatchery this past week. Of these, 50% were released on March 5th and 50% were released on March 6th. These Spring Creek subyearlings were first encountered at Bonneville Dam on the evening of March 6th. In addition, volitional releases of approximately 480,000 yearling fall Chinook from acclimation facilities on the Umatilla River began on March 4th. These releases are expected to run through March 11th. Finally, volitional releases of approximately 1.5 million coho juveniles to the

Umatilla River were scheduled to begin this week. As with the Chinook releases to the Umatilla River, these releases are expected to run through March 11th.

Other than the volitional releases to the Umatilla River that are expected to run through March 11th, there are no scheduled releases of juvenile salmonids to this zone over the next two weeks.

### Adult Fish Passage

Traditional counts at Bonneville Dam do not begin until March 15th. Traditional counts allow for comparison of current year counts with historical data. Traditional counts began on March 1st at Lower Granite Dam. 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 counts adults year round. They also use video counts which, at times, causes a delay in the posting of their data. The following paragraph describes the winter counts for 2008 and compares them with 2007 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 3rd was 308. In 2007, for the same date range, the Bonneville steelhead count was 1,049. So far, this year's Bonneville steelhead count is only about 29.3% of the 2007 count of 1,049 (includes hatchery and wild fish). The 2008 wild steelhead count of 156 is about half of the 2007 count of 318. The counts at Lower Granite Dam have not been reported yet. At Willamette Falls Dam, the 2008 count for steelhead was 329, as of Feb 15th. This year's steelhead count is only about 19.2% of the 2007 count of 1,707 at Willamette Falls Dam.

This year, the first spring Chinook was counted at Bonneville Dam on Feb 5th. The second spring Chinook was counted on Feb 11th. As of March 3rd, 4 spring Chinook adults had been counted at Bonneville Dam. In 2007, as of March 3rd, 2 spring Chinook had crossed Bonneville Dam. In 2007, one spring Chinook had passed Willamette Falls Dam, as of February 15th. This year, no spring Chinook have been counted so far at Willamette Falls Dam.

Based on estimates made by the Technical Advisory Committee (TAC) for US v. Oregon this winter, the upriver Spring Chinook run for 2008 is expected to be 269,300. In 2007, the TAC forecasted 78,500 upriver Spring Chinook would return. On February 15, 2008, the TAC reported that 86,200 upriver Spring Chinook had returned to the river. In the same report the TAC reported that 16,200 wild Winter Steelhead returned in 2007 and they predicted that the wild Winter Steelhead run size for 2007 would be 15,000 (TAC, 2008).

US v. Oregon Technical Advisory Committee (TAC). Winter Fact Sheet No. 3, February 15, 2008. Oregon and Washington Departments of Fish and Wildlife, Vancouver, WA. Available at [http://www.dfw.state.or.us/fish/OSCRP/CRM/FS/08/08\\_02\\_15wf3.pdf](http://www.dfw.state.or.us/fish/OSCRP/CRM/FS/08/08_02_15wf3.pdf)

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

Date	Dworshak		Hells Brownlee Canyon		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
02/22/2008	3.8	0.0	11.6	14.9	29.0	0.0	31.9	0.0	34.8	0.0	36.1	0.0
02/23/2008	1.3	0.0	12.0	11.4	24.6	0.0	23.5	0.0	24.0	0.0	23.1	0.0
02/24/2008	1.3	0.0	11.4	9.7	22.8	0.0	23.4	0.0	25.8	0.0	25.6	0.0
02/25/2008	2.1	0.0	11.7	10.4	23.2	0.0	23.8	0.0	26.2	0.0	25.0	0.0
02/26/2008	1.3	0.0	13.2	14.7	26.2	0.0	23.0	0.0	24.5	0.0	26.2	0.0
02/27/2008	1.3	0.0	13.2	14.7	28.1	0.0	28.4	0.0	30.4	0.0	27.3	0.0
02/28/2008	1.3	0.0	13.7	11.1	29.8	0.0	28.4	0.0	32.8	0.0	32.9	0.0
02/29/2008	1.3	0.0	12.7	10.5	30.1	0.0	31.8	0.0	35.2	0.0	34.1	0.0
03/01/2008	1.3	0.0	12.8	10.8	25.7	0.0	23.7	0.0	28.0	0.0	26.8	0.0
03/02/2008	1.3	0.0	14.9	13.5	32.3	0.0	30.9	0.0	35.0	0.0	35.4	0.0
03/03/2008	6.3	0.0	14.1	16.8	33.3	0.0	33.0	0.0	37.8	0.0	35.8	0.0
03/04/2008	6.6	0.0	13.7	15.9	38.5	0.0	37.3	0.0	41.4	0.0	39.9	0.0
03/05/2008	6.3	0.0	13.8	16.3	42.0	0.0	42.7	0.0	47.9	0.0	46.7	0.0
03/06/2008	6.3	0.0	---	---	34.4	0.0	33.5	0.0	34.3	0.0	34.2	0.0

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

Date	McNary		John Day		The Dalles		Bonneville		PH1	PH2
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill		
02/22/2008	134.9	0.0	149.9	0.0	150.0	0.0	142.7	0.6	75.5	64.1
02/23/2008	98.8	0.0	102.1	0.0	105.3	0.0	126.3	0.6	65.9	57.4
02/24/2008	109.0	0.0	105.0	0.0	106.8	0.0	119.1	0.6	56.7	59.4
02/25/2008	109.7	0.0	120.6	0.0	121.6	0.0	123.3	0.6	67.9	52.4
02/26/2008	108.3	0.0	108.8	0.0	107.0	0.0	128.2	0.6	64.8	60.3
02/27/2008	138.2	0.0	147.6	0.0	149.0	0.0	146.6	0.7	86.6	56.9
02/28/2008	121.6	0.0	128.1	0.0	130.2	0.0	147.3	0.6	84.6	58.6
02/29/2008	104.6	0.0	112.1	0.0	113.1	0.0	133.1	0.7	74.7	51.0
03/01/2008	92.5	0.0	102.0	0.0	104.7	0.0	127.4	1.0	76.8	40.7
03/02/2008	107.1	0.0	111.0	0.0	113.2	0.0	129.5	1.3	74.3	45.7
03/03/2008	130.3	0.2	135.8	0.0	137.7	0.0	141.7	1.3	79.2	54.3
03/04/2008	142.1	0.0	143.6	0.0	140.6	0.0	161.0	1.4	69.2	83.6
03/05/2008	149.5	0.0	160.6	0.0	164.1	0.0	175.2	1.4	78.6	86.7
03/06/2008	139.1	0.2	142.4	0.0	137.4	0.0	148.2	1.4	69.0	65.9

## HATCHERY RELEASE LAST TWO WEEKS

### Hatchery Release Summary

From: **2/22/2008** to **03/06/08**

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2008	141,700	03-01-08	03-01-08	Crooked R	S Fk Clearwater River
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2008	415,900	03-01-08	03-01-08	Powell	Lochsa River
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2008	424,700	03-01-08	03-01-08	Red River	S Fk Clearwater River
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2008	566,800	03-01-08	03-01-08	Crooked	S Fk Clearwater River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2008	2,500,000	03-01-08	04-25-08	Rapid River	Little Salmon River
<b>Idaho Dept. of Fish and Game Total</b>					<b>4,049,100</b>				
U.S. Fish and Wildlife Service	Spring Creek NFH	CH0	FA	2008	3,693,551	03-06-08	03-06-08	Spring Creek	L Col R (D/s McN Dam)
U.S. Fish and Wildlife Service	Spring Creek NFH	CH0	FA	2008	3,722,505	03-05-08	03-05-08	Spring Creek	L Col R (D/s McN Dam)
<b>U.S. Fish and Wildlife Service Total</b>					<b>7,416,056</b>				
Umatilla Tribe	Bonneville Hatchery	CH1	FA	2008	240,000	03-04-08	03-11-08	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Bonneville Hatchery	CH1	FA	2008	240,000	03-04-08	03-11-08	Thornhollow Acclim Pond	Umatilla River
Umatilla Tribe	Cascade Hatchery	CO	UN	2008	1,000,000	03-04-08	03-11-08	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Lower Herman Cr	CO	UN	2008	500,000	03-04-08	03-11-08	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2008	400,000	03-04-08	03-11-08	Imeques	Umatilla River
<b>Umatilla Tribe Total</b>					<b>2,380,000</b>				
Yakama Tribe	Klickitat Hatchery	CH1	SP	2008	600,000	03-05-08	03-05-08	Klickitat	Klickitat River
<b>Yakama Tribe Total</b>					<b>600,000</b>				
<b>Grand Total</b>					<b>14,445,156</b>				

## HATCHERY RELEASE NEXT TWO WEEKS

### Hatchery Release Summary

**From: 3/7/2008 to 3/20/2008**

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2008	1,062,000	03-17-08	03-17-08	S Fk Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2008	525,000	03-17-08	03-27-08	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2008	200,000	03-13-08	03-13-08	Pine Bar/Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2008	489,000	03-10-08	03-12-08	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2008	2,500,000	03-01-08	04-25-08	Rapid River Hatchery	Little Salmon River
<b>Idaho Dept. of Fish and Game Total</b>					<b>4,776,000</b>				
Nez Perce Tribe	Eagle Creek NFH	CO	UN	2008	275,000	03-11-08	03-11-08	Lapwai Creek	Clearwater River M F
Nez Perce Tribe	Eagle Creek NFH	CO	UN	2008	275,000	03-13-08	03-13-08	Clear Creek	Clearwater River M F
Nez Perce Tribe	Lookingglass Hatchery	CH1	SP	2008	74,400	03-19-08	04-01-08	Lostine Accim Pond	Wallowa River South Fork Salmon River
Nez Perce Tribe	McCall Hatchery	CH1	SU	2008	88,000	03-10-08	03-10-08	Johnson Cr Idaho	River
<b>Nez Perce Tribe Total</b>					<b>712,400</b>				
Oregon Dept. of Fish and Wildlife	Lookingglass Hatchery	CH1	SP	2008	360,000	03-20-08	03-20-08	Imnaha Acclim Pond	Imnaha River
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>360,000</b>				
Umatilla Tribe	Bonneville Hatchery	CH1	FA	2008	240,000	03-04-08	03-11-08	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Bonneville Hatchery	CH1	FA	2008	240,000	03-04-08	03-11-08	Thornhollow Acclim Pond	Umatilla River
Umatilla Tribe	Cascade Hatchery	CO	UN	2008	1,000,000	03-04-08	03-11-08	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Lower Herman Cr	CO	UN	2008	500,000	03-04-08	03-11-08	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2008	400,000	03-04-08	03-11-08	Imeques Acclim Pond	Umatilla River
<b>Umatilla Tribe Total</b>					<b>2,380,000</b>				
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2008	211,004	03-15-08	05-15-08	Clark Flat Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2008	217,146	03-15-08	05-15-08	Jack Creek Acclim Pond	Yakima River
Yakama Tribe	Cle Elem	CH1	SP	2008	219,470	03-15-08	05-15-08	Easton Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CH0	FA	2008	8,336	03-07-08	03-07-08	Prosser Acclim Pond	Yakima River
<b>Yakama Tribe Total</b>					<b>655,956</b>				
<b>Grand Total</b>					<b>8,884,356</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

	<u>Hungry H. Dnst</u>			<u>Boundary</u>			<u>Grand Coulee</u>			<u>Grand C. Tlwr</u>			<u>Chief Joseph</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>				
2/22	---	---	---	0	102	102	103	24	100	100	100	24	100	101	102	24	---	---	---	0
2/23	---	---	---	0	101	102	102	23	100	100	100	24	100	100	101	23	---	---	---	0
2/24	---	---	---	0	100	101	101	21	100	100	101	24	100	101	102	21	---	---	---	0
2/25	---	---	---	0	100	100	101	22	99	99	100	24	99	99	102	22	---	---	---	0
2/26	---	---	---	0	100	101	101	23	98	98	99	24	98	99	101	23	---	---	---	0
2/27	---	---	---	0	101	102	103	22	99	99	99	24	99	100	102	22	---	---	---	0
2/28	---	---	---	0	101	102	103	24	99	99	99	24	100	100	100	24	---	---	---	0
2/29	---	---	---	0	102	103	104	22	100	100	101	24	101	102	104	22	---	---	---	0
3/1	---	---	---	0	101	102	102	24	100	100	100	24	101	101	103	24	---	---	---	0
3/2	---	---	---	0	100	101	101	23	98	99	99	24	100	100	102	23	---	---	---	0
3/3	---	---	---	0	102	102	103	22	100	100	101	24	100	101	103	22	---	---	---	0
3/4	---	---	---	0	106	107	109	23	99	100	100	24	100	101	102	23	---	---	---	0
3/5	---	---	---	0	107	108	108	22	99	99	99	24	100	101	101	22	---	---	---	0
3/6	---	---	---	0	108	108	109	24	99	99	100	24	100	101	101	24	---	---	---	0

Total Dissolved Gas Saturation Data at Mid Columbia River Sites

<u>Date</u>	<u>Chief J. Dnst</u>			<u>Wells</u>			<u>Wells Dwnstrm</u>			<u>Rocky Reach</u>			<u>Rocky R. Tlwr</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>				
2/22	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/23	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/24	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/25	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/26	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/27	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/28	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/29	---	---	---	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

Total Dissolved Gas Saturation at Mid Columbia River Sites

<u>Date</u>	<u>Rock Island</u>			<u>Rock I. Tlwr</u>			<u>Wanapum</u>			<u>Wanapum Tlwr</u>			<u>Priest Rapids</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>				
2/22	---	---	---	0	---	---	---	0	100	100	100	24	101	101	101	24	101	101	101	24
2/23	---	---	---	0	---	---	---	0	100	100	100	24	100	101	101	24	100	101	101	24
2/24	---	---	---	0	---	---	---	0	100	100	101	24	101	101	101	24	101	101	101	24
2/25	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/26	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/27	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/28	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
2/29	---	---	---	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

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

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

Date	<u>Priest R. Dnst</u>			#	<u>Pasco</u>			#	<u>Dworshak</u>			#	<u>Clrwtr-Peck</u>			#	<u>Anatone</u>			#
	<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>	
	<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>		
2/22	101	101	101	24	---	---	---	0	98	100	106	24	---	---	---	0	---	---	---	0
2/23	100	101	101	24	---	---	---	0	106	107	108	24	---	---	---	0	---	---	---	0
2/24	101	101	101	24	---	---	---	0	107	107	108	17	---	---	---	0	---	---	---	0
2/25	---	---	---	0	---	---	---	0	99	102	106	24	---	---	---	0	---	---	---	0
2/26	---	---	---	0	---	---	---	0	105	106	107	24	---	---	---	0	---	---	---	0
2/27	---	---	---	0	---	---	---	0	106	106	107	23	---	---	---	0	---	---	---	0
2/28	---	---	---	0	---	---	---	0	107	107	108	24	---	---	---	0	---	---	---	0
2/29	---	---	---	0	---	---	---	0	108	109	109	24	---	---	---	0	---	---	---	0
3/1	---	---	---	0	---	---	---	0	107	108	108	24	---	---	---	0	---	---	---	0
3/2	---	---	---	0	---	---	---	0	106	107	107	24	---	---	---	0	---	---	---	0
3/3	---	---	---	0	---	---	---	0	98	101	106	24	---	---	---	0	---	---	---	0
3/4	---	---	---	0	---	---	---	0	98	98	102	11	---	---	---	0	---	---	---	0
3/5	---	---	---	0	---	---	---	0	100	100	103	8	---	---	---	0	---	---	---	0
3/6	---	---	---	0	---	---	---	0	98	98	101	11	---	---	---	0	---	---	---	0

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

Date	<u>Clrwtr-Lewiston</u>			#	<u>Lower Granite</u>			#	<u>L. Granite TIwr</u>			#	<u>Little Goose</u>			#	<u>L. Goose TIwr</u>			#
	<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>	
	<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>		
2/22	---	---	---	0	---	---	---	0	103	103	104	24	---	---	---	0	103	104	104	24
2/23	---	---	---	0	---	---	---	0	103	103	104	24	---	---	---	0	103	104	104	24
2/24	---	---	---	0	---	---	---	0	103	103	104	24	---	---	---	0	104	104	105	24
2/25	---	---	---	0	---	---	---	0	102	102	102	24	---	---	---	0	103	103	104	24
2/26	---	---	---	0	---	---	---	0	102	102	102	24	---	---	---	0	102	103	103	24
2/27	---	---	---	0	---	---	---	0	102	102	102	24	---	---	---	0	103	103	103	24
2/28	---	---	---	0	---	---	---	0	102	102	103	24	---	---	---	0	103	103	103	24
2/29	---	---	---	0	---	---	---	0	103	103	103	24	---	---	---	0	104	104	104	24
3/1	---	---	---	0	---	---	---	0	102	103	104	24	---	---	---	0	103	103	103	24
3/2	---	---	---	0	---	---	---	0	100	101	101	24	---	---	---	0	101	101	101	24
3/3	---	---	---	0	---	---	---	0	101	102	102	24	---	---	---	0	102	103	103	24
3/4	---	---	---	0	---	---	---	0	101	101	102	24	---	---	---	0	102	102	102	24
3/5	---	---	---	0	---	---	---	0	101	101	101	24	---	---	---	0	101	101	102	24
3/6	---	---	---	0	---	---	---	0	101	101	101	24	---	---	---	0	101	101	102	24

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

Date	<u>Lower Mon.</u>			#	<u>L. Mon. TIwr</u>			#	<u>Ice Harbor</u>			#	<u>Ice Harbor TIwr</u>			#	<u>McNary-Oregon</u>			#
	<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>	
	<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>		
2/22	---	---	---	0	102	102	103	24	---	---	---	0	102	102	103	24	---	---	---	0
2/23	---	---	---	0	102	102	103	24	---	---	---	0	102	103	104	24	---	---	---	0
2/24	---	---	---	0	103	103	103	24	---	---	---	0	103	103	104	24	---	---	---	0
2/25	---	---	---	0	101	102	102	24	---	---	---	0	101	102	103	24	---	---	---	0
2/26	---	---	---	0	102	102	103	24	---	---	---	0	102	102	103	24	---	---	---	0
2/27	---	---	---	0	103	104	106	24	---	---	---	0	102	103	103	24	---	---	---	0
2/28	---	---	---	0	104	104	105	24	---	---	---	0	103	103	104	24	---	---	---	0
2/29	---	---	---	0	105	106	106	24	---	---	---	0	104	105	105	24	---	---	---	0
3/1	---	---	---	0	104	105	105	24	---	---	---	0	104	104	105	24	---	---	---	0
3/2	---	---	---	0	103	103	103	24	---	---	---	0	103	103	103	24	---	---	---	0
3/3	---	---	---	0	104	104	104	24	---	---	---	0	104	105	105	20	---	---	---	0
3/4	---	---	---	0	103	103	104	24	---	---	---	0	104	104	104	24	---	---	---	0
3/5	---	---	---	0	102	102	102	24	---	---	---	0	103	103	104	24	---	---	---	0
3/6	---	---	---	0	102	102	103	24	---	---	---	0	103	104	105	24	104	105	108	24

## 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			
2/22	---	---	---	0	102	102	103	24	---	---	---	0	103	103	104	24	---	---	---	0
2/23	---	---	---	0	102	102	102	24	---	---	---	0	103	104	104	23	---	---	---	0
2/24	---	---	---	0	102	102	103	24	---	---	---	0	104	104	104	24	---	---	---	0
2/25	---	---	---	0	101	101	101	24	---	---	---	0	102	102	103	24	---	---	---	0
2/26	---	---	---	0	101	101	101	24	---	---	---	0	102	102	102	24	---	---	---	0
2/27	---	---	---	0	102	102	102	24	---	---	---	0	103	103	103	24	---	---	---	0
2/28	---	---	---	0	102	102	102	24	---	---	---	0	103	103	103	24	---	---	---	0
2/29	---	---	---	0	103	103	103	24	---	---	---	0	104	104	105	24	---	---	---	0
3/1	---	---	---	0	102	102	103	24	---	---	---	0	103	103	104	24	---	---	---	0
3/2	---	---	---	0	101	101	101	24	---	---	---	0	102	102	103	24	---	---	---	0
3/3	---	---	---	0	102	103	103	24	---	---	---	0	103	104	105	24	---	---	---	0
3/4	---	---	---	0	102	102	102	24	---	---	---	0	103	103	103	24	---	---	---	0
3/5	---	---	---	0	101	102	102	24	---	---	---	0	102	103	103	24	---	---	---	0
3/6	---	---	---	0	102	102	102	24	---	---	---	0	103	103	103	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>CamasWashougal</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			
2/22	103	103	104	24	---	---	---	0	104	104	104	24	---	---	---	0	---	---	---	0
2/23	103	104	104	24	---	---	---	0	104	105	105	24	---	---	---	0	---	---	---	0
2/24	103	103	104	24	---	---	---	0	105	105	105	24	---	---	---	0	---	---	---	0
2/25	102	102	102	24	---	---	---	0	103	103	103	24	---	---	---	0	---	---	---	0
2/26	102	102	103	24	---	---	---	0	103	104	104	24	---	---	---	0	---	---	---	0
2/27	103	103	103	24	103	103	103	14	103	104	104	24	105	105	106	8	110	110	111	12
2/28	103	103	104	24	104	104	105	24	104	105	106	24	105	106	107	24	110	111	112	24
2/29	104	104	105	24	105	105	105	24	105	105	106	24	105	106	106	24	110	111	115	24
3/1	102	103	103	24	103	104	105	24	105	106	106	24	104	105	105	24	113	116	119	24
3/2	101	102	102	24	102	103	103	24	104	104	104	24	105	106	107	24	113	116	118	24
3/3	103	104	104	24	103	103	103	24	104	104	104	24	104	105	106	24	112	115	117	24
3/4	102	103	103	24	102	102	103	24	103	103	103	24	103	104	104	24	114	115	116	24
3/5	102	103	103	24	102	103	103	24	103	104	104	24	103	104	105	24	113	114	114	24
3/6	103	103	104	24	103	103	103	24	105	105	106	24	104	105	106	24	113	114	116	24







## 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)
02/22/2008	---	---	---	---	---	---	---	---	---	---	---
02/23/2008	---	---	---	---	---	---	---	---	---	---	---
02/24/2008	---	---	---	---	---	---	---	---	---	---	---
02/25/2008	---	---	---	---	---	---	---	---	---	---	---
02/26/2008	---	---	---	---	---	---	---	---	---	---	---
02/27/2008	---	---	---	---	---	---	---	---	---	---	---
02/28/2008	---	---	---	---	---	---	---	---	---	---	---
02/29/2008	---	---	---	---	---	---	---	---	---	---	---
03/01/2008	---	---	---	---	---	---	---	---	---	---	---
03/02/2008	---	---	---	---	---	---	---	---	---	---	---
03/03/2008	---	---	---	---	---	---	---	---	---	---	---
03/04/2008	*	---	---	---	---	---	---	---	---	---	0
03/05/2008	---	---	0	---	---	---	---	---	---	---	0
03/06/2008	---	---	0	---	---	---	---	---	---	---	0
03/07/2008	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b># Days:</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>YTD</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

\* 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.