



Fish Passage Center

Weekly Report #11 - 02

March 25, 2011

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Summary of Events:

Water Supply: Precipitation throughout the Columbia Basin has varied between 138% and 206% of average at individual sub-basins over March. Precipitation above The Dalles has been 191% of average over March. Over the 2011 water year, precipitation has ranged between 97% and 133% of 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 2011 March 1-21, 2011		Water Year 2011 October 1, 2010 to March 21, 2011	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	2.18	180	15.79	115
Snake River Above Ice Harbor	2.05	183	11.78	121
Columbia Above The Dalles	2.49	191	15.84	116
Kootenai	2.49	206	15.75	112
Clark Fork	1.14	140	10.48	122
Flathead	2.23	202	15.50	133
Pend Oreille/ Spokane	3.37	180	21.98	114
Central Washington	0.91	162	5.46	97
Snake River Plain	1.35	177	7.24	126
Salmon/Boise/ Payette	2.63	200	13.56	112
Clearwater	2.62	138	20.66	117
SW Washington Cascades/Cowlitz	7.65	159	51.71	101
Willamette Valley	7.39	171	43.88	102

Snowpack within the Columbia Basin has seen increases with recent storms that have resulted in slightly better than average snowpack in most basins.

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 108% of average, and for lower Columbia Basins between McNary and Bonneville Dam average snowpack is 108% of average.

Table 2 displays the March Final and March Mid-Month runoff volume forecasts for multiple reservoirs. The March Final forecast at The Dalles between January and July is 109000 Kaf (102% of average).

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

Location	March Final		March Mid-Month	
	% Average (1971 -2000)	Probable Runoff Volume (Kaf)	% Average (1971 -2000)	Probable Runoff Volume (Kaf)
The Dalles (Jan-July)	102	109000	104	112000
Grand Coulee (Jan-July)	104	65600	107	67600
Libby Res. Inflow, MT (Apr-Aug)	105	6550 7105*	114	7130
Hungry Horse Res. Inflow, MT (Jan-July)	123	2730	125	2790
Lower Granite Res. Inflow (Apr- July)	100	21600	104	22500
Brownlee Res. Inflow (Apr-July)	90	5690	96	6060
Dworshak Res. Inflow (Apr-July)	110	2900 3329*	110	2910

* Denotes COE Forecast

Grand Coulee Reservoir is at 1253.0 feet (3-24-11) and held steady over the last week. Drum gate maintenance is currently being performed at Grand Coulee which requires a maximum reservoir elevation of 1255 feet. The end of March FC Elevation at Grand Coulee is 1270.2 feet. Outflows at Grand Coulee have ranged between 79.4 and 133.5 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2368.9 feet (3-24-11) and has drafted 6.2 feet last week. The end of March FC Elevation at Libby is 2364.3 feet. Outflows at Libby Dam have been 17-18 Kcfs last week.

Hungry Horse is currently at an elevation of 3504.2 feet (3-24-11) and has drafted 4.6 feet last week. The end of March FC Elevation at Hungry Horse is 3503.4 feet. Outflows at Hungry Horse have been 8.3 Kcfs last week.

Dworshak is currently at an elevation of 1469.9 feet (3-24-11) and has drafted 9.4 feet last week. The end of March System Flood Control Elevation is 1445.0 feet, however the COE has approved a Flood Control deviation request to release approximately 14 Kcfs and operate Dworshak to target an April 15 elevation of 1451.4 ft. Outflows from Dworshak have been 13.9-15.8 Kcfs last week.

The Brownlee Reservoir was at an elevation of 2036.9 feet on March 23rd, 2011 drafting 3.2 feet last week. The end of March FC Elevation at Brownlee is 2038.7 feet. Over the last week, outflows at Brownlee have ranged between 29.7-35.5 Kcfs.

Spill:

Spill for fish passage is scheduled to begin on April 3rd at the lower Snake River projects, and on April 10th at the lower Columbia River projects. Some involuntary spill has occurred over the past week at McNary and Ice Harbor dams. Three units are presently out of operation at McNary Dam, limiting the hydraulic capacity of the project. A unit is also out at Ice Harbor Dam. At Bonneville Dam, a small amount of spill is being provided for attraction to the adult fishways.

Smolt Monitoring:

Smolt monitoring activities began at Bonneville Dam on March 1st, with the first sample worked up on March 2nd. SMP traps in the Snake River basin began sampling in January (Imnaha Trap) or the first week of March (Lewiston, Grande Ronde and Salmon River traps). New for 2011, the SMP is collecting species and life-stage data for juvenile lamprey that are sampled at the various dam and trap sites. There are three

possible species/life-stages of lamprey juveniles that SMP crews will be using to categorize their samples: 1) pacific lamprey ammocoetes, 2) brook lamprey ammocoetes, and 3) pacific lamprey macrophthalmia. A fourth category (unknown ammocoete) will be used for those ammocoetes that are either too small to identify to species or are indistinguishable to species. Juvenile lamprey numbers presented in weekly reports will be for all species/life-stages combined, unless otherwise stated.

Bonneville Dam is the only SMP dam that has sampled so far this season. The daily passage index for yearling Chinook has increased over the past week. With a daily average passage index of 1,512, yearling Chinook juveniles dominated the sample at BON over the past week. Most of these yearling Chinook juveniles were clipped, indicating hatchery origin. Chinook fry have also represented a large portion of the sample at BON this week. The daily average passage index for Chinook fry at BON was 1,253 per day this week. Small numbers of coho fry, steelhead, and sockeye juveniles continue to be sampled at BON. Finally, average daily collection counts of juvenile lamprey have decreased from last week. Last week's daily average collection was 150 per day, while this week's average daily counts were 91 per day. Pacific lamprey macrophthalmia continue to make up a majority of the lamprey juveniles collected at BON.

The Grande Ronde Trap is operated by the Oregon Department of Fish and Wildlife and is located at river mile two in the Grande Ronde River. Sampling at the Grande Ronde Trap began on March 6th with the first sample worked up on March 7th. The sample from the Grande Ronde Trap continues to be dominated by yearling Chinook. The daily average collection for yearling Chinook has increased over the past week, with this week's collection averaging 23 per day.

The Salmon River Trap is located at River km 103 and operated by Idaho Department of Fish and Game. Sampling at the Salmon River Trap began on March 6th with the first sample being worked up on March 7th. Yearling Chinook juveniles continued to dominate the collection at the trap this week. From March 17th to March 20th, the daily average collection for yearling Chinook was 673 per day. These yearling Chinook were mostly hatchery origin fish that were likely from the Rapid River Hatchery release. Since March 20th, the daily average collection has declined to 54 per day.

The Snake River Trap is located at River km 225 and operated by Idaho Department of Fish and Game. Sampling at the Snake River Trap began on March 6th with the first sample being worked up on March 7th. The trap continues to collect only a few juvenile salmonids each day; mostly yearling Chinook, Chinook fry, coho fry, and steelhead.

The Imnaha River Trap is operated by the Nez Perce Tribe, which provides data to the SMP on their fish collection. The trap has been operating since early January. However, not all the data collected at the Imnaha Trap for 2011 have been received by the FPC to date. The Imnaha Trap has been collecting mostly yearling Chinook over the past few weeks, with a daily average collection of approximately 41 per day over the past week. The Imnaha Trap has also collected a few steelhead juveniles each day over the past week.

SMP personnel at Lower Granite Dam will begin sampling on March 25th, with the first sample being worked up on March 26th. Other SMP sampling sites at dams will begin sampling by the first week of April.

It's worth noting that bypass systems at Lower Granite Dam and Little Goose Dam were watered up on or around March 22nd. Since this time, 905 PIT-tagged holdover fall Chinook have been detected at LGS and 19 have been detected at LGR. Most of these fish were released in late June to mid-July in 2010 and it is common for these late released fall Chinook to holdover. However, 241 of the PIT-tagged Chinook detected at LGS this week were released in September (135), October (105), or November (1) of 2010.

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 are available on the fpc.org at http://www.fpc.org/adultsalmon/adultqueries/Adult_Table_Species_Graph.html and <http://www.fpc.org/adultsalmon/AdultCumulativeTable.asp>.

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 (<http://www.fpc.org/>).

The following paragraphs describe the counts at Bonneville Dam (3/15 through 11/15), Willamette Falls Dam (1/1 through 12/31), and Lower Granite Dam (3/1 through 12/15) using the historical counting schedule. Adult counts at Bonneville Dam have been updated through March 24th. From March 15th through March 24th, daily adult spring Chinook counts at Bonneville Dam ranged from 0 to 14 adult salmon per day. As of March 24th, using the historical counting schedule, 52 spring Chinook have been counted at Bonneville Dam. In 2010, 145 adult spring Chinook were counted at Bonneville Dam for the same time period. The 2011 adult spring Chinook count at Bonneville Dam is 35.8% of the 2010 count and only 5.7% of the 10 year average of 909. At Willamette Falls Dam 3 adult spring Chinook has been counted so far this year.

The Bonneville Dam 2011 steelhead count of 375 is about 39.6% of the 2010 count of 946. The 2011 steelhead count is about 89.5% of the 10 year average count of 419. The 2011 Bonneville wild adult steelhead count, as of March 24th, was 157. This year's Lower Granite steelhead count of 2,878 is about 86.5% of the 2010 count of 3,327 and 78.4% of the 10 year average of 3,671. The 2011 Lower Granite wild adult steelhead count, as of March 22nd, was 858. At Willamette Falls Dam, the 2011 count for steelhead was 4,270, as of March 23rd. This year's steelhead count is about 1.07 times greater than the 2010 count of 3,979.

Hatchery Release:

Snake River Zone: The Snake River Zone encompasses the Snake River and its tributaries from its confluence with the Columbia River to Hells Canyon Dam. There were a few releases of yearling spring Chinook scheduled to begin over the past week in this zone. In all, these releases were expected to total just over 1.5 million spring Chinook juveniles. Of these, approximately 90% were scheduled for release into the Clearwater River and its tributaries and 10% were scheduled for release into the Grande Ronde River. In addition to the yearling Chinook releases that began this week, two large volitional releases that began last week continued this week. The first is a release of nearly 1.08 million juveniles from Dworshak NFH on

the Clearwater River. This release is expected to run through the end of the month. The second is a release of just over 2.5 million juveniles from Rapid River Hatchery to the Salmon River. This release is expected to run through mid- to late April. The only other releases that were scheduled to begin this week were of steelhead juveniles. In all, approximately 960,000 steelhead juveniles were scheduled to be released this week, all to the Clearwater River and its tributaries. Approximately 53% of these steelhead juveniles are unclipped and unmarked (i.e., no coded-wire tags or other external marks).

There are several releases of yearling spring Chinook juveniles scheduled to take place over the next two weeks. In all, these releases are expected to total nearly 2.25 million juveniles. Of these, approximately 79% are scheduled for release into the Clearwater River and its tributaries. Approximately 11% of the yearling spring Chinook juveniles that are scheduled for release over the next two weeks are going to be released into the Grande Ronde River, from the Grande Ronde and Catherine Creek acclimation facilities. Finally, the remaining 10% of the yearling spring Chinook are going to be released into the Tucannon River.

Approximately 1.27 million yearling summer Chinook are scheduled for release into this zone over the next two week. Of these, approximately 1.07 million will be released from Pahsimeroi Hatchery into the Pahsimeroi River. The remaining 204,000 are scheduled to be released into the Crooked River, a tributary of the Clearwater River. This is the first year that yearling summer Chinook will be released to the Clearwater River basin. These summer Chinook were transferred from McCall Hatchery to the Clearwater Hatchery for final rearing and release and are 100% CWT. Finally, nearly 2.7 million summer steelhead are scheduled for release to this zone over the next two weeks. Of these, nearly 45% are scheduled for release into the Clearwater River and its tributaries, nearly 29% are scheduled for release into the Salmon River, nearly 20% are scheduled for release into the Snake River (below Hells Canyon Dam), and about 7% are scheduled for release into the Grande Ronde River.

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 yearling spring Chinook juveniles from Cle Elem Hatchery acclimation sites continued this week. In all, these releases are expected to total about 835,000 spring Chinook juveniles. These releases

are expected to run through mid-May. No releases of juvenile salmonids to this zone were scheduled to begin this past week.

Two releases of summer steelhead are scheduled to take place in this zone over the next two weeks. These two releases include a release of approximately 145,500 juveniles to the mid-Columbia River and a release of about 85,000 juveniles to the Touchet River. These are the only releases that are scheduled for 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. There were no releases of juvenile salmonids scheduled to begin this past week to this zone. Approximately 965,000 spring Chinook juveniles are scheduled for release to this zone in early April. Of these, approximately 56% are scheduled for release into the Deschutes River while 44% are scheduled for release into the Umatilla River. Finally, approximately 2.5 million coho juveniles are scheduled to be released into the Klickitat River in early April.

Hatchery Releases Last Two Weeks

Hatchery Release Summary

From: 3/11/2011 **to** 03/24/11

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2011	200,000	03-18-11	03-18-11	Pinehurst Bridge	Little Salmon River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2011	400,000	03-14-11	03-17-11	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2011	2,511,000	03-14-11	04-22-11	Rapid River Hatchery	Little Salmon River
Idaho Dept. of Fish and Game Total					3,111,000				
Nez Perce Tribe	Clearwater Hatchery	CH1	SP	2011	414,000	03-23-11	03-24-11	Selway River	Clearwater River M F
Nez Perce Tribe	Dworshak NFH	CO	UN	2011	313,000	03-15-11	04-08-11	Kooskia Hatchery	Clearwater River M F
Nez Perce Tribe	Dworshak NFH	ST	SU	2011	110,000	03-21-11	03-25-11	S Fk Clearwater River	Clearwater River M F
Nez Perce Tribe	Kooskia NFH	CH1	SP	2011	657,000	03-24-11	04-04-11	Kooskia Hatchery	Clearwater River M F
Nez Perce Tribe Total					1,494,000				
U.S. Fish and Wildlife Service	Dworshak NFH	CH1	SP	2011	1,075,000	03-14-11	03-31-11	Dworshak Hatchery	Clearwater River M F
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2011	400,000	03-21-11	03-25-11	Clear Creek Redhouse (SFk)	Clearwater River M F
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2011	450,000	03-21-11	03-25-11	ClearH20 R)	S Fk Clearwater River
U.S. Fish and Wildlife Service Total					1,925,000				
Umatilla Tribe	Cascade Hatchery	CO	UN	2011	1,000,000	03-15-11	03-15-11	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2011	50,182	03-21-11	03-29-11	Catherine Creek Grande Ronde Acclim Pond	Grande Ronde River
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2011	53,120	03-22-11	03-30-11	Grande Ronde Acclim Pond	Grande Ronde River
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2011	54,963	03-22-11	03-30-11	Grande Ronde Acclim Pond	Grande Ronde River
Umatilla Tribe Total					1,158,265				
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2011	273,539	03-15-11	05-14-11	Jack Creek Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2011	279,639	03-15-11	05-14-11	Clark Flat Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2011	282,335	03-15-11	05-14-11	Easton Pond	Yakima River
Yakama Tribe	Klickitat Hatchery	CH1	SP	2011	600,000	03-15-11	03-15-11	Klickitat Hatchery	Klickitat River
Yakama Tribe Total					1,435,513				
Grand Total					9,123,778				

Hatchery Releases Next Two Weeks

Hatchery Release Summary									
From:	3/25/2011		to		4/7/2011				
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2011	291,000	03-25-11	03-28-11	Clear Creek	Clearwater River M F
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2011	413,000	04-06-11	04-07-11	Powell Acclim Pond	Lochsa River
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2011	1,117,000	03-29-11	04-05-11	Red River	S Fk Clearwater River
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SU	2011	204,000	03-29-11	03-29-11	Crooked River	S Fk Clearwater River
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2011	90,000	04-06-11	04-06-11	Shoup Br (Salmon R)	Salmon River (ID)
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2011	120,000	04-04-11	04-06-11	Salmon River (ID)	Salmon River (ID)
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2011	120,000	04-06-11	04-08-11	Salmon River (ID)	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2011	100,000	03-31-11	04-05-11	Little Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2011	345,000	04-06-11	05-04-11	Little Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2011	525,000	03-30-11	03-31-11	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game	Pahsimeroi Hatchery	CH1	SU	2011	1,067,000	03-31-11	04-12-11	Pahsimeroi Hatchery	Pahsimeroi River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2011	2,511,000	03-14-11	04-22-11	Rapid River Hatchery	Little Salmon River
Idaho Dept. of Fish and Game Total					6,903,000				
Nez Perce Tribe	Dworshak NFH	CO	UN	2011	313,000	03-15-11	04-08-11	Kooskia Hatchery	Clearwater River M F
Nez Perce Tribe	Dworshak NFH	ST	SU	2011	110,000	03-21-11	03-25-11	S Fk Clearwater River	Clearwater River M F
Nez Perce Tribe	Kooskia NFH	CH1	SP	2011	657,000	03-24-11	04-04-11	Kooskia Hatchery	Clearwater River M F
								Nez Perce Tribal	
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH1	SP	2011	240,000	04-01-11	04-15-11	Hatchery	Clearwater River M F
Nez Perce Tribe Total					1,320,000				
U.S. Fish and Wildlife Service	Dworshak NFH	CH1	SP	2011	1,075,000	03-14-11	03-31-11	Dworshak Hatchery	Clearwater River M F
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2011	400,000	03-21-11	03-25-11	Clear Creek	Clearwater River M F
								Redhouse (SFk	
								ClearH20 R)	S Fk Clearwater River
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2011	450,000	03-21-11	03-25-11		
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2011	1,200,000	03-28-11	04-01-11	Dworshak Hatchery	Clearwater River M F
								Warm Springs	
U.S. Fish and Wildlife Service	Warm Springs NFH	CH1	SP	2011	538,388	04-04-11	04-27-11	Hatchery	Deschutes River
U.S. Fish and Wildlife Service Total					3,663,388				
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2011	50,182	03-21-11	03-29-11	Catherine Creek	Grande Ronde River
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2011	50,307	04-05-11	04-14-11	Catherine Creek	Grande Ronde River
								Grande Ronde Acclim	
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2011	53,120	03-22-11	03-30-11	Pond	Grande Ronde River
								Grande Ronde Acclim	
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2011	54,963	03-22-11	03-30-11	Pond	Grande Ronde River
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2011	58,825	03-30-11	04-14-11	Catherine Creek	Grande Ronde River
								Grande Ronde Acclim	
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2011	135,247	04-06-11	04-14-11	Pond	Grande Ronde River
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2011	193,000	04-01-11	04-15-11	Umatilla River	Umatilla River
								Thornhollow Acclim	
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2011	234,000	04-01-11	04-01-11	Pond	Umatilla River
Umatilla Tribe Total					829,644				
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2011	85,000	04-01-11	04-15-11	Dayton Acclim Pond	Touchet River
								Cottonwood Acclim	
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2011	197,000	04-01-11	04-10-11	Pond	Grande Ronde River
								Ringold Springs	
Washington Dept. of Fish and Wildlife	Ringold Springs Hatchery	ST	SU	2011	145,500	04-01-11	04-15-11	Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	CH1	SP	2011	113,000	04-01-11	04-30-11	Curl Lake Acclim Pond	Tucannon River
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	CH1	SP	2011	118,000	04-01-11	04-30-11	Curl Lake Acclim Pond	Tucannon River
Washington Dept. of Fish and Wildlife	Washougal Hatchery	CO	NO	2011	2,500,000	04-01-11	04-07-11	Klickitat River	Klickitat River
Washington Dept. of Fish and Wildlife Total					3,158,500				
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2011	273,539	03-15-11	05-14-11	Jack Creek Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2011	279,639	03-15-11	05-14-11	Clark Flat Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2011	282,335	03-15-11	05-14-11	Easton Pond	Yakima River
Yakama Tribe Total					835,513				
Grand Total					16,710,045				

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

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
03/11/2011	133.4	0.0	140.3	0.0	137.5	0.0	134.0	0.0	138.9	0.0	144.3	5.2	141.8	0.0
03/12/2011	134.8	0.0	138.8	0.0	138.8	0.1	139.0	0.0	143.0	0.0	150.5	11.3	149.3	0.0
03/13/2011	128.8	0.0	124.7	0.0	127.8	0.0	132.4	0.0	135.8	0.0	145.2	5.2	144.6	0.0
03/14/2011	126.4	0.0	128.3	0.0	129.2	0.0	129.0	0.0	129.5	1.6	140.2	1.5	136.2	1.4
03/15/2011	116.7	0.0	120.4	0.0	122.8	0.0	124.3	0.0	129.0	0.0	136.1	0.5	136.5	0.1
03/16/2011	110.2	0.0	110.3	0.0	112.8	0.0	115.4	0.0	120.1	0.0	129.4	2.3	124.1	1.0
03/17/2011	87.0	0.0	90.8	0.0	98.3	0.0	101.3	0.0	104.4	0.0	124.9	0.0	130.9	0.0
03/18/2011	94.7	0.0	94.7	0.0	94.5	0.0	90.4	0.0	92.6	0.0	109.5	0.0	116.3	0.0
03/19/2011	85.4	0.0	84.7	0.0	87.3	0.0	89.3	0.0	93.3	0.0	96.1	0.0	89.2	0.0
03/20/2011	79.4	0.0	78.6	0.0	77.7	0.0	77.0	0.0	80.8	0.0	90.8	0.0	91.8	0.0
03/21/2011	120.5	0.0	115.7	0.0	116.0	0.0	115.5	0.0	118.9	0.0	114.7	0.0	109.5	0.0
03/22/2011	124.7	0.0	129.0	0.0	131.6	0.0	130.2	0.0	130.5	0.0	132.3	0.0	127.8	0.0
03/23/2011	133.5	0.0	139.8	0.0	137.7	0.0	133.7	0.0	136.5	0.0	144.1	6.2	139.2	0.0
03/24/2011	120.8	0.0	123.4	0.0	128.5	0.0	129.5	0.0	130.8	0.0	143.3	0.0	147.4	0.0

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
03/11/2011	14.1	3.4	20.8	19.4	56.3	0.0	59.9	0.0	68.7	0.0	67.9	0.0
03/12/2011	14.1	3.4	21.3	23.5	61.0	0.0	61.6	0.0	68.0	0.0	66.8	0.0
03/13/2011	13.9	3.3	21.9	22.3	48.9	0.0	34.0	0.0	41.6	0.0	43.1	0.0
03/14/2011	13.9	3.4	25.0	25.0	58.5	0.0	57.8	0.0	62.7	0.0	60.6	0.0
03/15/2011	14.0	3.4	27.7	25.0	61.0	0.0	60.2	0.0	68.1	0.0	70.0	0.0
03/16/2011	13.9	3.4	35.3	19.2	64.1	0.0	56.0	0.0	61.9	0.0	62.9	0.0
03/17/2011	13.9	3.4	40.2	28.5	74.6	0.0	75.8	0.0	88.1	0.0	88.4	12.5
03/18/2011	13.9	3.3	34.5	31.3	73.6	0.0	74.8	0.0	81.9	0.0	82.8	6.9
03/19/2011	14.8	4.2	33.1	34.9	78.9	0.0	73.9	0.0	82.5	0.0	80.0	5.1
03/20/2011	14.8	4.2	29.6	34.8	80.3	0.0	70.3	0.0	78.4	0.0	76.2	3.6
03/21/2011	13.4	3.3	29.1	35.0	71.4	0.0	72.8	0.0	80.7	0.0	81.9	7.6
03/22/2011	14.7	4.2	32.6	34.9	72.3	0.0	61.1	0.0	73.3	0.0	74.3	0.0
03/23/2011	14.9	4.3	28.9	35.9	75.2	0.0	67.7	0.0	78.8	0.0	79.0	4.2
03/24/2011	15.8	5.1	---	---	80.7	0.0	77.2	0.0	79.8	0.0	77.4	3.3

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
03/11/2011	199.4	38.9	203.7	0.0	204.0	0.0	235.0	1.4	101.8	124.8
03/12/2011	204.8	48.0	222.0	0.0	228.0	0.0	246.3	1.4	118.8	119.2
03/13/2011	205.0	50.1	187.2	0.0	185.5	0.0	202.3	1.4	88.2	105.6
03/14/2011	203.1	48.0	214.2	0.0	220.2	0.0	229.9	1.4	103.5	115.9
03/15/2011	217.7	62.3	209.5	0.0	209.2	0.0	226.6	1.4	96.2	117.0
03/16/2011	209.8	53.9	178.9	0.0	182.5	0.0	216.3	1.3	92.5	110.9
03/17/2011	229.4	70.9	222.9	0.0	224.3	0.0	243.5	1.4	107.3	122.8
03/18/2011	222.6	62.9	230.5	0.0	229.6	0.0	245.9	1.5	112.1	120.3
03/19/2011	209.2	48.2	213.3	0.0	219.8	0.0	242.1	1.4	103.0	125.7
03/20/2011	188.4	24.3	198.3	0.0	198.2	0.0	208.8	1.4	84.4	111.0
03/21/2011	188.2	26.1	168.7	0.0	174.3	0.0	208.6	1.4	82.8	112.4
03/22/2011	184.3	12.1	200.7	0.0	198.8	0.0	204.7	1.4	86.3	105.0
03/23/2011	224.6	50.5	235.9	0.0	238.2	0.0	246.7	1.4	107.6	125.7
03/24/2011	220.5	50.5	224.4	0.0	227.5	0.0	241.5	1.4	105.5	122.6

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>	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		
3/11	---	---	---	0	102.2	102.6	103.2	19	101.9	102.0	102.2	24	102.9	103.1	103.2	19	---	---	---	0
3/12	---	---	---	0	102.4	103.0	104.1	23	102.1	102.4	102.6	24	102.9	103.3	103.5	23	---	---	---	0
3/13	---	---	---	0	102.4	103.0	103.7	19	102.5	102.9	103.2	22	103.4	103.8	104.2	19	---	---	---	0
3/14	---	---	---	0	102.4	102.5	102.9	20	102.2	102.3	102.6	24	103.5	103.7	103.9	20	---	---	---	0
3/15	---	---	---	0	103.0	103.8	104.2	21	103.1	103.5	103.8	24	104.3	104.7	105.2	21	---	---	---	0
3/16	---	---	---	0	103.5	103.9	104.7	23	103.0	103.2	103.5	24	104.2	104.5	104.9	23	---	---	---	0
3/17	---	---	---	0	102.5	102.9	103.3	21	102.1	102.2	102.3	24	103.4	103.7	103.8	21	---	---	---	0
3/18	---	---	---	0	103.4	104.2	104.4	23	102.7	103.3	103.8	24	104.4	104.9	105.3	23	---	---	---	0
3/19	---	---	---	0	103.7	104.0	104.4	23	103.5	103.7	103.9	24	105.1	105.4	105.8	23	---	---	---	0
3/20	---	---	---	0	103.4	104.3	105.2	23	103.3	103.8	104.0	24	105.1	105.7	105.9	23	---	---	---	0
3/21	100.0	100.0	100.2	13	103.8	104.1	104.6	23	103.9	104.1	104.7	24	104.3	105.4	106.3	23	103.0	103.0	103.3	10
3/22	100.0	100.1	100.2	24	103.3	103.6	104.1	24	103.1	103.3	103.6	24	101.9	102.1	102.7	24	102.5	102.6	102.7	24
3/23	100.0	100.0	100.2	22	103.9	104.1	104.3	23	103.2	103.8	104.0	24	102.0	102.5	102.7	23	102.2	102.3	102.4	24
3/24	100.0	100.0	100.0	6	104.0	104.2	104.5	24	104.4	104.6	104.9	24	103.0	103.3	103.7	24	102.8	102.9	103.0	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>	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		
3/11	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/12	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/13	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/14	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/15	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/16	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/17	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/18	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/19	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/20	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/21	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/22	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/23	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/24	103.0	103.1	103.8	14	---	---	---	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>	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		
3/11	---	---	---	0	---	---	---	0	101.2	101.5	101.6	24	101.2	101.4	101.7	24	101.7	102.2	102.4	24
3/12	---	---	---	0	---	---	---	0	101.5	101.7	102.0	24	102.2	102.7	103.5	24	102.8	103.3	105.0	24
3/13	---	---	---	0	---	---	---	0	101.7	102.1	102.4	24	129.1	156.2	746.0	24	130.0	157.1	748.0	24
3/14	---	---	---	0	---	---	---	0	101.4	101.6	101.9	24	101.1	101.3	101.9	24	102.2	102.8	104.1	24
3/15	---	---	---	0	---	---	---	0	102.4	102.8	103.0	24	102.1	102.4	102.5	24	102.8	103.3	103.8	24
3/16	---	---	---	0	---	---	---	0	102.1	102.3	102.5	24	101.9	102.1	102.3	24	102.0	102.3	102.7	24
3/17	---	---	---	0	---	---	---	0	101.5	101.7	101.8	24	101.6	101.7	101.7	24	102.0	102.6	103.1	24
3/18	---	---	---	0	---	---	---	0	102.2	102.6	102.9	24	102.1	102.5	102.8	24	102.6	103.0	103.3	24
3/19	---	---	---	0	---	---	---	0	102.8	102.9	103.0	24	102.6	102.7	102.9	24	103.1	103.5	103.7	24
3/20	---	---	---	0	---	---	---	0	103.2	103.5	103.6	24	102.9	103.2	103.3	24	103.4	103.8	104.0	24
3/21	---	---	---	0	---	---	---	0	103.3	103.5	103.6	24	103.2	103.3	103.4	24	103.5	103.8	104.1	24
3/22	---	---	---	0	---	---	---	0	102.2	102.4	102.8	24	102.0	102.2	102.7	24	102.5	102.7	103.0	24
3/23	---	---	---	0	---	---	---	0	102.5	103.0	103.5	24	103.0	104.3	105.9	24	102.5	103.0	103.9	24
3/24	---	---	---	0	---	---	---	0	103.8	104.0	104.1	24	104.4	104.5	104.6	24	105.2	105.5	106.2	24

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	
3/11	---	---	---	0	102.2	102.6	103.2	19	101.9	102.0	102.2	24	102.9	103.1	103.2	19	---	---	---	0
3/12	---	---	---	0	102.4	103.0	104.1	23	102.1	102.4	102.6	24	102.9	103.3	103.5	23	---	---	---	0
3/13	---	---	---	0	102.4	103.0	103.7	19	102.5	102.9	103.2	22	103.4	103.8	104.2	19	---	---	---	0
3/14	---	---	---	0	102.4	102.5	102.9	20	102.2	102.3	102.6	24	103.5	103.7	103.9	20	---	---	---	0
3/15	---	---	---	0	103.0	103.8	104.2	21	103.1	103.5	103.8	24	104.3	104.7	105.2	21	---	---	---	0
3/16	---	---	---	0	103.5	103.9	104.7	23	103.0	103.2	103.5	24	104.2	104.5	104.9	23	---	---	---	0
3/17	---	---	---	0	102.5	102.9	103.3	21	102.1	102.2	102.3	24	103.4	103.7	103.8	21	---	---	---	0
3/18	---	---	---	0	103.4	104.2	104.4	23	102.7	103.3	103.8	24	104.4	104.9	105.3	23	---	---	---	0
3/19	---	---	---	0	103.7	104.0	104.4	23	103.5	103.7	103.9	24	105.1	105.4	105.8	23	---	---	---	0
3/20	---	---	---	0	103.4	104.3	105.2	23	103.3	103.8	104.0	24	105.1	105.7	105.9	23	---	---	---	0
3/21	100.0	100.0	100.2	13	103.8	104.1	104.6	23	103.9	104.1	104.7	24	104.3	105.4	106.3	23	103.0	103.0	103.3	10
3/22	100.0	100.1	100.2	24	103.3	103.6	104.1	24	103.1	103.3	103.6	24	101.9	102.1	102.7	24	102.5	102.6	102.7	24
3/23	100.0	100.0	100.2	22	103.9	104.1	104.3	23	103.2	103.8	104.0	24	102.0	102.5	102.7	23	102.2	102.3	102.4	24
3/24	100.0	100.0	100.0	6	104.0	104.2	104.5	24	104.4	104.6	104.9	24	103.0	103.3	103.7	24	102.8	102.9	103.0	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	
3/11	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/12	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/13	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/14	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/15	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/16	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/17	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/18	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/19	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/20	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/21	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/22	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/23	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/24	103.0	103.1	103.8	14	---	---	---	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	
3/11	---	---	---	0	---	---	---	0	101.2	101.5	101.6	24	101.2	101.4	101.7	24	101.7	102.2	102.4	24
3/12	---	---	---	0	---	---	---	0	101.5	101.7	102.0	24	102.2	102.7	103.5	24	102.8	103.3	105.0	24
3/13	---	---	---	0	---	---	---	0	101.7	102.1	102.4	24	129.1	156.2	746.0	24	130.0	157.1	748.0	24
3/14	---	---	---	0	---	---	---	0	101.4	101.6	101.9	24	101.1	101.3	101.9	24	102.2	102.8	104.1	24
3/15	---	---	---	0	---	---	---	0	102.4	102.8	103.0	24	102.1	102.4	102.5	24	102.8	103.3	103.8	24
3/16	---	---	---	0	---	---	---	0	102.1	102.3	102.5	24	101.9	102.1	102.3	24	102.0	102.3	102.7	24
3/17	---	---	---	0	---	---	---	0	101.5	101.7	101.8	24	101.6	101.7	101.7	24	102.0	102.6	103.1	24
3/18	---	---	---	0	---	---	---	0	102.2	102.6	102.9	24	102.1	102.5	102.8	24	102.6	103.0	103.3	24
3/19	---	---	---	0	---	---	---	0	102.8	102.9	103.0	24	102.6	102.7	102.9	24	103.1	103.5	103.7	24
3/20	---	---	---	0	---	---	---	0	103.2	103.5	103.6	24	102.9	103.2	103.3	24	103.4	103.8	104.0	24
3/21	---	---	---	0	---	---	---	0	103.3	103.5	103.6	24	103.2	103.3	103.4	24	103.5	103.8	104.1	24
3/22	---	---	---	0	---	---	---	0	102.2	102.4	102.8	24	102.0	102.2	102.7	24	102.5	102.7	103.0	24
3/23	---	---	---	0	---	---	---	0	102.5	103.0	103.5	24	103.0	104.3	105.9	24	102.5	103.0	103.9	24
3/24	---	---	---	0	---	---	---	0	103.8	104.0	104.1	24	104.4	104.5	104.6	24	105.2	105.5	106.2	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>							
	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24h Avg	12h Avg	High	# hr	24h Avg	12h Avg	High	# hr				
3/11	103.1	103.3	103.6	24	108.6	110.1	110.3	24	---	---	---	0	105.5	105.9	106.1	24	---	---	---	0
3/12	102.8	103.2	103.5	24	109.7	110.0	110.4	24	---	---	---	0	106.0	106.2	106.3	24	---	---	---	0
3/13	103.0	103.4	103.9	22	110.1	110.5	112.3	22	---	---	---	0	106.6	107.0	107.6	22	---	---	---	0
3/14	102.6	102.9	103.4	24	109.7	109.9	110.0	24	---	---	---	0	106.2	106.3	106.5	24	---	---	---	0
3/15	103.8	104.0	104.4	24	112.3	112.9	113.2	24	---	---	---	0	106.1	106.1	106.5	9	---	---	---	0
3/16	103.4	103.5	103.7	24	110.5	110.7	111.0	24	---	---	---	0	105.5	105.7	106.0	19	---	---	---	0
3/17	102.8	102.9	103.3	24	112.6	114.1	114.2	24	---	---	---	0	105.3	105.7	105.8	24	---	---	---	0
3/18	103.1	103.3	103.6	24	112.4	112.7	112.9	24	---	---	---	0	106.3	106.6	106.9	24	---	---	---	0
3/19	103.5	103.9	104.6	24	110.8	110.9	111.2	24	---	---	---	0	106.2	106.5	106.7	24	---	---	---	0
3/20	104.6	104.8	104.8	24	108.7	111.0	111.3	24	---	---	---	0	106.8	107.0	107.3	24	---	---	---	0
3/21	104.2	104.4	104.6	24	107.6	110.2	110.7	24	---	---	---	0	106.3	106.6	106.8	24	---	---	---	0
3/22	103.0	103.2	103.6	24	105.7	107.9	108.6	24	---	---	---	0	105.4	105.7	105.8	24	---	---	---	0
3/23	103.5	104.1	104.5	24	110.1	111.0	112.0	24	---	---	---	0	106.5	107.3	107.6	24	---	---	---	0
3/24	104.3	104.6	104.9	24	110.5	110.9	111.6	24	---	---	---	0	107.1	107.3	107.4	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>							
	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr	24h Avg	12h Avg	High	# hr	24h Avg	12h Avg	High	# hr				
3/11	104.9	105.1	105.4	24	---	---	---	0	104.7	105.1	105.4	24	104.5	105.1	105.6	24	112.4	112.5	119.5	13
3/12	105.4	105.7	105.8	24	---	---	---	0	105.2	105.3	105.4	24	104.5	104.7	105.0	24	111.3	111.7	111.9	24
3/13	105.7	106.0	106.5	22	---	---	---	0	105.6	105.9	106.6	22	104.5	104.8	105.2	22	111.0	111.2	111.5	22
3/14	105.4	105.6	106.1	24	---	---	---	0	104.8	105.2	105.9	24	104.4	105.1	105.6	24	110.7	111.2	111.6	24
3/15	106.4	106.6	106.9	24	---	---	---	0	106.4	106.7	107.0	24	105.4	105.7	106.0	24	111.3	111.8	112.1	24
3/16	105.2	105.5	105.7	24	---	---	---	0	105.9	106.0	106.2	24	105.0	105.2	105.3	24	110.6	110.8	111.1	24
3/17	104.7	105.1	105.3	24	---	---	---	0	105.3	105.6	105.7	24	105.2	105.8	106.3	24	111.0	111.6	112.7	24
3/18	105.5	105.7	106.0	24	---	---	---	0	105.8	106.0	106.2	24	105.1	105.4	105.7	24	112.2	112.8	113.4	24
3/19	105.4	105.5	105.6	24	---	---	---	0	106.1	106.3	106.5	24	105.6	106.1	106.6	24	112.0	112.5	112.7	24
3/20	106.0	106.2	106.6	24	---	---	---	0	106.7	107.0	107.2	24	105.5	105.8	106.1	24	112.1	112.5	112.6	24
3/21	105.6	106.0	106.1	24	---	---	---	0	105.8	106.0	106.4	24	105.2	105.4	105.8	24	110.7	111.0	111.3	24
3/22	104.6	104.7	104.8	24	---	---	---	0	105.1	105.3	105.4	24	104.9	105.8	106.6	24	110.4	110.8	111.3	24
3/23	105.8	106.4	106.7	24	---	---	---	0	105.8	106.2	106.4	24	105.0	105.5	106.0	24	111.2	111.8	112.3	24
3/24	106.5	106.8	106.8	24	---	---	---	0	106.5	106.7	107.1	24	105.4	105.6	105.8	24	111.3	111.8	112.2	24

Two-Week Summary of Passage Indices

* See sampling comments

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

Smolt indices, clipped & unclipped or combined, are presented in the following order: yearling chinook (chinook 1's), subyearling chinook (chinook 0's), steelhead, coho, sockeye, and lamprey juveniles. Two classes of fish counts are shown in these tables:

Two classes of fish counts are shown in these tables:

Collection counts (Coll), which account for sample rates but are not adjusted for flow;

Passage indices (INDEX), which are collection counts divided by the proportion of water passing through the sampled powerhouse.

Passage indices are not population estimates, but are used to adjust collection counts for daily fluctuations in the site's or project's operations.

The classes of counts presented in the report are defined below for each site. Most samples occur over a 24-hr period that spans two calendar days. In this report, the date shown corresponds with the sample end date.

Combined lamprey juvenile collection counts are provided for all sites. Combined lamprey juveniles is a combination of pacific lamprey ammocoetes, brook lamprey ammocoetes, unknown lamprey ammocoetes, and pacific lamprey macrophthalmia.

† Caution should be used with interpreting lamprey juvenile collection counts at LGR because of the possibility that lamprey may escape the sample tank before being sampled

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.

Cumulative Adult Passage at Mainstem Dams Through: 03/24

DAM	EndDate	Spring Chinook						Summer Chinook						Fall Chinook					
		2011		2010		10-Yr Avg.		2011		2010		10-Yr Avg.		2011		2010		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	03/24	52	0	145	8	909	0	0	0	0	0	0	0	0	0	0	0	0	0
TDA	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JDA	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MCN	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IHR	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LMN	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGS	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGR	03/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRD	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RRH	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEL	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WFA	03/23	3	0	118	0	-	-	-	-	-	-	-	-	0	0	0	0	-	-

DAM	Coho						Sockeye			Steelhead			
	2011		2010		10-Yr Avg.		2011	2010	10-Yr Avg.	2011	2010	10-Yr Avg.	Wild 2011
	Adult	Jack	Adult	Jack	Adult	Jack							
BON	0	0	0	0	0	0	0	0	0	375	946	419	157
TDA	0	0	0	0	0	0	0	0	0	0	0	0	0
JDA	0	0	0	0	0	0	0	0	0	0	0	0	0
MCN	0	0	0	0	0	0	0	0	0	0	0	0	0
IHR	0	0	0	0	0	0	0	0	0	0	0	0	0
LMN	0	0	0	0	0	0	0	0	0	0	0	0	0
LGS	0	0	0	0	0	0	0	0	0	0	0	0	0
LGR	0	0	0	0	0	0	0	0	0	2878	3327	3671	858
PRD	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS	0	0	0	0	0	0	0	0	0	0	0	0	0
RRH	0	0	0	0	0	0	0	0	0	0	0	0	0
WEL	0	0	0	0	0	0	0	0	0	0	0	0	0
WFA	0	0	0	0	-	-	-	-	-	4270	3979	-	-

PRD does not post wild steelhead numbers.
 These numbers were collected from USACE, Grant PUD, Douglas PUD, Chelan PUD, ODFW and DART.
 Wild steelhead numbers are included in the total. Wild Steelhead are defined as unclipped fish.
 Historic counts (pre-1996) were obtained from CRITFC and compiled by the FPC.
 Historic counts 1997 to present were obtained from the Corps of Engineers.

Page last updated on: 03/25/11

BON counts from January 1, 2009 to March 15, 2010 (historical counts begin March 15):

Year	Chinook Adult	Chinook Jack	Steelhead	Wild Steelhead
2011	49	1	1,419	600
2010	39	0	2,318	657