



## Fish Passage Center

# Weekly Report #98 - 7

May 1, 1998

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### SUMMARY OF EVENTS:

**Water Supply:** Precipitation for the October through April period varied from 77% at Flathead to 118% at Klamath basin and Harney/Malheur basin. Most of the precipitation in the basin continues to fall in the 80% to 100% range. Precipitation distribution for April 1 through 28 shows high variations, with the highest precipitation in Owyhee/Malheur basin at 162% and the lowest at NW Slope Washington Cascade with 47%. Klamath basin, Upper Deschutes/Crooked, Okanogan and Harney/Malheur basins were sites with a high precipitation in the range of 126%-142%. Precipitation in the Columbia above Coulee was 89% of the average, the Columbia above The Dalles was 98% of the average and the Snake River above Ice Harbor was 119% of the average.

The new May Early Runoff Volume Forecast has been issued. In general, the runoff volume forecast decreased from the April final by 3% in the upper Columbia basin at Hungry Horse and decreased by 2% and 1% in the Snake River basin at Brownlee and Dworshak. Comparison with the April Final Runoff Volume Runoff forecast shows a decreasing trend at the upper Columbia basin and no change at the rest of the major sites. The summary of results is shown in the following Table:

Location	Period	March 98 Final		April 98 Final		May 98 Early	
		MAF	%	MAF	%	MAF	%
Libby	Apr-Sep	5.37	79	5.52	82	5.54	81
Hungry Horse	Apr-Sep	1.62	74	1.62	74	1.56	71
Grand Coulee	Jan-Jul	54.8	87	55.6	88	5.54	88
The Dalles	Jan-Jul	91.7	87	90.8	86	90.8	86
Lower Granite	Jan-Jul	26.4	89	25.0	84	25.0	84
Dworshak	Apr-Jul	2.0	74	1.75	65	1.75	65
Brownlee	Apr-Jul	5.25	91	4.78	82	4.76	82

**System Storage and Streamflow:** The system was overdrafted earlier in the season for flood control purposes and for maintenance work. Most of the major reservoirs were below the required flood control elevation on April 30 and continue to refill. Consequently, current flows in the system are low. Fishery Agencies had expressed concern regarding this possibility earlier in the winter. Fishery Agencies are now seriously concerned about present flow levels and the flows which will be achieved in the summer. A summary of actual elevations and required flood control elevations at the end of April is shown in the following table:

Reservoir	Actual Elev. [ft] 4/30/98	Max. Reservoir Pool [ft]	End of April Flood Control Elev. [ft]
Libby	2399.62	2459.0	NA
Hungry Horse	3519.11	3560.0	3526.7
Grand Coulee	1276.9	1290.0	1281.2
Brownlee	2073.2	2077.0	2073.5
Dworshak	1561.93	1600.0	1595.4*

\*required flood control elevation for April 15.

Libby continues to refill at a minimum outflow of 4 kcfs.

Hungry Horse continues to maintain a minimum outflow of about 200 cfs, controlling the flow of 3.5 kcfs at Columbia Falls. It continues to refill to the BiOp required end of June elevation.

Grand Coulee has been refilling during the last week. Fishery agencies request for higher flows at Priest Rapids and McNary were only partially met. The outflow was in the range of 54.4-107.2 kcfs. Projected operations

for the coming week are to draft the reservoir with outflows to support a flow of 120 kcfs at Priest Rapids.

Brownlee was slowly refilling during last week and it will continue to refill. The average outflow during last week was about 31 kcfs. Inflows during the coming week will be about 32 kcfs. The projected outflow is not planned to exceed 32 kcfs to limit spill below the Hells Canyon Dam.

Dworshak continued releases to a full powerhouse capacity of 9.9 kcfs from April 20 to support higher flows at Lower Granite. If the natural inflow at Lower Granite increases to support the requested outflow of 100 kcfs, Dworshak outflow will be decreased. Dworshak is projected to refill. Fishery Agencies requested daily average flows of 100 kcfs

Upper Snake reservoirs:

The reservoirs will continue to pass inflow through the end of the next week. The May Early Runoff Volume Forecast increased by 1%, compared to the April Midmonth Runoff Volume Forecast for the Upper Snake Basin. The runoff volumes for the major sites remained in the range of 82% to 97% of average.

The irrigation demands increased and are expected that they will continue to increase, depending on the weather forecast.

Jackson Lake is projected to pass inflow of 0.78 kcfs by the end of next week. Currently the reservoir is 77% full.

Palisades continues to pass inflow through the end of next week. Currently, the outflow is 8.9 kcfs and the reservoir is 59% full.

American Falls continues to pass inflow of 12.1 kcfs by the end of next week.

Millner flow at the lowest point of the Upper Snake system is projected not to exceed 8 kcfs through the end of next week. Current outflow is 5.7 kcfs because of the irrigation withdrawal of 5.3 kcfs at Minidoka.

The weekly average flows are increasing compared to the previous week but they are below the target BiOp flows. The summary of

average weekly flows for run of-the-river projects during the April 16 through 30 period is shown in the following Table:

Project	April 24-30	April 16-22
Priest Rapids	104 kcfs	85.8 kcfs
McNary	196 kcfs	144.3 kcfs
Lower Granite	88.4 kcfs	57.6 kcfs
Bonneville	218.6 kcfs	157.3 kcfs

**Spill.** Spill at Lower Granite Dam over the past week has averaged 21.6 kcfs per day. Total dissolved gas below the project has remained well below the gas cap. The limitation of spill is due to the stated need for a consistent powerhouse operation during the conduct of the fish curtain test. Little Goose and Lower Monumental dams have been spilling to the 120% total dissolved gas cap from 1800 hours to 0600 hours. Spill at Ice Harbor Dam has been provided on a 24-hour basis. Daytime spill is limited to 45 kcfs because of adult passage concerns. At the present flows, more than 90% of the flow is being spilled during nighttime hours.

Spill in the Lower Columbia River began on April 20, 1998. Spill was requested from 1800 to 0600 hours at McNary and John Day dams and for 24 hours per day at The Dalles and Bonneville dams, at amounts up to the 115/120% gas cap consistent with a system-wide approach to passage management. The request asked that spill be limited to 75 kcfs during daytime hours at Bonneville Dam because of adult passage concerns. The request is being implemented above the minimum generation flows established by BPA of 50 kcfs for McNary, The Dalles and John Day dams, and 30 kcfs at Bonneville Dam established by the operating agencies. At The Dalles Dam research is being conducted with lower spill levels resulting in lower than the 64% spill on alternate days. At John Day Dam the spill is being limited to 60% of instantaneous project flow, resulting in spill less than the gas cap level. Spill for fish passage is occurring at all the Mid-Columbia projects.

Total Dissolved Gas Supersaturation and gas

Bubble Trauma Monitoring: Total dissolved gas levels are being managed to the gas waivers below Little Goose and Lower Monumental dams, and are below the waivers at the other lower Snake projects. The gas levels in the lower Columbia at or below the gas waivers at all sites. Limited data is available for the Mid-Columbia sites at this time, but levels at the sites monitored show dissolved gas levels below the waivers. Gas bubble trauma monitoring has occurred at all sites over the past week. Few fish are showing signs throughout the system, with the percentage of signs remaining well below the action criteria.

**Smolt Monitoring.** *Snake River Drainage.* A sharp rise in tributary flows April 23 to 24 resulted in a spike in chinook and steelhead catches on April 24 at the traps on the lower Salmon (WTB), Grande Ronde (GRN), and Snake (LEW) rivers. The Imnaha River trap (IMN) was not operated due to the high flow and debris load. During the past four days hatchery steelhead have begun to dominate the catches in the Salmon River, Imnaha River, and Snake River traps, while wild chinook and hatchery steelhead have been equally present in the Grande Ronde River trap collections. As flows continued to rise from the 60's to 90's kcfs, passage indices at Lower Granite Dam rose for hatchery and wild chinook and steelhead. As flows dropped back into the low 80's kcfs during the latter part of this reporting period, the passage indices of chinook and steelhead at Lower Granite dam also began a downward trend. During this week, a peak daily passage index of approximately 293,000 hatchery steelhead, 50,000 wild steelhead, 98,000 hatchery chinook, and 12,000 wild chinook occurred at Lower Granite Dam. Higher passage indices for chinook and steelhead are also reported for Little Goose and Lower Monumental dams this week.

*Columbia River Drainage.* Smolt passage indices have increased this week at Rock Island Dam for yearling chinook and wild and hatchery steelhead; wild sockeye passage indices have remained strong. During this week, a peak daily passage index of 1,275 wild Wenatchee sockeye

occurred at Rock Island Dam. To-date, few hatchery Wenatchee sockeye have been observed in the catches at Rock Island Dam. This week has seen increasing passage indices at McNary Dam for yearling and subyearling chinook, coho, wild steelhead, and wild sockeye, and a drop in hatchery steelhead levels. Both John Day and Bonneville dams have had higher passage indices for yearling chinook, coho, and hatchery and wild steelhead this week compared to last week's level. Decreasing numbers of subyearling chinook (Spring Creek Hatchery tule fall chinook) were present at Bonneville Dam throughout this week.

**Adult Fish Passage:** At Bonneville Dam, the cumulative count adult spring chinook was 24,571 through April 30. This total is far below normal return numbers reported in 1997 or for the 10-year average (See the Cumul. Adult Passage Table). The return of 4-year old fish remains very low with the 5-year old fish making up the greater portion of this year's run. This week's daily counts were normally nearly 1,000 per day. The upstream passage of these adult fish at The Dalles Dam was 15,042, about 61% of the current Bonneville Dam count. The tally at McNary Dam was 6,660 through April 30 with 3,844 counted at Ice Harbor Dam (Snake River component) and 699 at Priest Rapids Dam (Mid-Columbia component). Other portions of the McNary Dam count will be destined for the Yakima River and Ringold Hatchery located in the Hanford Reach of the Columbia River. One encouraging point was the increase of adult spring chinook that passed Ice Harbor during the past two days, 709 on 4/29 and 797 on 4/30.

The adult steelhead run for the 1997/98 returns to the Snake River basin is nearly completed for the year with daily totals normally less than 20 fish per day. The spring total counted at Lower Granite Dam was 4,041 through the end of April.

**Hatchery Releases:** In the Snake, Mid-Columbia, and lower Columbia Reaches, the final releases of yearling spring chinook were made during the week. There are still a couple of subyearling spring chinook groups scheduled for release in May.

The steelhead hatcheries were very busy during the past week in most of the Reaches. Following the juvenile steelhead releases completed during the week, the mid-Columbia area hatcheries have nearly completed releases in the Wenatchee River and tributaries, and will continue releases in the Methow River and tributaries and are nearing completion in the Okanogan River. The last group of steelhead should be in the river from Ringold Hatchery on April 30. Several million juvenile steelhead were released in the Clearwater River basin during the past two weeks (Dworshak Hatchery releases were completed on April 30), will continue at some Salmon River and Grande Ronde River sites as well as the Snake River. At lower Columbia River hatcheries, most of the steelhead are already planted with the final groups scheduled to be released in Mid-May.

Coho releases have been planted in various sections of the Columbia River basin beginning in March with the final releases completed in June. The Mid-Columbia Reach and Snake River Reach have several new acclimation ponds that are in use this year. These will be updated in a later FPC Report.

**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
04/17/98	61.3	0.0	63.4	0.0	68.5	6.4	69.1	6.6	69.5	20.4	68.5	14.2	69.7	7.2
04/18/98	58.1	0.0	57.3	0.0	63.7	6.0	72.3	10.7	72.1	19.9	84.5	16.8	94.2	55.1
04/19/98	28.2	0.0	29.1	0.0	48.5	4.2	45.8	9.6	46.4	19.3	62.1	14.0	88.1	52.8
04/20/98	96.3	0.0	95.9	0.0	84.1	6.2	81.2	9.5	81.7	20.9	75.0	14.9	75.1	45.3
04/21/98	91.2	0.0	101.0	0.0	102.5	8.4	102.1	9.3	102.4	20.3	91.2	18.8	98.6	59.0
04/22/98	98.3	0.0	98.0	0.0	104.8	8.1	108.5	14.2	108.5	26.9	91.3	18.6	101.0	61.5
04/23/98	80.3	0.0	77.9	0.0	86.0	7.6	98.4	16.8	99.5	30.1	108.3	22.2	134.2	78.4
04/24/98	77.0	0.0	83.4	0.0	86.5	7.6	82.8	20.9	85.6	29.7	78.5	15.8	75.0	44.0
04/25/98	54.4	0.0	60.3	0.0	82.1	7.0	89.0	14.4	93.7	23.5	77.3	15.8	87.6	52.4
04/26/98	76.6	0.0	74.7	0.0	76.6	5.3	78.6	13.0	80.4	20.3	71.2	14.2	79.1	48.1
04/27/98	91.5	0.0	93.6	0.0	97.7	7.6	102.8	15.5	103.8	27.0	100.0	19.5	108.5	65.2
04/28/98	107.2	0.0	107.1	0.0	114.9	9.7	118.5	13.0	120.6	30.3	101.8	20.3	113.6	67.9
04/29/98	103.8	0.0	106.4	0.0	123.7	10.3	126.6	17.5	129.9	30.3	113.0	23.2	128.3	77.2
04/30/98	89.8	0.0	96.3	0.0	111.0	9.5	115.1	20.0	120.2	30.4	129.8	30.1	135.9	82.4

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

Date	Dworshak		Brownlee		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
04/17/98	1.3	0.0	---	---	55.4	6.0	56.7	22.6	58.6	18.1	58.6	46.9
04/18/98	1.3	0.0	---	---	53.5	6.0	54.2	18.1	55.7	19.1	58.2	50.5
04/19/98	1.3	0.0	---	---	52.8	6.0	51.5	17.0	53.3	15.5	58.0	45.7
04/20/98	9.6	0.0	---	---	58.2	6.0	58.1	19.6	60.3	19.0	63.9	51.0
04/21/98	9.9	0.0	---	---	64.7	9.5	65.9	22.6	69.8	18.2	75.8	57.8
04/22/98	9.9	0.0	---	---	62.5	6.7	61.7	23.1	62.3	19.7	64.8	53.4
04/23/98	9.9	0.0	---	---	71.4	6.5	69.1	22.9	70.3	18.0	76.4	59.5
04/24/98	9.9	0.0	---	---	86.0	19.0	84.7	23.0	88.7	19.6	90.4	60.5
04/25/98	9.9	0.0	---	---	98.6	32.1	94.4	22.9	101.2	18.1	103.5	65.8
04/26/98	9.9	0.0	---	---	93.6	26.7	87.6	22.4	91.4	18.4	95.6	65.6
04/27/98	9.9	0.0	---	---	84.1	17.3	80.4	23.0	81.7	17.5	86.8	59.8
04/28/98	9.9	0.0	---	---	82.1	15.4	81.8	23.0	87.6	18.4	89.8	61.0
04/29/98	9.9	0.0	---	---	83.6	16.8	81.1	22.8	84.2	17.9	87.7	62.4
04/30/98	9.9	0.0	---	---	90.8	24.0	86.0	23.0	89.1	16.9	93.8	64.8

**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
04/17/98	137.9	0.0	160.1	0.0	166.4	0.0	162.1	0.0	63.8	89.1
04/18/98	129.3	0.0	136.9	0.0	138.2	0.0	160.9	0.0	64.8	86.9
04/19/98	141.8	0.0	147.6	0.2	146.2	0.0	138.3	0.3	64.1	64.7
04/20/98	145.6	49.5	155.1	43.3	153.1	89.8	174.2	88.0	51.7	25.2
04/21/98	155.7	50.6	162.9	51.4	157.4	54.5	162.3	91.6	58.3	3.2
04/22/98	155.0	58.4	155.0	47.2	144.1	77.7	161.8	92.2	53.9	6.5
04/23/98	202.8	74.7	196.3	66.0	186.6	68.5	195.1	89.3	61.0	35.6
04/24/98	194.1	75.3	207.8	66.5	205.5	118.7	212.4	85.5	70.6	47.2
04/25/98	180.3	69.9	209.4	64.9	208.9	75.7	233.3	85.5	76.0	62.6
04/26/98	184.6	70.1	198.5	60.1	192.9	111.3	193.6	84.4	71.4	28.6
04/27/98	200.1	69.9	213.7	64.5	205.5	74.0	223.6	85.5	74.9	54.0
04/28/98	198.5	70.0	213.9	65.6	207.9	121.6	220.6	85.6	80.2	45.6
04/29/98	196.9	70.0	199.6	61.6	196.1	72.5	214.2	82.9	69.4	52.7
04/30/98	217.2	64.0	230.1	68.7	229.9	128.2	---	---	72.1	70.9

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

Site	Date	Species	Number of Fish	Number w GBT signs	Number w Fin Signs	% Fin GBT	% Severe Fin GBT	Number of Fish with Fin GBT Listed by Highest Rank				Fish with L. Line GBT	
								Rank 1	Rank 2	Rank 3	Rank 4	Num Fish	Avg. Rank
<b>Lower Granite Dam</b>													
	04/22/98	Yearling Chinook	100	4	0	0.00%	0.00%	0	0	0	0	4	1
	04/22/98	Steelhead	100	2	0	0.00%	0.00%	0	0	0	0	2	1
	04/24/98	Yearling Chinook	100	3	1	1.00%	0.00%	1	0	0	0	2	1
	04/24/98	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/27/98	Yearling Chinook	100	2	0	0.00%	0.00%	0	0	0	0	2	1
	04/27/98	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/29/98	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/29/98	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
<b>Little Goose Dam</b>													
	04/21/98	Yearling Chinook	100	1	1	1.00%	0.00%	1	0	0	0	0	0
	04/21/98	Steelhead	49	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/23/98	Yearling Chinook	99	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/23/98	Steelhead	23	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/25/98	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/25/98	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/28/98	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/28/98	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/30/98	Yearling Chinook	100	1	1	1.00%	0.00%	1	0	0	0	0	0
	04/30/98	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
<b>Lower Monumental Dam</b>													
	04/22/98	Yearling Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/22/98	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/24/98	Yearling Chinook	101	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/24/98	Steelhead	100	2	2	2.00%	0.00%	2	0	0	0	0	0
	04/27/98	Yearling Chinook	100	5	2	2.00%	0.00%	2	0	0	0	3	1
	04/27/98	Steelhead	100	3	1	1.00%	0.00%	1	0	0	0	2	1
	04/29/98	Yearling Chinook	100	2	0	0.00%	0.00%	0	0	0	0	1	1
	04/29/98	Steelhead	99	1	1	1.01%	0.00%	1	0	0	0	0	0
<b>Ice Harbor Dam</b>													
	04/21/98	Yearling Chinook	17	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/21/98	Steelhead	13	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/24/98	Yearling Chinook	100	5	1	1.00%	0.00%	1	0	0	0	4	1
	04/24/98	Steelhead	85	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/28/98	Yearling Chinook	99	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/28/98	Steelhead	60	0	0	0.00%	0.00%	0	0	0	0	0	0

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Site	Date	Species	Number of Fish	Number w GBT signs	Number w Fin Signs	% Fin GBT	% Severe Fin GBT	Number of Fish with Fin GBT Listed by Highest Rank				Fish with L. Line GBT	
								Rank 1	Rank 2	Rank 3	Rank 4	Num Fish	Avg. Rank
<b>McNary Dam</b>													
	04/21/98	Yearling Chinook	100	2	0	0.00%	0.00%	0	0	0	0	2	1
	04/21/98	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	2
	04/23/98	Yearling Chinook	96	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/23/98	Steelhead	93	2	0	0.00%	0.00%	0	0	0	0	2	1
	04/25/98	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/25/98	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/28/98	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/28/98	Steelhead	97	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/30/98	Yearling Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/30/98	Steelhead	90	4	0	0.00%	0.00%	0	0	0	0	4	1
<b>John Day Dam</b>													
	04/21/98	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/22/98	Steelhead	44	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/23/98	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/24/98	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/25/98	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/26/98	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/28/98	Yearling Chinook	100	2	0	0.00%	0.00%	0	0	0	0	2	1
	04/29/98	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/30/98	Yearling Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	05/01/98	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
<b>Bonneville Dam</b>													
	04/21/98	Yearling Chinook	90	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/22/98	Steelhead	11	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/23/98	Yearling Chinook	100	2	0	0.00%	0.00%	0	0	0	0	2	1
	04/24/98	Steelhead	35	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/25/98	Yearling Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/27/98	Steelhead	36	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/28/98	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/29/98	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/30/98	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
<b>Rock Island Dam</b>													
	04/22/98	Yearling Chinook	100	5	5	5.00%	0.00%	5	0	0	0	0	0
	04/22/98	Steelhead	27	1	1	3.70%	0.00%	1	0	0	0	0	0
	04/24/98	Yearling Chinook	100	6	4	4.00%	0.00%	4	0	0	0	2	1
	04/24/98	Steelhead	81	6	2	2.46%	0.00%	2	0	0	0	4	1
	04/27/98	Yearling Chinook	100	6	2	2.00%	0.00%	2	0	0	0	4	1
	04/27/98	Steelhead	99	3	3	3.03%	0.00%	2	1	0	0	0	0
	04/29/98	Yearling Chinook	100	6	4	4.00%	0.00%	4	0	0	0	2	1
	04/29/98	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1

**Hatchery Release Summary**  
**Schedule for Last Two Weeks**  
**From 04/17/98 to 04/30/98**

Hatchery	Species	FPC LotID	Number Released	Release Dates		Release Site	River Name
				Begin	End		
<b>IDFG</b>							
Clearwater	SU Steelhead	98084	207,900	04/20/98	04/20/98	Clear Cr	Clearwater River, Main Fk
	SP Chinook	98004	8,892	04/21/98	04/22/98	Selway R	Clearwater River, Main Fk
	SU Steelhead	98083	5,200	04/24/98	04/24/98	Red R	S Fk Clearwater River
	SU Steelhead	98085	489,625	04/27/98	04/30/98	S Fk Clearwater R	Clearwater River, Main Fk
Eagle	Sockeye	98091	82,300	04/27/98	05/15/98	Redfish Lake Cr	Salmon River
Magic Valley	SU Steelhead	98113	301,310	04/16/98	04/17/98	Shoup Br (Salmon R)	Salmon River
	SU Steelhead	98111	292,000	04/20/98	04/21/98	Lemhi R	Salmon River
	SU Steelhead	98115	335,000	04/24/98	04/28/98	E Fk Salmon R	Salmon River
	SU Steelhead	98117	180,000	04/27/98	05/02/98	Slate Cr	Salmon River
	SU Steelhead	98116	122,000	04/29/98	04/30/98	E Fk Salmon R	Salmon River
Niagara Springs	SU Steelhead	98119	830,000	04/12/98	05/02/98	Pahsimeroi H	Pahsimeroi River
Pahsimeroi	SU Chinook	98011	65,648	04/15/98	04/25/98	Pahsimeroi H	Pahsimeroi River
Rapid River	SP Chinook	98007	896,170	03/16/98	04/21/98	Rapid River H	Little Salmon River
Sawtooth	SP Chinook	98012	43,161	04/10/98	04/22/98	Sawtooth H	Salmon River
	SU Steelhead	98124	60,000	04/24/98	04/24/98	Sawtooth H	Salmon River
	SU Steelhead	98127	60,000	04/24/98	04/24/98	Sawtooth H	Salmon River
<b>Agency Total:</b>			3,979,206				
<b>ODFW</b>							
Li Sheep	SU Steelhead	98109	82,000	04/23/98	04/23/98	L Sheep Acclim Pd	Imnaha River
Round Butte	SP Chinook	98128	280,000	04/20/98	04/23/98	Bel. Pelton Dam	Deschutes River
<b>Agency Total:</b>			362,000				
<b>Umatilla Tribe</b>							
Bonifer	SU Steelhead	98051	50,000	04/10/98	04/20/98	Bonifer H	Umatilla River
Minthorn	SU Steelhead	98053	50,000	04/10/98	04/20/98	Minthorn Acclim Pd	Umatilla River
Thornhollow	SP Chinook	98050	100,000	04/10/98	04/20/98	Thornhollow Acclim Pd	Umatilla River
	FA Chinook	98046	225,000	04/10/98	04/20/98	Thornhollow Acclim Pd	Umatilla River
<b>Agency Total:</b>			425,000				



**Hatchery Release Summary**  
**Schedule for Last Two Weeks**  
**From 04/17/98 to 04/30/98**

Hatchery	Species	FPC	Number	Release Dates		Release Site	River Name
		LotID	Released	Begin	End		
<b>USFWS</b>							
Carson	SP Chinook	98059	1,734,188	04/20/98	04/20/98	Carson H	Wind River
Dworshak	SU Steelhead	98060	520,000	04/20/98	04/24/98	S Fk Clearwater R	Clearwater River, Main Fk
	SU Steelhead	98061	380,000	04/20/98	04/24/98	Kooskia H	Clearwater River, Main Fk
	SU Steelhead	98062	1,200,000	04/27/98	04/30/98	Dworshak H	Clearwater River, Main Fk
Hagerman	SU Steelhead	98065	60,000	03/31/98	04/30/98	Sawtooth H	Salmon River
	SU Steelhead	98067	565,000	03/31/98	04/30/98	Sawtooth H	Salmon River
	SU Steelhead	98068	361,000	04/13/98	04/30/98	Little Salmon R	Salmon River
	SU Steelhead	98066	60,000	04/24/98	04/24/98	Torrey'S (Salmon R)	Salmon River
Leavenworth	SP Chinook	98069	1,701,314	04/20/98	04/20/98	Leavenworth H	Wenatchee River
L White Salmon	SP Chinook	98070	1,070,000	04/20/98	04/20/98	Little White Salmon H	Little White Salmon River
Spring Creek	FA Chinook	98074	4,200,000	04/20/98	04/20/98	Spring Creek H	Columbia River
Willard	Coho	98077	1,800,000	04/17/98	04/20/98	Willard H	Columbia River
Winthrop	Coho	98079	100,000	04/20/98	04/20/98	Winthrop H	Methow River
<b>Agency Total:</b>			13,751,502				
<b>WDFW</b>							
Chewuch	SP Chinook	98025	92,000	04/06/98	04/20/98	Chewuch R	Methow River
East Bank	SU Steelhead	98020	276,000	04/20/98	04/24/98	Wenatchee R	Wenatchee River
	SU Chinook	98016	624,000	04/28/98	04/28/98	Dryden Accl Pd	Wenatchee River
	SP Chinook	98015	15,000	04/29/98	04/29/98	Chiwawa H	Wenatchee River
Klickitat	Coho	98095	1,000,000	04/20/98	06/10/98	Klickitat H	Klickitat River
Lyons Ferry	SU Steelhead	98037	135,000	04/15/98	04/30/98	Walla Walla R	Walla Walla River
	SU Steelhead	98033	80,000	04/15/98	04/30/98	Lyons Ferry H	Snake River
	SU Steelhead	98036	160,000	04/15/98	04/30/98	Tucannon R	Snake River
	SU Steelhead	98035	140,000	04/15/98	04/30/98	Dayton Acclim Pd	Walla Walla River
	SU Steelhead	98034	300,000	04/15/98	04/30/98	Cottonwood Accl Pd	Grande Ronde River
Methow	SP Chinook	98026	77,400	04/06/98	04/20/98	Twisp R	Methow River
	SP Chinook	98024	203,000	04/06/98	04/20/98	Methow H	Methow River
Ringold	SU Steelhead	98141	180,000	04/15/98	04/30/98	Ringold Springs H	Mid-Columbia River
Turtle Rock	SU Chinook	98023	134,400	04/22/98	04/22/98	Turtle Rock H	Mid-Columbia River
	SU Steelhead	98019	146,300	04/27/98	04/30/98	Wenatchee R	Wenatchee River
Wells	SU Chinook	98027	357,000	04/15/98	04/24/98	Wells H	Mid-Columbia River
	SU Steelhead	98031	320,000	04/23/98	05/05/98	Methow R	Mid-Columbia River
	SU Steelhead	98029	50,000	04/23/98	05/05/98	Okanogan R	Mid-Columbia River
<b>Agency Total:</b>			4,290,100				

**Hatchery Release Summary**  
**Schedule for Last Two Weeks**  
**From 04/17/98 to 04/30/98**

Hatchery	Species	FPC	Number	Release Dates		Release Site	River Name
		LotID	Released	Begin	End		
<b>Warm Springs Tribe</b>							
Oak Springs	Wl Steelhead	98131	30,000	04/13/98	04/19/98	E Fk Hood R	Hood River
	Wl Steelhead	98132	30,000	04/24/98	05/04/98	E Fk Hood R	Hood River
Round Butte	SP Chinook	98135	62,000	04/20/98	05/02/98	Hood R	Hood River
	<b>Agency Total:</b>		122,000				
<b>Yakama Tribe</b>							
Lewis River	Coho	98143	138,000	04/15/98	04/30/98	Klickitat R	Klickitat River
<b>Agency Total:</b>		138,000					
<b>Total Release:</b>		23,067,808					

**Hatchery Release Summary**  
**Schedule for Next Two Weeks**  
**From 05/01/98 to 05/14-98**

Hatchery	Species	FPC LotID	Number Released	Release Dates		Release Site	River Name
				Begin	End		
<b>IDFG</b>							
Niagara Springs	SU Steelhead	98121	69,000	05/03/98	05/05/98	Little Salmon R	Salmon River
	<b>Agency Total:</b>		69,000				
<b>Nez Perce Tribe</b>							
Kooskia	Coho	98138	220,000	05/11/98	05/22/98	Kooskia H	Clearwater River, Main Fk
	<b>Agency Total:</b>		220,000				
<b>ODFW</b>							
Big Canyon	SU Steelhead	98108	85,000	05/12/98	05/12/98	Big Canyon H	Grande Ronde River
	SU Steelhead	98107	85,000	05/13/98	05/27/98	Big Canyon H	Grande Ronde River
Wallowa	SU Steelhead	98106	200,000	05/05/98	05/05/98	Wallowa Acclim Pd	Grande Ronde River
	SU Steelhead	98105	200,000	05/06/98	05/20/98	Wallowa Acclim Pd	Grande Ronde River
	<b>Agency Total:</b>		570,000				
<b>Umatilla Tribe</b>							
Bonifer	SU Steelhead	98052	50,000	05/10/98	05/20/98	Bonifer H	Umatilla River
	<b>Agency Total:</b>		50,000				
<b>USFWS</b>							
Entiat	SP Chinook	98064	160,000	05/14/98	05/15/98	Entiat H	Entiat River
	<b>Agency Total:</b>		160,000				
<b>WDFW</b>							
Wells	SU Steelhead	98030	50,000	05/01/98	05/05/98	Effy Bridge	Methow River
	<b>Agency Total:</b>		50,000				
	<b>Total Release:</b>		1,119,000				

## Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High<sup>2</sup>

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

Date	Can. Boundary			Grand Coulee			Tlwtr G. Coulee			Chief Joseph			Wells			Rocky Reach								
	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#						
	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr						
4/17	103	104	104	24	104	105	107	24	103	103	104	24	105	106	106	22	105	105	105	8	108	108	108	23
4/18	103	104	105	24	106	107	107	24	103	103	104	24	105	106	106	24	105	105	105	12	107	108	108	23
4/19	104	104	105	24	107	108	109	24	104	105	106	24	105	106	107	22	106	107	110	21	108	109	110	23
4/20	104	105	105	24	107	109	109	24	103	104	104	24	106	106	107	22	105	105	105	5	109	109	110	23
4/21	105	105	106	24	109	109	110	24	104	104	105	24	106	106	107	22	---	---	---	0	110	110	111	23
4/22	105	106	106	24	109	110	112	24	104	105	105	24	107	107	108	22	106	106	107	13	111	111	112	21
4/23	106	107	108	24	112	112	113	20	105	106	107	24	108	108	108	22	107	107	108	23	112	112	112	22
4/24	110	114	115	24	109	110	111	24	105	106	106	24	107	107	107	22	107	107	109	23	110	110	111	22
4/25	113	117	118	24	105	105	107	24	104	105	106	24	106	106	106	22	106	106	106	23	109	109	110	23
4/26	114	115	116	24	105	107	108	24	103	104	104	24	105	105	106	22	105	105	105	3	108	108	109	22
4/27	114	116	118	19	106	107	107	24	104	104	105	24	105	106	106	22	105	105	106	2	109	109	110	23
4/28	---	---	---	0	106	106	106	24	104	105	105	24	106	106	106	22	105	105	106	17	109	109	110	17
4/29	112	112	113	14	107	108	110	24	104	105	106	24	106	107	107	22	105	105	105	8	109	110	110	22
4/30	113	114	115	24	108	109	110	24	105	105	106	24	107	107	108	22	105	105	106	15	109	109	110	22

### Total Dissolved Gas Saturation Data at Mid Columbia Sites

Date	Tlwtr. Rocky R.			Rock Island			Tlwtr. Rock Island			Wanapum			Tlwtr Wanapum			Priest Rapids								
	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#						
	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr						
4/17	108	109	111	23	105	107	108	23	113	114	115	23	---	---	---	0	---	---	---	0	---	---	---	0
4/18	107	107	108	23	106	106	107	23	113	114	114	23	---	---	---	0	---	---	---	0	---	---	---	0
4/19	108	108	109	23	105	106	107	23	113	114	115	23	---	---	---	0	---	---	---	0	---	---	---	0
4/20	108	108	109	12	106	107	108	23	112	112	112	23	---	---	---	0	---	---	---	0	---	---	---	0
4/21	---	---	---	0	108	108	109	23	113	113	115	23	---	---	---	0	---	---	---	0	---	---	---	0
4/22	---	---	---	0	109	110	110	21	115	116	117	21	---	---	---	0	---	---	---	0	---	---	---	0
4/23	---	---	---	0	110	111	111	22	118	118	120	22	---	---	---	0	---	---	---	0	---	---	---	0
4/24	---	---	---	0	108	109	110	21	117	118	119	21	---	---	---	0	---	---	---	0	---	---	---	0
4/25	---	---	---	0	108	108	108	23	115	116	118	23	---	---	---	0	---	---	---	0	---	---	---	0
4/26	---	---	---	0	106	106	107	23	113	113	114	23	---	---	---	0	---	---	---	0	---	---	---	0
4/27	---	---	---	0	107	108	109	23	115	116	117	23	---	---	---	0	---	---	---	0	---	---	---	0
4/28	---	---	---	0	108	109	109	18	116	117	117	16	---	---	---	0	---	---	---	0	---	---	---	0
4/29	---	---	---	0	109	110	110	23	117	118	119	23	---	---	---	0	---	---	---	0	---	---	---	0
4/30	---	---	---	0	109	110	110	22	118	119	121	22	---	---	---	0	---	---	---	0	---	---	---	0

### Total Dissolved Gas Saturation at Mid Columbia, Clearwater and Snake Sites

Date	Dwnstr P Rapids			Dworshak			Clearwater			Snake-Lewiston			Lower Granite			Tlwtr L. Granite								
	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#						
	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr						
4/17	---	---	---	0	109	109	110	24	100	100	101	13	101	101	102	12	102	102	103	24	103	103	103	24
4/18	---	---	---	0	100	101	101	24	100	101	101	24	102	103	106	24	104	104	105	24	103	104	104	24
4/19	---	---	---	0	109	110	111	24	100	101	101	24	103	104	106	24	103	103	104	24	104	104	104	24
4/20	---	---	---	0	100	101	108	24	101	102	102	24	102	104	105	24	105	106	108	24	104	104	105	24
4/21	---	---	---	0	99	100	101	23	101	101	102	24	102	104	105	24	106	108	109	24	105	106	106	24
4/22	---	---	---	0	100	100	100	24	101	101	102	24	102	103	104	24	107	108	108	24	106	107	107	23
4/23	---	---	---	0	99	99	100	13	101	101	102	24	102	103	104	24	106	106	107	3	107	107	108	15
4/24	---	---	---	0	98	98	99	24	100	100	100	24	100	100	101	24	104	104	105	10	---	---	---	0
4/25	---	---	---	0	97	97	97	24	100	101	101	24	101	101	102	16	101	102	102	24	---	---	---	0
4/26	---	---	---	0	97	97	98	24	100	101	102	24	---	---	---	0	100	100	101	24	108	108	110	7
4/27	---	---	---	0	97	98	98	24	100	101	102	24	102	103	104	18	101	102	103	24	107	107	107	20
4/28	---	---	---	0	98	98	99	24	101	101	102	24	102	103	104	24	104	105	106	24	107	107	108	24
4/29	---	---	---	0	99	99	100	24	101	102	103	24	102	103	104	24	104	104	106	15	107	108	109	15
4/30	---	---	---	0	99	100	100	24	101	102	103	24	102	103	104	24	105	105	106	24	109	110	111	21

<sup>1</sup> Data provided by the Corps of Engineers.

<sup>2</sup> Dissolved gas readings and averages have been rounded to the nearest integer.

# Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High<sup>2</sup>

## Total Dissolved Gas Saturation Data at Snake Sites

Date	Little Goose				Tlwtr L. Goose				Lower Mon.				Tlwtr L. Mon				Ice Harbor				Tlwtr Ice Harbor			
	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	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr
4/17	105	105	107	24	113	119	120	24	111	111	112	23	117	120	122	24	112	113	113	24	114	115	115	24
4/18	103	104	104	24	110	116	118	24	112	113	114	23	117	120	121	24	114	114	116	24	114	115	116	24
4/19	102	103	103	24	110	116	119	24	112	113	114	24	117	119	121	24	114	115	115	24	114	115	116	24
4/20	104	105	109	24	111	118	120	24	111	112	115	24	117	120	121	24	114	115	117	24	114	115	116	24
4/21	107	109	113	24	112	119	120	24	110	112	113	24	117	120	122	24	115	115	116	19	115	115	115	19
4/22	107	108	110	24	114	120	120	24	111	112	113	23	118	121	122	24	116	117	117	24	115	116	117	24
4/23	107	108	110	24	120	120	120	2	114	115	116	22	119	120	122	16	117	118	122	21	115	116	117	21
4/24	105	105	106	24	112	119	120	24	111	113	115	24	117	121	122	24	113	114	115	24	115	116	117	24
4/25	103	103	104	24	111	118	119	24	109	111	112	24	117	121	123	24	110	111	112	24	116	117	118	24
4/26	104	106	110	24	110	118	119	24	109	111	115	17	118	121	122	18	111	112	114	24	116	117	118	24
4/27	111	113	115	24	114	119	120	24	108	108	112	11	119	119	121	8	113	114	115	24	115	116	117	24
4/28	111	112	113	24	115	119	120	24	116	116	120	10	117	121	123	23	115	116	117	24	115	116	118	24
4/29	109	110	113	24	114	119	120	24	116	119	122	24	118	121	122	24	116	117	118	24	116	116	117	24
4/30	109	110	112	24	113	119	120	24	116	117	119	23	119	121	123	24	116	117	119	22	116	117	118	22

## Total Dissolved Gas Saturation Data at Lower Columbia Sites

Date	McNary-Oregon				McNary-Wash.				Tlwtr McNary				John Day				Tlwtr John Day				The Dalles			
	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	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr
4/17	108	109	112	24	107	108	112	24	106	106	107	24	102	102	104	22	100	101	101	23	101	101	102	22
4/18	108	109	110	24	109	110	112	24	106	107	107	24	103	104	105	24	101	101	101	24	102	102	102	24
4/19	108	110	113	24	107	107	109	24	106	107	107	24	102	102	102	22	101	102	109	24	102	102	102	22
4/20	109	111	112	24	110	112	114	24	112	116	118	24	104	104	106	22	109	114	116	24	102	103	103	22
4/21	110	113	116	24	110	111	114	24	112	116	120	24	104	104	106	22	112	112	117	8	107	108	113	22
4/22	111	113	114	24	114	116	118	24	116	119	120	24	107	107	109	22	111	113	119	15	110	113	115	22
4/23	114	114	119	16	115	116	116	17	116	117	120	17	107	107	108	22	112	119	120	24	111	113	116	22
4/24	112	112	113	24	112	112	114	24	116	119	119	24	105	106	106	22	113	120	121	24	108	109	111	22
4/25	109	110	111	23	108	109	109	23	113	118	119	23	104	104	105	22	111	118	121	24	108	111	112	22
4/26	108	110	116	24	108	109	111	24	113	118	119	24	105	106	108	22	112	118	119	24	108	111	114	22
4/27	110	111	112	22	113	114	115	22	115	117	119	22	109	110	113	22	113	119	121	24	111	113	115	22
4/28	113	115	119	24	114	116	119	24	115	118	119	24	110	112	114	22	113	119	120	24	112	114	116	22
4/29	114	116	117	24	116	117	118	24	117	119	119	24	110	112	114	22	114	119	120	24	112	115	117	22
4/30	115	116	119	24	116	117	119	23	117	120	121	24	113	114	116	22	115	119	120	24	113	115	117	22

## Total Dissolved Gas Saturation Data at Lower Columbia Sites

Date	Dnstr T. Dalles				Bonneville				Warrendale				Skamania				Camas\Wash.				Wauna Mill			
	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	24 h Avg	12 h Avg	High	# hr	24 h Avg	12 h Avg	High	# hr
4/17	101	102	102	23	103	103	104	22	103	103	104	22	103	103	104	22	103	105	106	23	103	103	104	23
4/18	102	102	103	24	104	104	104	24	103	103	104	24	103	103	104	24	103	104	105	24	103	103	104	24
4/19	101	102	102	23	104	104	105	22	103	103	104	22	103	104	104	22	104	105	106	23	103	104	104	23
4/20	111	113	114	23	105	105	105	22	110	112	114	22	113	116	120	22	107	110	114	23	104	105	105	23
4/21	112	113	115	23	105	106	106	22	111	113	115	22	118	119	121	22	113	117	119	23	104	105	106	23
4/22	116	116	117	23	113	116	117	22	115	116	117	22	120	121	122	22	116	118	120	23	106	107	107	23
4/23	114	117	119	23	114	115	116	22	116	118	120	22	118	121	123	22	115	116	117	23	107	107	107	23
4/24	115	116	117	23	111	111	112	22	114	115	116	22	116	118	121	22	113	114	116	23	107	107	108	23
4/25	113	115	117	23	109	110	110	22	112	113	115	21	114	116	117	22	113	114	116	23	108	108	109	23
4/26	115	116	119	23	112	113	114	22	115	115	116	22	118	118	120	22	113	117	118	23	108	109	109	23
4/27	115	117	119	23	112	113	114	22	115	115	116	10	117	118	120	22	116	117	118	23	109	110	111	23
4/28	118	119	120	23	116	117	117	22	117	117	118	20	118	119	121	22	116	118	120	23	110	111	112	23
4/29	116	118	120	23	116	117	117	22	117	118	118	22	119	120	121	22	117	118	119	23	113	114	115	23
4/30	118	119	120	23	118	119	120	22	119	119	120	22	120	120	121	22	117	119	120	23	114	114	115	23

<sup>1</sup> Data provided by the Corps of Engineers.

<sup>2</sup> Dissolved gas readings and averages have been rounded to the nearest integer.

# Two-Week Summary of Passage Indices

## Yearling Chinook

Date	Hatchery							Hatchery/Wild Combined			
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/17/98	361	160	8	336	12,516	1,385	1,560	24	6,901	5,448	585
04/18/98	---	---	---	---	13,712	1,975	2,841	50	6,630	4,673	983
04/19/98	---	---	---	---	23,354	3,213	4,617	17	10,842	6,460	918
04/20/98	172	112	2	32	21,108	2,976	3,184	28	15,442	5,294	1,084
04/21/98	30	101	3	49	47,408	3,185	6,176	23	12,759	5,010	2,904
04/22/98	207	187	9	71	56,524	7,375	9,184	328	15,410	2,994	7,588
04/23/98	195	125	5	58	52,978	8,711	14,161	500	9,451	3,998	10,788
04/24/98	342	0	107	1,188	63,621	17,073	11,134	321	21,131	6,957	15,751
04/25/98	---	---	---	---	94,046	45,867	19,069	241	18,692	12,701	12,384
04/26/98	---	---	---	---	98,127	37,601	27,517	227	28,527	15,671	6,560
04/27/98	84	9	9	3	81,081	46,522	24,288	149	38,242	14,586	10,792
04/28/98	46	11	6	116	79,337	45,299	19,306	182	49,644	10,360	12,072
04/29/98	20	13	5	43	44,742	50,801	23,161	222	44,371	13,142	11,343
04/30/98	6	12	6	63	59,155	23,706	18,738	373	25,289	12,307	9,256
<b>Total:</b>	1,463	730	160	1,959	747,709	295,689	184,936	2,685	303,331	119,601	103,008
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	146	73	16	196	53,408	21,121	13,210	192	21,667	8,543	7,358

## Wild Yearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
04/17/98	17	57	0	19	4,973	876	131
04/18/98	---	---	---	---	4,259	953	170
04/19/98	---	---	---	---	4,976	1,307	457
04/20/98	90	67	0	2	3,781	1,084	562
04/21/98	25	112	1	5	9,104	1,194	1,459
04/22/98	27	199	2	10	9,274	3,078	1,938
04/23/98	19	106	7	10	9,591	2,821	2,454
04/24/98	73	0	79	186	6,611	4,456	2,986
04/25/98	---	---	---	---	10,792	11,815	5,583
04/26/98	---	---	---	---	11,001	9,396	5,627
04/27/98	51	4	69	4	10,946	8,046	1,666
04/28/98	19	21	10	52	12,001	8,413	2,007
04/29/98	6	19	12	23	9,282	9,537	2,220
04/30/98	1	14	19	35	8,482	3,088	2,636
<b>Total:</b>	328	599	199	346	115,073	66,064	29,896
<b># Days:</b>	10	10	10	10	14	14	14
<b>Average:</b>	33	60	20	35	8,220	4,719	2,135

## Wild Subyearling Chinook

LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
108	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
1,300	0	0
0	0	0
<b>1,408</b>	<b>0</b>	<b>0</b>
<b>14</b>	<b>14</b>	<b>14</b>
<b>101</b>	<b>0</b>	<b>0</b>

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## Two-Week Summary of Passage Indices

Date	Hatchery Subyearling Chinook							Combined Subyearling Chinook			
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/17/98	0	0	0	0	0	0	0	96	30	24	48
04/18/98	---	---	---	---	0	0	0	23	20	152	74
04/19/98	---	---	---	---	0	0	0	59	0	0	48
04/20/98	0	0	0	0	0	0	0	10	0	0	52
04/21/98	0	0	0	0	0	0	0	20	75	0	38,897
04/22/98	0	0	0	0	0	0	0	50	92	0	53,537
04/23/98	0	0	0	0	0	0	0	29	0	0	31,908
04/24/98	0	0	0	0	0	0	0	56	32	9	13,966
04/25/98	---	---	---	---	0	0	0	26	90	29	7,785
04/26/98	---	---	---	---	0	0	0	18	250	0	2,531
04/27/98	0	0	0	0	0	0	0	11	242	0	4,236
04/28/98	0	0	0	0	0	0	0	4	1,933	0	3,479
04/29/98	0	0	0	0	0	0	0	0	829	0	1,565
04/30/98	0	0	0	0	0	0	0	1	2,107	44	805
<b>Total:</b>	0	0	0	0	0	0	0	403	5,700	258	158,931
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	0	0	0	0	0	0	0	29	407	18	11,352

Date	All Coho							RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)				
04/17/98	0	0	0	0	0	0	0	0	210	0	153
04/18/98	---	---	---	---	0	0	0	0	70	0	533
04/19/98	---	---	---	---	0	0	0	0	120	10	363
04/20/98	0	0	0	0	0	0	0	0	238	11	421
04/21/98	0	0	0	0	0	0	0	0	675	43	557
04/22/98	0	0	0	0	117	0	0	0	370	29	651
04/23/98	0	0	0	0	113	0	0	0	150	30	2,103
04/24/98	0	0	0	0	217	0	129	0	668	81	3,513
04/25/98	---	---	---	---	700	0	0	0	570	15	3,715
04/26/98	---	---	---	---	440	0	0	0	650	28	1,705
04/27/98	0	0	0	0	405	0	0	0	2,901	231	2,920
04/28/98	0	0	0	0	0	280	0	0	4,794	86	6,194
04/29/98	0	0	0	0	371	0	0	0	3,901	562	3,751
04/30/98	0	0	0	0	565	0	0	0	1,885	706	4,117
<b>Total:</b>	0	0	0	0	2,928	280	129	0	17,202	1,832	30,696
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	0	0	0	0	209	20	9	0	1,229	131	2,193

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## Two-Week Summary of Passage Indices

Hatchery Steelhead											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/17/98	68	0	5	126	15,310	2,781	567	2	338	12	201
04/18/98	---	---	---	---	19,088	1,857	1,358	0	2,880	0	103
04/19/98	---	---	---	---	11,705	1,965	2,404	0	11,612	40	153
04/20/98	34	0	3	60	14,279	1,906	3,282	0	20,215	45	230
04/21/98	37	1	1	72	25,107	1,914	3,697	3	11,710	199	184
04/22/98	82	5	1	70	20,309	1,785	4,419	3	8,794	59	510
04/23/98	88	14	11	110	14,418	1,559	4,697	22	3,630	483	366
04/24/98	195	0	281	1,505	29,806	5,300	7,084	75	6,377	2,415	1,065
04/25/98	---	---	---	---	72,906	16,428	12,797	123	4,260	6,733	2,565
04/26/98	---	---	---	---	186,866	13,966	20,406	242	4,104	8,344	1,188
04/27/98	195	782	49	93	293,311	32,769	14,207	293	6,285	9,748	2,948
04/28/98	98	405	17	245	267,184	26,066	7,932	220	4,098	5,572	2,399
04/29/98	109	399	12	180	192,147	32,046	10,963	322	3,549	6,442	3,190
04/30/98	125	391	16	145	172,955	27,464	12,335	387	3,881	6,088	2,879
<b>Total:</b>	1,031	1,997	396	2,606	1,335,391	167,806	106,148	1,692	91,733	46,180	17,981
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	103	200	40	261	95,385	11,986	7,582	121	6,552	3,299	1,284

Wild Steelhead											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/17/98	4	21	1	12	1,956	410	131	11	597	1,038	297
04/18/98	---	---	---	---	2,605	293	152	14	660	1,428	243
04/19/98	---	---	---	---	1,527	319	398	22	908	2,120	322
04/20/98	5	78	0	9	1,862	305	118	25	835	1,731	370
04/21/98	0	99	0	8	4,397	398	227	24	525	752	336
04/22/98	3	338	0	3	3,522	181	501	38	696	1,036	651
04/23/98	7	454	5	11	4,184	245	491	42	120	1,086	1,158
04/24/98	12	0	58	278	3,902	1,013	330	44	648	4,226	1,728
04/25/98	---	---	---	---	15,415	1,642	1,255	53	750	11,198	3,538
04/26/98	---	---	---	---	34,909	2,271	2,350	80	563	15,770	1,756
04/27/98	35	0	6	15	46,622	4,702	1,792	97	2,224	10,499	3,635
04/28/98	5	80	9	56	50,220	4,765	2,198	142	4,407	8,336	4,586
04/29/98	3	125	5	32	33,231	6,677	1,838	165	2,278	9,814	3,279
04/30/98	10	160	11	30	32,418	6,025	1,977	247	1,441	6,132	3,436
<b>Total:</b>	84	1,355	95	454	236,770	29,246	13,758	1,004	16,652	75,166	25,335
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	8	136	10	45	16,912	2,089	983	72	1,189	5,369	1,810

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## Two-Week Summary of Passage Indices

Hatchery Sockeye											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/17/98	0	0	0	0	0	0	0	0	0	0	0
04/18/98	---	---	---	---	0	0	0	1	0	0	0
04/19/98	---	---	---	---	0	0	0	0	0	0	0
04/20/98	0	0	0	0	0	0	0	0	0	0	0
04/21/98	0	0	0	0	0	0	0	0	0	0	0
04/22/98	0	0	0	0	0	0	0	3	0	0	0
04/23/98	0	0	0	0	0	0	0	3	0	0	0
04/24/98	0	0	0	0	0	0	0	16	32	0	0
04/25/98	---	---	---	---	0	0	0	18	0	0	0
04/26/98	---	---	---	---	0	0	0	5	50	0	52
04/27/98	0	0	0	0	0	0	0	0	0	0	0
04/28/98	0	0	0	0	0	0	0	9	155	0	0
04/29/98	0	0	0	0	0	0	0	9	118	0	0
04/30/98	0	0	0	0	0	0	0	16	0	0	0
<b>Total:</b>	0	0	0	0	0	0	0	80	355	0	52
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	0	0	0	0	0	0	0	6	25	0	4

Wild Sockeye											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/17/98	0	0	0	0	0	0	0	109	60	0	10
04/18/98	---	---	---	---	0	0	0	143	50	1	0
04/19/98	---	---	---	---	0	0	0	209	45	0	0
04/20/98	0	0	0	0	0	0	14	292	119	0	0
04/21/98	0	0	0	0	0	0	0	262	150	0	0
04/22/98	0	0	0	0	0	0	0	459	46	15	0
04/23/98	0	0	0	0	0	0	0	467	120	0	0
04/24/98	0	0	0	0	0	0	0	528	223	0	0
04/25/98	---	---	---	---	0	0	0	1,275	360	15	0
04/26/98	---	---	---	---	0	0	0	546	1,450	0	0
04/27/98	0	0	0	0	0	0	0	195	1,886	0	29
04/28/98	0	0	0	0	0	0	0	289	3,016	0	0
04/29/98	0	0	0	0	0	0	0	144	2,010	86	0
04/30/98	0	0	0	0	0	0	0	250	3,437	44	0
<b>Total:</b>	0	0	0	0	0	0	14	5,168	12,972	161	39
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	0	0	0	0	0	0	1	369	927	12	3

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### Cumulative Adult Passage at Mainstem Dams Through April 30, 1998

	Spring Chinook						Summer Chinook						Fall Chinook					
	1998		1997		10-Yr Avg.		1998		1997		10-Yr Avg.		1998		1997		10-Yr Avg.	
	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	24,571	102	66,980	156	48,926	656												
TDA	15,042	88	25,624	15	24,580	239												
JDA	9,546	31	13,576	3	15,088	192												
MCN	6,660	25	6,526	3	11,437	127												
IHR	3,844	8	3,442	0	4,828	27												
LMN	1,742	2	1,465	28	3,680	29												
LGS	1,069	2	519	0	na	na												
LWG	901	2	222	0	1,550	8												
PRD	699	0	32	0	1,467	3												
RIS	139	0	6	0	451	1												
RRH	13	0	0	0	76	0												
WEL																		

	CRhR						SRFNHyH			SWHdHad		
	1998		1997		10-Yr Avg.		1998	1997	10-Yr Avg.	1998	1997	10-Yr Avg.
	Adult	Jack	Adult	Jack	Adult	Jack						
BON	0	0	0	0	0	0	0	0	0	1,316	2,540	2,823
TDA	0	0	0	0	0	0	0	0	0	605	575	1,540
JDA	0	0	0	0	0	0	0	0	0	5,574	1,887	2,551
MCN	0	0	0	0	0	0	0	0	0	1,318	1,038	2,430
IHR	0	0	0	0	0	0	0	0	0	1,731	1,032	2,893
LMN	0	0	0	0	0	0	0	0	0	1,506	913	2,549
LGS	0	0	0	0	na	na	0	0	na	1,901	1,078	na
LWG	0	0	0	0	0	0	0	0	0	4,041	3,328	5,684
PRD	0	0	0	0	0	0	0	0	0	7	2	26
RIS	0	0	0	0	0	0	0	0	2	16	12	74
RRH	0	0	0	0	0	0	0	0	0	60	575	40
WEL												

Historic counts (pre-1996) were obtained from CRITFC and compiled by the FPC.  
 1996, 1997, and 1998 counts were obtained from the Corps of Engineers.  
 1998 totals at LMN, LGS, RIS, and RRH are based on video counts accumulated through April 29.  
 Adult count records at LGS have been maintained since 1993.

## Transportation Summary Report

### Two-Week Transportation Summary from 4/17/98 to 4/30/98

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
<b>LOWER GRANITE DAM</b>						
Collected	694,030	1,150	1,220,893	2,250	0	1,918,323
Bypassed	36,066	0	5,790	0	0	41,856
Trucked	0	0	0	0	0	0
Barged	536,623	1,050	1,133,423	1,599	0	1,672,695
<b>Total Transported</b>	<b>536,623</b>	<b>1,050</b>	<b>1,133,423</b>	<b>1,599</b>	<b>0</b>	<b>1,672,695</b>
<b>LITTLE GOOSE DAM</b>						
Collected	258,309	0	140,431	200	0	398,940
Bypassed	0	0	0	0	0	0
Trucked	0	0	0	0	0	0
Barged	256,769	0	141,680	200	0	398,649
<b>Total Transported</b>	<b>256,769</b>	<b>0</b>	<b>141,680</b>	<b>200</b>	<b>0</b>	<b>398,649</b>
<b>LOWER MONUMENTAL DAM</b>						
Collected	167,117	0	93,863	100	10	261,090
Bypassed	590	0	590	0	0	1,180
Trucked	0	0	0	0	0	0
Barged	167,170	0	93,559	106	10	260,845
<b>Total Transported</b>	<b>167,170</b>	<b>0</b>	<b>93,559</b>	<b>106</b>	<b>10</b>	<b>260,845</b>
<b>MCNARY DAM</b>						
Collected	215,448	3,771	83,009	11,470	8,820	322,518
Bypassed	215,300	3,766	82,984	11,470	8,668	322,188
Trucked	0	0	0	0	0	0
Barged	0	0	0	0	0	0
<b>Total Transported</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PROJECT TOTALS</b>						
Collected	1,334,904	4,921	1,538,196	14,020	8,830	2,900,871
Bypassed	251,956	3,766	89,364	11,470	8,668	365,224
Trucked	0	0	0	0	0	0
Barged	960,562	1,050	1,368,662	1,905	10	2,332,189
<b>Total Transported</b>	<b>960,562</b>	<b>1,050</b>	<b>1,368,662</b>	<b>1,905</b>	<b>10</b>	<b>2,332,189</b>

### Cumulative Transportation Summary through 4/30/98

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
<b>LOWER GRANITE DAM</b>						
Collected	812,841	1,270	1,351,096	2,534	10	2,167,751
Bypassed	66,387	33	20,162	14	0	86,596
Trucked	29,484	46	45,304	119	10	74,963
Barged	581,567	1,090	1,191,869	1,678	0	1,776,204
<b>Total Transported</b>	<b>611,051</b>	<b>1,136</b>	<b>1,237,173</b>	<b>1,797</b>	<b>10</b>	<b>1,851,167</b>
<b>LITTLE GOOSE DAM</b>						
Collected	261,521	0	147,427	205	14	409,167
Bypassed	0	0	0	0	0	0
Trucked	568	0	1,097	5	0	1,670
Barged	258,524	0	146,230	200	14	404,968
<b>Total Transported</b>	<b>259,092</b>	<b>0</b>	<b>147,327</b>	<b>205</b>	<b>14</b>	<b>406,638</b>
<b>LOWER MONUMENTAL DAM</b>						
Collected	173,575	22	96,460	116	10	270,183
Bypassed	2,493	10	1,025	10	0	3,538
Trucked	797	0	780	0	0	1,577
Barged	169,854	12	94,638	106	10	264,620
<b>Total Transported</b>	<b>170,651</b>	<b>12</b>	<b>95,418</b>	<b>106</b>	<b>10</b>	<b>266,197</b>
<b>MCNARY DAM</b>						
Collected	351,783	5,285	89,167	12,924	9,018	468,177
Bypassed	351,448	5,272	89,140	12,923	8,865	467,648
Trucked	0	0	0	0	0	0
Barged	0	0	0	0	0	0
<b>Total Transported</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PROJECT TOTALS</b>						
Collected	1,599,720	6,577	1,684,150	15,779	9,052	3,315,278
Bypassed	420,328	5,315	110,327	12,947	8,865	557,782
Trucked	30,849	46	47,181	124	10	78,210
Barged	1,009,945	1,102	1,432,737	1,984	24	2,445,792
<b>Total Transported</b>	<b>1,040,794</b>	<b>1,148</b>	<b>1,479,918</b>	<b>2,108</b>	<b>34</b>	<b>2,524,002</b>