



## Fish Passage Center

# Weekly Report #98 - 14

June 19, 1998

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### SUMMARY OF EVENTS:

**Water Supply:** Distribution of the cumulative precipitation for the October through June period remained similar to last week. The sites with the highest precipitation in the basin are still in the Middle Snake basin and in Upper Deschutes/Crooked. The areas with the highest precipitation for the period of October through June were Harney/Malheur Basin with 147%, Owyhee/Malheur Basin with 141%, the Upper Deschutes with 133% of average and the Klamath basin with 132% of average. The lowest amount was 92% of average at NW Slope Washington Cascade and 92% at the Columbia above Castelgar. Areas with precipitation lower than average remain the Washington Cascades and Upper Columbia Basin. Observation of the precipitation in the entire basin during June 1 through 16, shows a continued decreasing trend compared to precipitation in May, except in the Upper/Middle Snake Basin. The area with the highest precipitation remained the Upper Snake with 229%. Owyhee/Malheur basin, Klamath Basin and Flathead are the areas with high precipitation in the range of 148 to 169%. The area with the lowest precipitation remained SW WA Cascades/Cowlitz with 51%. Precipitation in the Columbia above Coulee was 131% of the average, the Columbia above The Dalles was 126% of the average and the Snake River above Ice Harbor was 139% of the average for the period of June 1 through 16.

**System Storage:** Precipitation increased during last week in the entire basin and flows increased for a few days last week. It is expected that flows will now continue to decrease throughout the season. Major US reservoirs in the system are almost full or full. The Snake river reservoirs continue passing high inflows. Canadian reservoirs continue to refill.

A summary of actual elevations is shown in the following table:

Reservoir	Actual Elev. [ft] 6/17/98	Max. Pool [ft]
Mica	2435.1	2475.0
Arrow	1430.5	1444.0
Duncan	1860.8	1892.0
Libby	2451.1	2459.0
Hungry Horse	3558.95	3560.0
Grand Coulee	1287.9	1290.0
Brownlee	2076.9	2077.0
Dworshak	1599.6	1600.0

- Mica continues with the same operations as last week. Actual outflow continues to be 0 kcfs. The current treaty elevation is 2432.7 ft. Water continues to be stored in the Non Treaty accounts of BPA and BC Hydro at a rate of 5 kcfs on each side. Currently there are 1009 ksfd in the US account and 951 ksfd in the BC Hydro account. It is projected that Mica will continue with the same operation to the end of June.
- Arrow continues with operations that will lead to refill by the end of July. Current actual elevation remains at about 7 ft below the Treaty elevation. Current outflow continues to be 16 kcfs. The requested minimum outflow is 20 kcfs below Arrow to protect the trout redds. However, because of the continuation of high Kootenai river inflows, an outflow of only 16 kcfs is needed from Arrow. Trout redds are protected because of the upstream backwater effect of Kootenai River. As projected, Treaty discharge is 26 kcfs, the difference between actual and projected treaty discharge of 10 kcfs is stored in Treaty storage and planned

to be released by the end of July when the flows in the system are projected to decrease significantly.

- Duncan continues to refill to the end of July full pool elevation with an outflow of 100 cfs. Treaty elevation at Duncan is the same as actual.
- Libby continues with similar operations as last week: to provide constant flows of 25 kcfs at Bonners Ferry through June 25. The actual outflow is projected to be in the range of 20-22 kcfs.
- Hungry Horse is releasing outflows up to 7.2 kcfs, and is almost full, a foot below full pool elevation.
- Grand Coulee will operate between 1287 and 1290 ft to the end of next week, with projected average outflows at Priest Rapids of 100 kcfs.
- Brownlee is full and continues to pass inflow in the range of 40 kcfs.
- Dworshak is full and will continue to pass inflow in the range of 7-9.5 kcfs.

Upper Snake reservoirs:

The system continued to be operated for flood control due to the high precipitation in the area. The flows are in a slower recession compared to the previous week. Irrigation demand continues to be at minimum.

Jackson Lake was refilled up to 93% of full and currently is releasing 3.3 kcfs.

Palisades was refilled up to 87% of full. Currently, the outflow is 14 kcfs.

American Falls is full and will continue to pass inflow of 18.9 kcfs through the end of the next week.

Millner flow, at the lowest point of the Upper Snake system, continues to decrease with outflows of 9.3 kcfs, compared to last week flows of 11 kcfs. Irrigation withdrawal upstream of Minidoka remained similar to last week, up to 6.6 kcfs.

Boise River Basin:

All three major reservoirs: Anderson, Arrowrock and Lucky Peak are full and the system is basically passing inflow. Irrigation demands are at a minimum, about 300 cfs. The

flow at Glenwood Bridge is 3.6 kcfs and 2.4 kcfs at New York Canal.

**System Streamflow:** The weekly average flows continue to be in recession in the entire basin. Flows at Priest Rapids were highly fluctuating between 109.5-196.9 kcfs during the period of June 11-17. The summary of average weekly flows for the run of the river projects during the June 5-18 period is shown in the following Table:

Project	June 5-11	June 12-18
Priest Rapids	204.5 kcfs	147.6 kcfs*
McNary	332.8 kcfs	264.2 kcfs*
Lower Granite	129.3 kcfs	118.5 kcfs
Bonneville	349.6 kcfs	276.9 kcfs

\* for the period of June 12-17.

**Spill:** Flows in the Snake River have continued to recede slowly this past week and spill levels decreased through the week. Most excess hydraulic capacity spill ended as the Biological Opinion Spill Program resumed. Spill averaged 31.5 kcfs, 38.3 kcfs, 18 kcfs and 64.4 kcfs at Lower Granite, Little Goose, Lower Monumental and Ice Harbor dams, respectively. Biological Opinion spill will end for the spring season at Lower Granite, Little Goose and Lower Monumental dams on June 20. Summer spill will begin on June 21 at Ice Harbor Dam.

Spill at the lower Columbia projects decreased coincident with the decrease in flow over the past week. Spill averaged 107.1 kcfs at McNary Dam, 70.9 kcfs at John Day Dam, 122.6 kcfs at The Dalles Dam, and 96.8 kcfs at Bonneville Dam over the past week.

Total Dissolved Gas Supersaturation and gas Bubble Trauma Monitoring

TDGS levels are generally at, or below, the gas waivers at all sites.

Gas bubble trauma monitoring has shown few juvenile fish with signs throughout the system. The percentage of fish affected remains well below the action criteria.

**Smolt Monitoring.** *Snake River Drainage.* All juvenile migrant collection traps have completed sampling for the 1998 season. Yearling chinook, coho and sockeye continue at about the same levels as last week at Lower Granite, Little Goose, and Lower Monumental dams. The passage indices at the Snake River projects are dominated by hatchery steelhead, which ranged from 2,700 to nearly 12,000 fish at Lower Granite Dam this past week. Wild subyearling chinook numbers were fairly steady at the Snake River dams with passage indices ranging 97 to 332 fish. PIT tagged hatchery subyearling chinook are not adipose clipped and will be counted in the sampling at the dams as wild chinook. As normal, any fish found with adipose clips will be listed as hatchery subyearling chinook.

*Columbia River Drainage.* The passage indices at Rock Island Dam are reduced for yearling chinook, coho, steelhead and sockeye compared to the previous week. Subyearling chinook increased steadily through the week.

At McNary Dam, the decreasing trend in passage indices of yearling chinook, coho, steelhead, and sockeye continued. The juvenile bypass system at McNary was repaired and sampling resumed on June 12<sup>th</sup>. Passage indices for subyearling chinook increased through the week and exceeded 105,000 by week's end. Passage of yearling migrants at John Day and Bonneville dams continued to decrease for all species during the week. Subyearling chinook increased and averaged about 30,000 for the week at John Day Dam. At Bonneville Dam, passage indices of subyearling chinook increased somewhat from the past week's average.

**Adult Fish Passage:** At Bonneville Dam, numbers of adult summer chinook ranged from 409 to 599 through the week of June 12 through 18. The cumulative count at Bonneville Dam through June 18 was 7328, about 58% of the 1997 and nearly equal to (7,363) the 10-year average. The early counts of summer chinook at Bonneville Dam are fish normally destined for the Snake

River, with the Mid-Columbia summer chinook dominating the counts after mid-June. All chinook passing Snake River dams are now being counted as summer chinook, with Rock Island Dam beginning its summer chinook count on June 18. Counts of summer chinook into the Snake River have in general ranged between 200 and 300 per day at each project. The first day of counting summer chinook at Lower Granite was 316 on June 18. The Ice Harbor Dam count of summer chinook was 2,048 or about 65% of the McNary Dam count to date.

The adult spring chinook count at Lower Granite Dam ended with 9,881, about 29% of the 1997 count and 65% of the 10-year average. The Rock Island count of 3,270 for spring chinook was reduced from the 1997 and the 10-year average as well. These low totals of returning adult chinook indicate that the spring chinook run remains very depressed in both the Snake and the Mid-Columbia River.

The steelhead run for the 1998/99 cycle ranged between 120 and 221 for this passage week at Bonneville Dam. About 40 to 75 per day were passing the lower Columbia dams through McNary Dam. The season count at Bonneville Dam in the period of March through June 11 was 5,401, and remains well below the 1997 and 10-year average to date.

Sockeye are now passing Bonneville Dam in increasing numbers; however, this year's run appears to be very weak compared to most sockeye runs in previous years. The high daily count for the week was 341 on June 18, the final day of the reporting week. The cumulative count through June 18 was 1,226, about 34% and 25% of the respective 1997 and 10-year average.

**Hatchery Releases:** Columbia Basin hatcheries will continue to release subyearling summer and fall chinook in fairly high numbers through the end of June. In the Mid-Columbia Reach, subyearling fall chinook from Priest Rapids Hatchery will be released on five separate days (normal is three days apart) beginning June 12 and ending on June 24. Wells Hatchery completed release from their ponds on June 15. Turtle Rock and

Ringold Hatcheries are slated to release fish beginning next week, with the combined total of 4.5 million. The Yakama acclimation ponds should be empty as of June 12, with many of the fish now passing McNary and John Day dams. Subyearling fall chinook released in the Snake River are from Pittsburg Landing and Big Canyon Acclimation Sites with no fish released from Lyons Ferry Hatchery (on-site). These fish were used as part of the survival studies that are ongoing in the Snake River. All fish from the acclimation ponds were PIT tagged this year. In the lower Columbia River, subyearling releases of fall chinook from the Umatilla River Basin were completed by the end of May. Klickitat Hatchery opened tail screens in mid-May and have allowed the fish to volitionally emigrate from the ponds (final end date will be mid to late June). Subyearling fall chinook from Little White Salmon Hatchery will be released in late June (scheduled for June 25 and June 26).

**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
06/05/98	174.8	6.8	188.2	8.5	213.3	66.1	216.3	61.4	220.7	28.0	212.5	54.7	236.2	141.0
06/06/98	141.1	0.2	137.9	0.0	162.1	32.3	167.5	16.9	174.3	20.2	199.8	39.5	223.9	136.2
06/07/98	167.6	7.7	164.7	7.9	189.8	46.0	193.7	65.0	198.5	22.7	156.1	31.4	171.9	104.9
06/08/98	143.0	0.1	148.4	0.0	174.0	19.6	180.6	27.0	184.4	20.3	184.8	37.0	218.3	131.5
06/09/98	163.5	0.1	155.4	0.0	166.7	13.2	177.2	13.5	181.9	20.3	183.1	36.6	208.2	124.9
06/10/98	132.9	0.1	144.3	0.0	164.1	3.3	177.0	7.3	184.2	20.2	169.0	30.6	175.9	104.8
06/11/98	141.8	0.1	142.4	0.0	158.2	0.0	169.7	2.9	172.7	20.3	172.7	25.7	196.9	120.4
06/12/98	129.2	0.1	135.9	0.0	150.1	0.0	160.8	0.0	167.0	20.2	159.1	24.5	174.3	103.8
06/13/98	109.6	0.1	106.5	0.0	130.8	0.0	147.6	0.0	152.4	20.3	152.7	23.3	167.8	100.9
06/14/98	73.4	0.1	78.4	0.0	101.6	0.0	112.5	0.0	118.9	20.4	142.7	21.5	173.3	103.4
06/15/98	148.1	0.1	138.4	0.0	126.0	0.0	127.5	0.0	128.7	20.3	106.6	11.8	115.1	53.6
06/16/98	134.3	0.1	139.1	0.0	149.4	5.8	154.7	6.7	153.9	20.4	109.5	0.0	109.5	0.0
06/17/98	122.1	0.1	123.4	0.0	131.2	8.4	141.6	6.0	146.3	20.2	142.7	0.0	145.8	2.5
06/18/98	138.0	0.1	136.7	0.0	145.1	9.8	148.3	1.2	150.1	20.3	146.2	0.0	149.9	3.3

**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
06/05/98	9.1	0.0	---	---	144.1	56.4	138.7	55.0	147.3	51.4	151.4	75.5
06/06/98	8.4	0.0	---	---	139.2	53.1	131.4	44.8	138.8	39.9	140.5	68.0
06/07/98	8.5	0.0	---	---	131.2	58.0	124.4	46.1	130.3	36.8	133.5	74.9
06/08/98	8.5	0.0	---	---	125.6	42.9	119.5	37.2	123.1	30.4	127.8	65.9
06/09/98	6.6	0.0	---	---	126.6	39.3	123.5	39.2	128.2	33.1	134.4	68.8
06/10/98	6.4	0.0	---	---	121.1	49.3	115.3	37.3	119.3	28.4	122.5	65.3
06/11/98	7.5	0.0	---	---	117.2	33.7	112.9	36.4	118.6	23.4	123.5	67.1
06/12/98	8.0	0.0	---	---	114.6	34.4	109.2	34.7	112.6	18.1	115.0	65.0
06/13/98	8.0	0.0	---	---	120.4	40.2	116.4	45.6	122.8	20.3	122.9	65.6
06/14/98	7.6	0.0	---	---	122.7	38.1	116.4	42.1	120.3	17.0	126.3	65.7
06/15/98	6.1	0.0	---	---	119.4	28.2	117.6	53.6	122.2	17.1	123.9	65.5
06/16/98	7.4	0.0	---	---	116.6	25.3	112.9	34.6	116.9	17.8	117.9	64.5
06/17/98	7.7	0.0	---	---	115.2	27.3	108.9	29.2	114.4	18.4	118.2	62.2
06/18/98	5.2	0.0	---	---	97.6	27.2	100.4	28.5	104.2	17.1	108.4	62.6

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

Date	McNary		John Day		The Dalles		Bonneville		PH1	PH2
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill		
06/05/98	353.5	180.8	370.2	125.4	359.2	243.5	379.8	161.0	81.6	128.0
06/06/98	373.3	202.5	382.9	120.9	370.5	138.5	378.3	157.6	80.1	131.5
06/07/98	316.8	160.0	349.0	131.9	349.6	241.1	356.9	146.4	80.1	121.1
06/08/98	323.0	154.9	330.0	112.9	322.4	116.8	333.8	114.1	77.7	132.8
06/09/98	337.0	164.1	353.4	111.7	349.9	201.4	345.1	124.4	80.6	130.9
06/10/98	315.2	150.9	332.5	109.7	327.4	109.3	325.9	103.1	80.2	133.4
06/11/98	310.8	141.6	318.8	106.1	306.7	137.9	327.6	104.9	82.5	131.0
06/12/98	296.5	126.9	310.0	104.3	310.3	112.9	312.5	101.8	75.1	126.4
06/13/98	304.3	137.1	309.1	74.0	294.1	165.3	313.4	99.8	83.7	120.7
06/14/98	290.7	111.3	298.7	66.5	297.9	110.8	306.6	98.2	79.1	120.1
06/15/98	273.7	110.7	276.8	64.1	274.4	154.4	298.3	93.7	77.4	118.0
06/16/98	213.9	73.8	227.2	65.1	229.6	85.8	241.0	97.2	66.0	68.6
06/17/98	252.1	95.3	251.9	59.8	239.0	136.7	233.4	93.3	54.1	76.8
06/18/98	253.3	94.9	250.5	62.8	245.9	92.1	266.8	93.3	63.3	101.0

## 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>													
	06/10/98	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	06/12/98	Steelhead	100	4	0	0.00%	0.00%	0	0	0	0	4	1
	06/15/98	Steelhead	100	2	0	0.00%	0.00%	0	0	0	0	1	1
	06/17/98	Steelhead	100	2	0	0.00%	0.00%	0	0	0	0	2	1
<b>Lower Monumental Dam</b>													
	06/09/98	Steelhead	100	11	6	6.00%	0.00%	5	1	0	0	5	1
	06/10/98	Steelhead	84	9	7	8.33%	0.00%	7	0	0	0	3	1
	06/12/98	Steelhead	100	8	5	5.00%	0.00%	5	0	0	0	3	1
	06/15/98	Steelhead	87	11	4	4.59%	0.00%	4	0	0	0	9	1
	06/17/98	Steelhead	87	9	4	4.59%	0.00%	4	0	0	0	6	1.2
<b>McNary Dam</b>													
	06/13/98	SubYrlng Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	06/16/98	SubYrlng Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	06/18/98	SubYrlng Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
<b>John Day Dam</b>													
	06/09/98	Yearling Chinook	100	3	3	3.00%	0.00%	3	0	0	0	0	0
	06/10/98	Steelhead	80	1	1	1.25%	0.00%	1	0	0	0	0	0
	06/11/98	SubYrlng Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	06/13/98	SubYrlng Chinook	100	1	1	1.00%	0.00%	1	0	0	0	0	0
	06/16/98	SubYrlng Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	06/18/98	SubYrlng Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
<b>Bonneville Dam</b>													
	06/09/98	SubYrlng Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	06/10/98	Steelhead	18	1	1	5.55%	5.55%	0	0	1	0	0	0
	06/11/98	SubYrlng Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	06/13/98	SubYrlng Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	06/16/98	SubYrlng Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	06/18/98	SubYrlng Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
<b>Rock Island Dam</b>													
	06/10/98	Yearling Chinook	19	2	2	10.52%	0.00%	2	0	0	0	0	0
	06/12/98	SubYrlng Chinook	31	1	0	0.00%	0.00%	0	0	0	0	1	1
	06/15/98	SubYrlng Chinook	76	1	1	1.31%	0.00%	1	0	0	0	0	0
	06/17/98	SubYrlng Chinook	100	2	2	2.00%	0.00%	1	1	0	0	0	0

**Hatchery Release Summary  
Schedule for Last Two Weeks  
From 06/04/98 to 06/17/98**

Hatchery	Species	FPC	Number Released	Release Dates		Release Site	River Name
		LotID		Begin	End		
<b>Nez Perce Tribe</b>							
Lyons Ferry	FA Chinook	98087	51,500	05/14/98	07/07/98	Pittsburg Landing	Snake River
	FA Chinook	98086	31,500	06/01/98	07/06/98	Clearwater R	Clearwater River, Main Fk
	<b>Agency Total:</b>		83,000				
<b>WDFW</b>							
Klickitat	Coho	98095	1,100,000	04/20/98	06/10/98	Klickitat H	Klickitat River
	FA Chinook	98096	4,000,000	05/21/98	06/20/98	Klickitat H	Klickitat River
Priest Rapids	FA Chinook	98140	6,700,000	06/15/98	06/25/98	Priest Rapids H	Mid-Columbia River
Wells	SU Chinook	98032	540,000	06/04/98	06/15/98	Wells H	Mid-Columbia River
	<b>Agency Total:</b>		12,340,000				
<b>Warm Springs Tribe</b>							
Oak Springs	WI Steelhead	98157	919	06/04/98	06/04/98	Hood R	Hood River
	<b>Agency Total:</b>		919				
<b>Yakama Tribe</b>							
Lost Creek	Coho	98147	300,000	04/24/98	06/04/98	Naches R	Yakama River
Prosser	FA Chinook	98153	1,700,000	05/08/98	06/12/98	Prosser Acclim Pd	Yakama River
	<b>Agency Total:</b>		2,000,000				
	<b>Total Release:</b>		14,423,919				

**Hatchery Release Summary  
Schedule for Next Two Weeks  
From 06/18/98 to 07/01/98**

Hatchery	Species	FPC	Number Released	Release Dates		Release Site	River Name
		LotID		Begin	End		
<b>USFWS</b>							
L White Salmon	FA Chinook	98071	2,000,077	06/25/98	06/26/98	Little White Salmon H	Little White Salmon River
	<b>Agency Total:</b>		2,000,077				
<b>WDFW</b>							
Ringold	FA Chinook	98145	3,800,000	06/24/98	06/27/98	Ringold Springs H	Mid-Columbia River
Turtle Rock	SU Chinook	98022	509,000	06/22/98	06/30/98	Turtle Rock H	Mid-Columbia River
	SU Chinook	98021	524,000	06/22/98	06/30/98	Turtle Rock H	Mid-Columbia River
	<b>Agency Total:</b>		4,833,000				
	<b>Total Release:</b>		6,833,077				

## 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				Tlwr 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	#	Avg	Avg	High	#	Avg	Avg	High	#	Avg	Avg	High	#	Avg	Avg	High	#	Avg	Avg	High	#
6/5	122	123	124	24	109	110	110	24	109	110	113	24	109	110	111	23	107	108	109	23	112	113	115	23
6/6	122	123	123	24	109	109	110	24	108	109	109	24	109	109	110	23	106	106	106	23	115	116	117	23
6/7	122	123	123	24	110	110	110	24	109	110	111	24	110	110	110	23	106	106	106	9	114	116	117	23
6/8	122	123	123	24	110	110	110	24	109	109	109	24	109	109	110	23	107	108	108	14	114	115	117	23
6/9	122	122	123	24	107	110	110	24	109	110	110	24	110	110	110	23	108	108	108	13	112	113	114	21
6/10	122	123	124	24	108	110	111	24	110	110	111	24	110	110	110	23	108	108	108	5	110	110	111	23
6/11	123	123	124	24	109	110	110	24	109	110	110	24	110	110	110	23	107	107	108	16	108	109	110	21
6/12	122	123	124	24	110	111	111	24	110	110	110	24	110	110	111	23	107	108	108	22	107	108	108	23
6/13	122	122	123	24	110	111	111	24	110	110	111	24	110	110	110	23	108	108	108	23	107	107	108	23
6/14	122	123	124	24	110	110	110	24	109	110	112	24	108	109	110	23	107	107	107	22	106	106	107	23
6/15	122	123	124	24	111	111	112	24	110	110	111	24	110	110	111	23	107	107	108	13	108	108	111	23
6/16	122	123	123	24	111	111	111	24	110	110	110	24	110	110	110	23	107	107	108	22	106	106	108	22
6/17	122	122	123	24	111	112	112	24	110	111	112	20	109	110	110	23	107	107	108	13	105	106	108	23
6/18	123	124	126	24	112	112	112	24	111	111	112	24	110	110	111	22	107	108	108	18	107	109	109	23

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

Date	Tlwr. Rocky R.			Rock Island				Tlwr. Rock Island				Wanapum				Tlwr 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	#	Avg	Avg	High	#	Avg	Avg	High	#	Avg	Avg	High	#	Avg	Avg	High	#	Avg	Avg	High	#
6/5	116	119	121	23	117	118	121	23	119	121	122	23	121	122	124	24	124	125	128	24	123	123	124	24
6/6	119	121	122	23	117	118	118	23	120	121	122	23	119	121	123	24	121	122	123	24	117	123	125	24
6/7	119	121	124	23	118	119	120	22	120	122	124	22	118	119	120	24	121	122	123	24	120	121	122	24
6/8	117	120	121	23	117	118	119	23	119	120	120	23	119	120	122	24	121	121	123	24	120	121	123	24
6/9	114	115	118	21	114	115	116	22	117	119	119	22	118	119	120	23	122	122	122	23	119	120	121	23
6/10	111	111	112	22	111	111	112	22	113	114	115	22	---	---	---	0	---	---	---	0	---	---	---	0
6/11	109	109	110	18	109	110	110	19	113	113	114	17	---	---	---	0	---	---	---	0	---	---	---	0
6/12	108	108	108	23	108	108	109	23	111	112	113	23	---	---	---	0	---	---	---	0	---	---	---	0
6/13	108	108	108	23	107	107	108	23	112	112	113	23	---	---	---	0	---	---	---	0	---	---	---	0
6/14	106	107	107	23	106	106	106	23	112	112	112	23	---	---	---	0	---	---	---	0	---	---	---	0
6/15	108	108	108	23	106	106	107	23	112	112	112	23	---	---	---	0	---	---	---	0	---	---	---	0
6/16	107	107	109	22	106	107	107	22	112	112	112	22	---	---	---	0	---	---	---	0	---	---	---	0
6/17	108	109	117	23	107	108	110	23	113	114	117	23	---	---	---	0	---	---	---	0	---	---	---	0
6/18	109	110	113	23	108	109	110	23	114	114	115	23	---	---	---	0	---	---	---	0	---	---	---	0

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

Date	Dwnstr P Rapids			Dworshak				Clearwater				Snake-Lewiston				Lower Granite				Tlwr 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	#	Avg	Avg	High	#	Avg	Avg	High	#	Avg	Avg	High	#	Avg	Avg	High	#	Avg	Avg	High	#
6/5	125	126	127	24	102	103	103	24	101	102	102	24	101	102	103	24	106	107	107	24	119	120	121	24
6/6	127	127	128	24	103	103	103	24	102	103	103	24	102	103	105	24	107	108	109	24	117	118	118	24
6/7	121	122	123	24	103	104	104	24	102	102	103	24	102	103	104	24	107	108	110	24	119	120	123	19
6/8	120	121	122	24	103	104	104	24	101	102	103	24	102	103	104	24	107	108	110	24	114	115	115	20
6/9	120	120	123	23	104	104	104	24	102	103	104	24	102	104	105	24	107	107	108	24	115	116	117	20
6/10	---	---	---	0	104	104	104	24	102	102	103	24	102	104	104	24	106	107	107	24	116	117	118	24
6/11	---	---	---	0	103	103	103	24	101	102	103	24	102	103	104	24	107	108	110	24	112	114	115	24
6/12	---	---	---	0	103	104	104	24	102	103	104	24	103	104	105	24	107	107	108	24	113	114	114	24
6/13	---	---	---	0	104	104	105	24	102	103	103	24	102	103	104	24	106	106	107	24	113	113	114	17
6/14	---	---	---	0	103	103	104	24	102	102	103	24	102	104	105	24	105	105	106	24	113	113	115	18
6/15	---	---	---	0	102	103	104	24	101	102	102	24	101	102	103	24	105	106	106	24	111	113	115	19
6/16	---	---	---	0	102	102	104	24	100	101	101	24	101	102	102	24	105	106	107	24	111	114	118	22
6/17	---	---	---	0	101	102	102	24	102	103	104	24	103	104	105	24	107	109	128	24	111	115	119	21
6/18	---	---	---	0	102	102	103	24	102	103	104	24	103	105	106	24	105	105	106	24	111	117	118	24

<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	<u>Little Goose</u>			<u>Twlwr L. Goose</u>			<u>Lower Mon.</u>			<u>Twlwr L. Mon</u>			<u>Ice Harbor</u>			<u>Twlwr Ice Harbor</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>	#	<u>24 h</u>	<u>12 h</u>	#
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High
6/5	114	114	116	120	122	124	120	120	122	125	126	129	122	122	123	123	124	
6/6	115	117	119	118	119	119	121	123	125	122	123	123	121	121	123	120	121	
6/7	117	118	118	119	121	124	119	120	120	122	123	125	120	121	121	121	122	
6/8	117	118	120	117	119	119	120	120	123	119	119	120	120	120	123	119	120	
6/9	118	119	121	118	119	120	119	120	120	120	121	122	119	119	120	120	121	
6/10	114	114	116	117	118	120	118	120	121	119	119	120	118	118	119	119	120	
6/11	---	---	---	0	---	---	0	116	117	118	118	119	120	116	117	118	119	
6/12	116	117	117	117	119	120	117	118	120	116	117	119	117	117	119	119	120	
6/13	112	114	116	118	119	119	116	118	119	117	118	120	116	116	116	119	120	
6/14	109	110	111	117	118	119	116	116	116	117	117	118	113	113	114	118	119	
6/15	110	111	112	120	121	122	116	117	118	118	119	120	114	115	115	119	121	
6/16	109	110	110	115	119	119	116	116	117	117	120	123	113	113	113	119	121	
6/17	109	112	115	113	117	119	115	117	117	119	121	113	114	115	119	120	122	
6/18	110	112	113	113	116	118	115	117	118	118	121	116	117	117	119	120	121	

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

Date	<u>McNary-Oregon</u>			<u>McNary-Wash.</u>			<u>Twlwr McNary</u>			<u>John Day</u>			<u>Twlwr John Day</u>			<u>The Dalles</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>	#	<u>24 h</u>	<u>12 h</u>	#	
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	
6/5	117	118	122	117	117	119	123	124	125	122	122	124	123	121	123	124	118	119	120
6/6	116	117	119	116	117	118	125	125	126	122	123	125	121	122	123	119	120	120	120
6/7	117	118	120	117	117	119	122	123	124	122	123	123	121	123	124	120	120	122	123
6/8	117	118	119	117	119	120	122	123	124	120	121	122	121	121	122	117	118	118	123
6/9	116	117	118	116	117	117	123	123	124	120	120	120	121	122	123	116	116	117	123
6/10	115	115	116	115	115	116	121	122	123	117	118	118	121	122	123	115	115	116	123
6/11	113	114	116	113	114	114	120	121	122	113	114	114	123	122	123	113	114	115	123
6/12	113	114	118	113	115	117	119	120	121	112	112	113	123	121	122	112	113	115	123
6/13	112	113	113	113	114	115	120	120	121	109	110	111	123	117	122	110	111	112	123
6/14	110	111	112	110	110	111	118	120	120	108	108	108	115	121	123	108	110	111	123
6/15	110	110	110	109	110	110	117	120	121	108	108	108	113	119	122	109	110	112	123
6/16	108	109	112	107	108	110	114	119	121	105	105	106	112	118	119	108	110	112	123
6/17	109	111	115	109	110	111	116	119	120	105	105	105	111	118	120	108	111	114	123
6/18	109	110	111	110	111	122	116	120	120	104	104	105	111	118	120	108	109	110	123

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

Date	<u>Dnstr T. Dalles</u>			<u>Bonneville</u>			<u>Warrendale</u>			<u>Skamania</u>			<u>Camas\Wash.</u>			<u>Wauna Mill</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>	#	<u>24 h</u>	<u>12 h</u>	#	
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	
6/5	122	122	123	116	116	117	122	122	124	121	122	124	121	122	123	113	114	114	124
6/6	121	122	122	119	121	122	123	124	125	123	124	125	120	122	122	114	115	115	124
6/7	122	123	123	120	120	122	124	126	126	124	126	127	123	123	125	113	113	115	124
6/8	120	121	123	118	119	119	122	123	124	121	122	123	120	121	122	112	112	113	124
6/9	120	121	122	115	116	117	121	122	123	120	121	123	119	120	121	113	113	114	124
6/10	118	119	122	115	115	115	119	120	122	118	120	121	117	118	118	112	112	113	124
6/11	118	120	121	113	114	116	118	119	122	117	119	120	116	117	118	111	111	112	124
6/12	117	119	121	112	113	113	117	118	119	116	118	120	115	117	118	109	110	110	124
6/13	117	118	118	111	112	114	115	117	120	115	117	120	114	115	117	108	108	109	124
6/14	115	116	118	109	110	111	114	116	118	113	115	117	112	113	116	107	108	108	124
6/15	116	118	118	110	111	112	115	117	119	114	116	119	112	114	116	107	108	109	122
6/16	113	116	118	108	108	110	114	115	118	115	117	123	112	115	119	107	107	108	124
6/17	116	118	120	110	110	111	116	118	122	116	120	126	114	117	121	106	107	107	124
6/18	114	116	119	109	110	111	114	114	116	113	115	118	111	112	115	107	108	108	124

<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

## 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)
06/05/98	---	0	---	---	346	145	70	151	6,303	14,556	954
06/06/98	---	---	---	---	195	184	259	157	2,832	8,200	1,060
06/07/98	---	---	---	---	133	168	212	120	2,608	10,203	933
06/08/98	---	0	---	---	138	170	158	113	2,679	4,039	458
06/09/98	---	0	---	0	90	106	206	66	4	2,045	383
06/10/98	---	0	---	0	41	183	79	40	---	2,252	379
06/11/98	---	0	---	0	51	99	76	43	---	2,026	147
06/12/98	---	---	---	0	191	90	84	26	879	1,022	121
06/13/98	---	---	---	---	422	106	80	26	1,188	2,294	39
06/14/98	---	---	---	---	156	151	216	18	906	1,323	19
06/15/98	---	---	---	---	115	101	56	21	2,173	1,146	0
06/16/98	---	---	---	---	118	118	141	14	865	943	140
06/17/98	---	---	---	---	163	58	---	15	1,156	726	332
06/18/98	---	---	---	---	225	112	15	12	1,480	1,120	20
<b>Total:</b>	0	0	0	0	2,384	1,791	1,652	822	23,073	51,895	4,985
<b># Days:</b>	0	5	0	4	14	14	13	14	12	14	14
<b>Average:</b>	0	0	0	0	170	128	127	59	1,923	3,707	356

### Wild Yearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
06/05/98	---	0	---	---	120	216	210
06/06/98	---	---	---	---	97	207	302
06/07/98	---	---	---	---	199	330	233
06/08/98	---	0	---	---	138	427	257
06/09/98	---	0	---	2	135	242	350
06/10/98	---	0	---	11	111	317	79
06/11/98	---	2	---	8	93	155	76
06/12/98	---	---	---	12	170	202	144
06/13/98	---	---	---	---	313	188	109
06/14/98	---	---	---	---	178	283	237
06/15/98	---	---	---	---	201	134	132
06/16/98	---	---	---	---	242	208	141
06/17/98	---	---	---	---	326	103	---
06/18/98	---	---	---	---	233	141	80
<b>Total:</b>	0	2	0	33	2,556	3,153	2,350
<b># Days:</b>	0	5	0	4	14	14	13
<b>Average:</b>	0	0	0	8	183	225	181

### Wild Subyearling Chinook

	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
06/05/98	301	26	23
06/06/98	665	46	86
06/07/98	399	56	85
06/08/98	172	79	178
06/09/98	165	45	330
06/10/98	152	67	105
06/11/98	76	62	38
06/12/98	184	45	96
06/13/98	145	40	87
06/14/98	97	81	105
06/15/98	216	88	174
06/16/98	118	88	290
06/17/98	332	41	---
06/18/98	282	120	168
<b>Total:</b>	3,304	884	1,765
<b># Days:</b>	14	14	13
<b>Average:</b>	236	63	136

The data presented in the following passage index section is preliminary and has been derived from various sources. For verification and/or origin of data, contact the operators of the Fish Passage Data System at (503) 230-4099.

Smolt indices, wild & hatchery or combined, are presented in the following order: yearling chinook (chinook 1's), subyearling chinook (chinook 0's), steelhead, coho, and sockeye. Two classes of fish counts are shown in these tables: collection counts, which account for sample rates but are not adjusted for flow; and passage indices, which are collection counts divided by the proportion of water passing through the sampling system. Collection counts may be constrained due to sampling effort or river flow. 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 hour period that spans two calendar days. In this report, the date shown corresponds with the sample end date.

## 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)
06/05/98	---	0	---	---	0	0	0	12	74,734	5,196	28,567
06/06/98	---	---	---	---	49	0	22	17	55,088	9,772	24,798
06/07/98	---	---	---	---	0	0	0	21	49,327	38,239	15,406
06/08/98	---	0	---	---	52	0	0	36	34,588	37,596	14,720
06/09/98	---	0	---	0	60	0	21	34	8	25,174	16,370
06/10/98	---	0	---	0	0	10	0	49	---	25,482	13,110
06/11/98	---	0	---	0	8	0	0	53	---	37,372	20,848
06/12/98	---	---	---	0	71	0	24	71	31,576	29,286	23,364
06/13/98	---	---	---	---	7	0	22	81	59,091	30,680	25,761
06/14/98	---	---	---	---	22	5	14	85	31,075	32,816	42,091
06/15/98	---	---	---	---	36	3	14	129	50,226	42,273	35,102
06/16/98	---	---	---	---	0	0	42	116	60,157	27,134	23,113
06/17/98	---	---	---	---	52	3	---	186	121,795	22,727	24,699
06/18/98	---	---	---	---	0	4	22	195	188,127	24,833	22,716
<b>Total:</b>	0	0	0	0	357	25	181	1,085	755,792	388,580	330,665
<b># Days:</b>	0	5	0	4	14	14	13	14	12	14	14
<b>Average:</b>	0	0	0	0	26	2	14	78	62,983	27,756	23,619

Date	All Coho										
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
06/05/98	---	0	---	---	1,490	255	514	921	3,938	6,983	6,949
06/06/98	---	---	---	---	827	254	324	1,344	2,705	3,914	5,946
06/07/98	---	---	---	---	814	239	275	699	564	4,181	6,444
06/08/98	---	0	---	---	293	343	257	743	790	4,661	2,351
06/09/98	---	0	---	0	240	254	742	763	0	2,041	3,759
06/10/98	---	0	---	0	269	184	527	423	---	2,296	3,482
06/11/98	---	0	---	0	263	163	214	400	---	2,139	4,901
06/12/98	---	---	---	0	346	209	132	316	1,202	1,022	1,272
06/13/98	---	---	---	---	363	209	145	317	1,674	765	3,506
06/14/98	---	---	---	---	282	160	251	287	1,346	1,456	1,917
06/15/98	---	---	---	---	245	137	195	210	986	764	799
06/16/98	---	---	---	---	255	142	255	99	518	539	379
06/17/98	---	---	---	---	411	86	---	150	693	208	912
06/18/98	---	---	---	---	274	116	66	93	820	248	1,119
<b>Total:</b>	0	0	0	0	6,372	2,751	3,897	6,765	15,236	31,217	43,736
<b># Days:</b>	0	5	0	4	14	14	13	14	12	14	14
<b>Average:</b>	0	0	0	0	455	197	300	483	1,270	2,230	3,124

**Definitions for Smolt Index Counts**

WTB (Collection) = Salmon River Trap at Whitebird : Collection Counts  
 GRN (Collection) = Grande Ronde River Trap : Collection Counts  
 LGR (Index) = Lower Granite Dam Bypass Collection System : Passage Index Counts :  $\text{Passage Index} = \frac{\text{Collection Counts}}{\{\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill})\}}$   
 LGS (Index) = Little Goose Bypass Collection System : Passage Index Counts :  $\text{Passage Index} = \frac{\text{Collection Counts}}{\{\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill})\}}$   
 LMN (Index) = Lower Monumental Dam Bypass Collection System : Passage Index Counts :  $\text{Passage Index} = \frac{\text{Collection Counts}}{\{\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill})\}}$   
 IMN (Collection) = Imnaha River Trap : Collection Counts  
 LEW (Collection) = Snake River Trap at Lewiston : Collection Counts

## 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)
06/05/98	---	0	---	---	11,875	2,984	1,926	14	3,544	6,852	500
06/06/98	---	---	---	---	8,938	1,832	3,109	14	1,143	3,286	807
06/07/98	---	---	---	---	6,813	2,648	1,883	11	361	3,869	434
06/08/98	---	5	---	---	6,045	2,589	1,323	16	494	2,020	543
06/09/98	---	15	---	4	2,569	1,786	3,190	18	0	1,747	267
06/10/98	---	35	---	9	2,307	2,746	1,547	7	---	789	498
06/11/98	---	50	---	5	1,506	1,379	757	7	---	563	69
06/12/98	---	---	---	4	2,651	732	486	13	109	568	343
06/13/98	---	---	---	---	11,686	714	479	4	162	225	522
06/14/98	---	---	---	---	3,531	730	544	5	633	198	19
06/15/98	---	---	---	---	4,554	1,027	458	0	102	637	60
06/16/98	---	---	---	---	2,781	1,040	467	4	261	606	88
06/17/98	---	---	---	---	4,535	1,019	---	4	77	208	83
06/18/98	---	---	---	---	3,293	1,332	393	1	0	169	98
<b>Total:</b>	0	105	0	22	73,084	22,558	16,562	118	6,886	21,737	4,331
<b># Days:</b>	0	5	0	4	14	14	13	14	12	14	14
<b>Average:</b>	0	21	0	6	5,220	1,611	1,274	8	574	1,553	309

### 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)
06/05/98	---	0	---	---	1,309	487	463	21	466	2,426	545
06/06/98	---	---	---	---	1,008	291	130	65	416	629	968
06/07/98	---	---	---	---	914	534	444	42	239	1,186	434
06/08/98	---	0	---	---	1,085	451	316	42	99	1,243	246
06/09/98	---	1	---	0	421	236	614	59	0	488	208
06/10/98	---	0	---	0	293	458	303	39	---	1,046	87
06/11/98	---	1	---	0	139	232	227	30	---	563	108
06/12/98	---	---	---	0	410	124	162	44	36	227	121
06/13/98	---	---	---	---	765	98	123	23	270	180	210
06/14/98	---	---	---	---	401	112	119	22	0	198	19
06/15/98	---	---	---	---	597	126	89	16	395	255	52
06/16/98	---	---	---	---	270	152	141	11	86	269	0
06/17/98	---	---	---	---	378	106	---	12	0	104	83
06/18/98	---	---	---	---	236	114	73	11	0	39	488
<b>Total:</b>	0	2	0	0	8,226	3,521	3,204	437	2,007	8,853	3,569
<b># Days:</b>	0	5	0	4	14	14	13	14	12	14	14
<b>Average:</b>	0	0	0	0	588	252	246	31	167	632	255

**Definitions for Smolt Index Counts.**

RIS (Index) = Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts :  $\text{Passage Index} = \frac{\text{Collection Counts}}{\{\text{Powerhouse 2 Flow} / (\text{Powerhouses 1 \& 2 Flow} + \text{Spill})\}}$

MCN (Index)= McNary Dam Bypass Collection System : Passage Index Counts :  $\text{Passage Index} = \frac{\text{Collection Counts}}{\{\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill})\}}$

JDA (Index) = John Day Dam Bypass Collection System : Passage Index Counts :  $\text{Passage Index} = \frac{\text{Collection Counts}}{\{\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill})\}}$

BO1 (Index)= Bonneville Dam First Powerhouse Bypass Trap : Passage Index Counts :  $\text{Passage Index} = \frac{\text{Collection Counts}}{\{\text{Powerhouse 1 Flow} / (\text{Powerhouses 1 \& 2 Flow} + \text{Spill})\}}$

## 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)
06/05/98	---	0	---	---	316	87	210	17	675	377	182
06/06/98	---	---	---	---	162	69	302	26	0	0	0
06/07/98	---	---	---	---	299	48	85	11	113	250	43
06/08/98	---	0	---	---	86	88	198	25	99	311	102
06/09/98	---	0	---	11	165	91	350	13	0	307	17
06/10/98	---	0	---	4	59	47	171	10	---	35	95
06/11/98	---	0	---	18	59	70	139	13	---	225	39
06/12/98	---	---	---	9	92	145	120	15	364	0	121
06/13/98	---	---	---	---	189	154	102	13	378	0	16
06/14/98	---	---	---	---	141	142	168	18	90	132	0
06/15/98	---	---	---	---	101	223	77	4	493	0	0
06/16/98	---	---	---	---	124	148	241	4	259	269	14
06/17/98	---	---	---	---	91	166	---	9	154	0	0
06/18/98	---	---	---	---	137	110	51	6	164	104	20
<b>Total:</b>	0	0	0	42	2,021	1,588	2,214	184	2,789	2,010	649
<b># Days:</b>	0	5	0	4	14	14	13	14	12	14	14
<b>Average:</b>	0	0	0	11	144	113	170	13	232	144	46

### 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)
06/05/98	---	0	---	---	0	0	47	5	3,717	5,163	182
06/06/98	---	---	---	---	0	0	0	3	2,811	3,886	530
06/07/98	---	---	---	---	0	16	0	2	1,585	3,963	239
06/08/98	---	0	---	---	0	0	0	2	1,786	1,087	68
06/09/98	---	0	---	0	0	0	41	2	0	1,201	33
06/10/98	---	0	---	0	0	0	0	0	---	1,011	166
06/11/98	---	0	---	0	0	7	0	0	---	1,013	124
06/12/98	---	---	---	1	0	0	0	2	510	568	40
06/13/98	---	---	---	---	0	7	0	6	756	270	234
06/14/98	---	---	---	---	0	0	14	11	449	265	0
06/15/98	---	---	---	---	0	8	0	0	592	255	0
06/16/98	---	---	---	---	0	0	7	0	778	0	140
06/17/98	---	---	---	---	0	7	---	1	847	0	0
06/18/98	---	---	---	---	0	3	7	3	0	117	0
<b>Total:</b>	0	0	0	1	0	48	116	37	13,831	18,799	1,756
<b># Days:</b>	0	5	0	4	14	14	13	14	12	14	14
<b>Average:</b>	0	0	0	0	0	3	9	3	1,153	1,343	125

LEW and WTB data collected for the FPC by Idaho Dept. of Fish and Game.

JDA and BO1 data collected for the FPC by National Marine Fisheries Service.

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 June 18, 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	38,253	762	114,000	963	71,826	2,812	7,328	619	12,645	131	7,363	528						
TDA	25,330	503	69,365	375	44,144	1,889	4,613	224	6,696	93	4,881	315						
JDA	22,495	418	62,253	327	34,393	1,541	4,253	149	5,985	71	3,518	245						
MCN	19,456	335	57,832	404	33,819	1,722	3,138	122	4,893	62	2,869	214						
IHR	12,420	131	41,398	75	18,178	714	2,048	47	2,599	18	1,329	78						
LMN	10,627	126	38,479	146	17,565	767	640	18	1,808	11	903	59						
LGS	10,218	104	37,874	108	n/a	n/a	629	13	1,290	3	n/a	n/a						
LWG	9,881	106	33,855	81	15,110	655	316	6	654	0	206	10						
PRD	4,147	37	6,780	8	10,704	173	307	4	328	2	411	12						
RIS	3,270	54	6,153	52	8,534	192	0	0	60	0	73	4						
RRH	766	49	1,856	10	2,066	52	0	0	0	0	0	0						
WEL	1	2	786	27	1,204	50	0	0	0	0	0	0						

	Coho						Sockeye			Steelhead		
	1998		1997		10-Yr Avg.		1998	1997	10-Yr Avg.	1998	1997	10-Yr Avg.
	Adult	Jack	Adult	Jack	Adult	Jack						
	0	0	0	0	0	0	1226	3,590	4916	5,401	7,839	9,361
	0	0	0	0	0	0	477	976	2,563	1,926	1,855	3,096
	0	0	0	0	0	0	289	624	1,580	8,490	3,729	3,747
	0	0	0	0	0	0	130	128	815	2,294	2,064	3,506
	0	0	0	0	0	0	0	0	0	1,866	1,486	3,231
	0	0	0	0	0	0	0	0	0	1,432	1,229	2,846
	0	0	0	0	n/a	n/a	0	0	n/a	2,057	1,425	n/a
	0	0	0	0	0	0	1	0	0	4,175	3,648	5,970
	0	1	0	0	0	0	39	4	223	32	35	120
	0	0	0	0	1	0	14	1	45	39	44	184
	0	0	0	0	1	0	41	0	18	94	0	110
	0	0	0	0	0	0	0	0	127	7	0	65

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, RIS, and RRH are based on video counts accumulated through June 17.

1998 totals at LGS are based on video counts accumulated through June 16.

Adult count records at LGS have been maintained since 1993.

\*\* - Through June 28, all (spring) chinook are being trapped and removed from the ladder at Wells prior to the counting window.

## Transportation Summary Report

### Two-Week Transportation Summary from 06/05/98 to 06/18/98

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
<b>LOWER GRANITE DAM</b>						
Collected	3386	2493	54103	4228	1352	65562
Bypassed	184	0	425	0	0	609
Trucked	0	0	0	0	0	0
Barged	3089	2446	52941	4155	1333	63964
<b>Total Transported</b>	<b>3089</b>	<b>2446</b>	<b>52941</b>	<b>4155</b>	<b>1333</b>	<b>63964</b>
<b>LITTLE GOOSE DAM</b>						
Collected	3,194	590	16,850	1,782	1,057	23,473
Bypassed	0	0	0	0	0	0
Trucked	0	0	0	0	0	0
Barged	3,114	586	16,695	1,751	1,044	23,190
<b>Total Transported</b>	<b>3,114</b>	<b>586</b>	<b>16,695</b>	<b>1,751</b>	<b>1,044</b>	<b>23,190</b>
<b>LOWER MONUMENTAL DAM</b>						
Collected	3,061	1,542	14,611	2,939	1,774	23,927
Bypassed	0	0	462	0	0	462
Trucked	0	0	0	0	0	0
Barged	3,147	1,781	14,780	3,013	1,869	24,590
<b>Total Transported</b>	<b>3,147</b>	<b>1,781</b>	<b>14,780</b>	<b>3,013</b>	<b>1,869</b>	<b>24,590</b>
<b>M McNARY DAM</b>						
Collected	11,803	425,863	4,324	7,891	8,432	458,313
Bypassed	0	0	0	0	0	0
Trucked	0	0	0	0	0	0
Barged	12,008	340,651	5,316	8,715	10,203	376,893
<b>Total Transported</b>	<b>12,008</b>	<b>340,651</b>	<b>5,316</b>	<b>8,715</b>	<b>10,203</b>	<b>376,893</b>
<b>PROJECT TOTALS</b>						
Collected	21,444	430,488	89,888	16,840	12,615	571,275
Bypassed	184	0	887	0	0	1,071
Trucked	0	0	0	0	0	0
Barged	21,358	345,464	89,732	17,634	14,449	488,637
<b>Total Transported</b>	<b>21,358</b>	<b>345,464</b>	<b>89,732</b>	<b>17,634</b>	<b>14,449</b>	<b>488,637</b>

## Transportation Summary Report

### Cumulative Transportation Summary through 06/18/98

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
<b>LOWER GRANITE DAM</b>						
Collected	1,499,453	7,173	4,994,826	148,302	48,612	6,698,366
Bypassed	102,195	33	124,448	1,425	0	228,101
Trucked	24,303	46	33,352	93	10	57,804
Barged	1,446,929	7,042	4,880,042	146,522	48,528	6,529,063
<b>Total Transported</b>	<b>1,471,232</b>	<b>7,088</b>	<b>4,913,394</b>	<b>146,615</b>	<b>48,538</b>	<b>6,586,867</b>
<b>LITTLE GOOSE DAM</b>						
Collected	885,598	998	1,491,914	47,286	16,386	2,442,182
Bypassed	0	0	0	0	0	0
Trucked	568	0	1,097	5	0	1,670
Barged	873,579	993	1,486,634	46,834	16,245	2,424,285
<b>Total Transported</b>	<b>874,147</b>	<b>993</b>	<b>1,487,731</b>	<b>46,839</b>	<b>16,245</b>	<b>2,425,955</b>
<b>LOWER MONUMENTAL DAM</b>						
Collected	491,504	2,834	942,052	28,721	14,109	1,479,220
Bypassed	4,255	189	12,129	1,008	639	18,220
Trucked	797	0	780	0	0	1,577
Barged	485,428	2,879	929,249	27,774	13,561	1,458,891
<b>Total Transported</b>	<b>486,225</b>	<b>2,879</b>	<b>930,029</b>	<b>27,774</b>	<b>13,561</b>	<b>1,460,468</b>
<b>M McNARY DAM</b>						
Collected	1,027,362	654,525	326,566	123,560	509,243	2,641,256
Bypassed	1,004,308	122,732	316,015	109,189	492,648	2,044,892
Trucked	7,035	70,968	4,888	4,978	4,115	91,984
Barged	12,008	340,651	5,316	8,715	10,203	376,893
<b>Total Transported</b>	<b>19,043</b>	<b>411,619</b>	<b>10,204</b>	<b>13,693</b>	<b>14,318</b>	<b>468,877</b>
<b>PROJECT TOTALS</b>						
Collected	3,903,917	665,530	7,755,358	347,869	588,350	13,261,024
Bypassed	1,110,758	122,954	452,592	111,622	493,287	2,291,213
Trucked	32,703	71,014	40,117	5,076	4,125	153,035
Barged	2,817,944	351,565	7,301,241	229,845	88,537	10,789,132
<b>Total Transported</b>	<b>2,850,647</b>	<b>422,579</b>	<b>7,341,358</b>	<b>234,921</b>	<b>92,662</b>	<b>10,942,167</b>