



Fish Passage Center

# Weekly Report #99 - 15

June 18, 1999

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**SUMMARY OF EVENTS:**

**Water Supply:** Normal to moderate high temperatures during last week resulted in minor snowmelt rises. It is expected that during coming week the headwater snowmelt will taper off in the area east of the Cascades while high flows will continue in the upper Columbia sub-basins west of the Cascades. Precipitation was diminishing during last week and it is expected that a showery pattern will persist in the coming week.

Precipitation above Grand Coulee was 79% of normal, the Snake River above Ice Harbor was 148% of normal and the Columbia above The Dalles was 99% of normal for the period of June 1-15. The subbasins with the highest precipitation continued to be in the Upper Snake with 212%, and Salmon/Boise/Payette with 170%. The lowest precipitation continued to be at Central Washington with 13% and the Upper Deschutes/Crooked with 14%.

The new June 99 Midmonth Runoff Volume Forecast was issued. Changes are in the range of 1% to 6% compared to the June Final. The highest increases are in the mid Snake River basin because of the increased precipitation in the period of June 1-15. Runoff Volume Forecast for Columbia River above The Dalles is 117% of average and is 1% higher than the June Final. The runoff volume forecast for Brownlee reservoir increased 6% compared to the June Final. The summary of the June Midmonth and June Final Runoff Volume Forecasts is given in the following Table.

Location	Period	June 99 Midmonth		June 99 Final	
		MAF	%	MAF	%
<i>Libby</i>	Apr-Sep	7.3	108	7.17	106
<i>Hungry Horse</i>	Apr-Sep	2.35	108	2.24	103
<i>Grand Coulee</i>	Jan-Jul	72.4	114	72.2	114
<i>The Dalles</i>	Jan-Jul	124.0	117	123.0	116
<i>Lower Granite</i>	Jan-Jul	36.0	121	35.7	120
<i>Dworshak</i>	Apr-Jul	3.14	116	3.13	116
<i>Brownlee</i>	Apr-Jul	7.9	136	7.51	130

**System Storage:** The major system reservoirs continue refilling toward the end of June Biological Opinion required full pool elevations.

- *Hungry Horse* is operated to the Integrated Rule Curves defined by the State of Montana. The reservoir is projected to be full by the third week of July, instead of June 30 as required by Biological Opinion. This operation will decrease flows during first three weeks of July at McNary. The actual daily average outflows continue to be in the range of 1.3-3.9 kcfs during working days and 200 cfs during weekends.
- *Libby* was operated last week for the sturgeon pulse. The daily average outflows were gradually increased to 11.6 kcfs on June 14, 21.7 kcfs on June 15, and 25 kcfs and 23.1 kcfs on June 16-17. The outflows will gradually decrease to the range of 15-16 kcfs during the coming week. The reservoir is projected to be 8 ft from full by the end of the third week of July, impacting summer flows at McNary.
- *Arrow* reservoir is holding its daily average outflow to 22-24 kcfs. There is a requested daily average outflow of 30 kcfs below Arrow for protecting trout redds but the upstream backwater effect of the higher flows in Kootenai River is providing a sufficient level of the protection. The reservoir is operated under US-Canada Treaty Agreement.
- *Grand Coulee* reservoir continues refilling toward an end of June full pool elevation. Daily average inflows were in the range of 179.5 kcfs-204.5 kcfs during the week of June 11-17. Daily average outflows were in the range of 119-168.5 kcfs during the same period, keeping daily minimum average outflows at Priest Rapids of 150 kcfs during

last week.

- *Dworshak* reservoir continues to refill with minimum daily average outflows of 1.3 kcfs-1.4 kcfs since May 20. The latest projection of the SSARR shows the reservoir will not refill at all in 1999. The highest projected elevation is 1586 ft at the end of the third week of July before summer flow augmentation begins. Deep drafting of the reservoir for flood control during March resulted in a failure of the reservoir to refill by June 30 or July 31, impacting flows at Lower Granite during the July through August period.
- *Brownlee* reservoir continue to be in refill during June 11-17 period. Daily average inflows continued to be high during the last week because of the snowmelt and increased precipitation at Mid and Upper Snake basins. Daily average outflows at Hells Canyon Dam were in the range of 30.6-36 kcfs during last week. The reservoir is projected to be full by June 20.

A summary of the current elevations on June 17 is given in the following Table:

Reservoir	Actual elev. As of June 17	Max Reservoir pool [ft]
<i>Libby</i>	2415.3	2459
<i>Hungry Horse</i>	3534.6	3560
<i>Grand Coulee</i>	1264.2	1290
<i>Brownlee</i>	2070.24*	2077
<i>Dworshak</i>	1553.9	1600

\*as of June 16

Upper Snake reservoirs:

As of June 17, American Falls is full, Palisades is at 72% of full and Jackson Lake is 87% of full capacity. All major reservoirs have been refilled because of intense precipitation in the region and decreased irrigation withdrawals, which resulted in higher flows at Minidoka of 18.8 kcfs. The resulting daily average flows downstream of Milner are 11.5 kcfs, as of June 17. The system is at 75% of capacity.

Boise and Payette River Basins:

Both systems are operated for flood control, but are also refilling because of high precipitation in the

basin. The Boise River system (Anderson Ranch, Arrowrock and Lucky Peak) is at 94% of capacity. The daily average outflow from Boise River system is 3.07 kcfs (as of June 17).

The Payette River system (Cascade, Deadwood) is at 95% of capacity. The daily average outflow from Payette river system is 11.3 kcfs (as of June 17). The outflows from the system are higher because of the increased precipitation in the region.

**Streamflow:** Biological Opinion spring flow targets based on the June Final Runoff Volume Forecast are: 100 kcfs at Lower Granite, and 260 kcfs at McNary. Flows in the system were generally in mild recession after last week's peaking. Daily average flows at Lower Granite were gradually decreasing to 107.6 kcfs on June 12 after previous week peaking period, and then continued with rising to 156 kcfs on June 17. It is expected that another, lower peak will occur on Friday, June 18. McNary daily average flows were fluctuating during the past week, from 360.7 kcfs on June 17 to 297 kcfs on June 11.

Daily average flows at Priest Rapids were fluctuating in the range of 166.6 kcfs to 208.2 kcfs in the period of June 11-17. The total range of daily and hourly fluctuations is presented in the following

Table:

Date	Average Daily Flow at Priest Rapids [kcfs]	Hourly fluctuations [kcfs]
June 11	207.9	171.6-257.3
June 12	208.2	177.6-243.3
June 13	166.6	150.6-177.4
June 14	183.0	123.4-238.7
June 15	192.4	161.7-212.9
June 16	191.0	162.2-239.6
June 17	185.1	163.9-209.1

The average daily discharge for the major run-of-river projects for June 4-17 period are given in the following Table:

Project	Average Discharge [kcfs]	
	June 11-17	June 4-10
<i>Priest Rapids</i>	190.6	205.9
<i>McNary</i>	318.2	345.9
<i>Lower Granite</i>	125.6	139.3
<i>Bonneville</i>	328.6	365.5

**Spill:** Outflow from Dworshak Dam continued at project minimum with no spill. The Biological Opinion spill program will continue to be implemented at the lower Snake projects through June 20. Increasing temperatures have resulted in higher flows towards the end of the week in the Snake and, consequently, spill volumes have increased. These projects are presently spilling water in excess of hydraulic capacity.

Biological Opinion spill levels continue at the lower Columbia projects. Spill continues at McNary, John Day and Bonneville dams as mostly excess hydraulic capacity spill. The spill at The Dalles continues at research levels.

Total dissolved gas levels are above the waivers in the forebay of Little Goose Dam, in the forebay and tailrace of Lower Monumental Dam, and in the forebay of Ice Harbor Dam. Total dissolved gas levels remain well above the waiver limits in the forebay and tailrace of both McNary and John Day dams, but closer to the waiver at the other projects.

Monitoring for signs of gas bubble trauma (GBT) on fish collected through the Smolt Monitoring Program showed few fish with signs of GBT over the past week. The Lower River projects will begin sampling subyearling chinook for signs of GBT as numbers of yearling chinook and steelhead begin to decrease at these projects. The same is true for Rock Island Dam. Monitoring at the Snake River projects will cease as spring spill is expected to terminate on June 20, 1999.

**Smolt Monitoring.** In the mid- and lower Columbia River, the passage indices of spring migrants steadily decreased this week from last week's level. In the Snake River, a rise in flow the last three days of this week sharply increased the passage indices of yearling chinook and steelhead at Lower Granite Dam during the past two days. By the end of the week, hatchery steelhead were again dominating the collections at Lower Granite Dam. This week's passage indices of subyearling chinook at Lower Granite Dam were running at one-tenth of last week's highs which followed the release of hatchery fall chinook from acclimation ponds in the Clearwater River (Big Canyon Creek

AP) and Snake River (Captain Johns AP). In the lower Columbia River, subyearling chinook are now the most numerous fish in the collections at McNary, John Day and Bonneville dams as a result of the rapidly decreasing numbers of spring migrants present. This week saw no increase in subyearling chinook passage indices at John Day and Bonneville dams and substantially lower subyearling chinook passage indices at McNary Dam compared to last week. In the mid-Columbia River, the collections at Rock Island Dam this week continued to be dominated by coho followed by hatchery and wild steelhead. Only by week's end were subyearling chinook passage indices at Rock Island Dam beginning to show a noticeable rise in magnitude.

**Adult Fish Passage:** Summer chinook passage at Bonneville Dam increased this week with the counts ranging between 300-500 for the week ending June 17. The summer chinook count of 5,264 was less than the 1998 count as well as the 10-year average. The summer chinook count at The Dalles, John Day and McNary dams was 3,003, 2,628, and 1,165 respectively. The turnoff into the Snake River (Ice Harbor Dam count) was 1,096 with 126 summer chinook counted into the Mid-Columbia (Priest Rapids Dam count).

The adult spring chinook count at the lower Snake River dam (Ice Harbor) was 5,335 with 3,924 proceeding up to Lower Monumental Dam and 3,322 adult spring chinook counted at Lower Granite Dam through June 17. In the Mid-Columbia River, 4,129 adult spring chinook were counted at Priest Rapids Dam, 3,255 passing Rock Island Dam, and 1,332 continuing past Rocky Reach Dam through June 15. It would appear that about 1,900 adult spring chinook would be destined for the Wenatchee River basin (Rock Island count minus the Rocky Reach count). As a further update, you should note that at Wells Dam, fish will be trapped on 3 days of the week with passage upstream past the counting station on the remaining 4 days. Due to this change in operations, spring chinook counts at Wells Dam will be revised at a later date. About 2,100 adult and 412 jack spring chinook (Wild origin) have been counted at Prosser Dam in the Yakama River through June 15.

Prosser Dam information was provided by Joel Hubble, Yakama Tribal biologist.

Adult sockeye counts continue to increase at Bonneville and upstream projects. The count at Bonneville was 1,252 through June 17 and was greater than the 1998 count but only 45% of the 10-yr average. The sockeye total at McNary Dam was 167 with sockeye present at the Mid-Columbia projects except for Wells Dam (counts through June 15-17).

Steelhead passage increased through the week at Bonneville Dam with the daily count on June 17 of 186 (30 were classified as wild). The total past Bonneville since March 15 is 4,446. Generally, the new run year of steelhead can be assessed from June 1 on through May 31 of the following year.

**Hatchery Releases:** During the past two weeks, approximately 14.36 million anadromous salmon were released from hatcheries, acclimation ponds, or were directly planted into streams. For the upcoming two weeks, about 2.8 million salmon are scheduled for release from basin hatcheries into the rivers and tributaries above Bonneville Dam. More than 79 million juvenile salmon of hatchery origin will be released into streams above Bonneville Dam for the 1999 Migration Year. Basically, all spring migrants, i.e., yearling spring, summer, and fall chinook, coho and steelhead have been released from the hatcheries in each River Reach. Releases of subyearling bright fall chinook peaked through the week with fish released from Priest Rapids, Ringold, Turtle Rock, Lyons Ferry hatcheries. Subyearling summer chinook from Wells Hatchery will be released on June 18 and completed on the Monday the 21<sup>st</sup>, with the accelerated subyearling chinook from Turtle Rock scheduled to be released on Tuesday, June 22. The last group of subyearling fall chinook will be released from Little White Salmon Hatchery next week (June 24).

**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
06/04/99	176.2	0.0	179.0	1.4	203.9	38.6	202.0	44.0	207.4	38.6	200.1	61.2	208.2	165.1
06/05/99	140.6	0.0	143.4	0.0	176.8	30.4	187.5	22.6	200.5	40.2	195.3	62.4	220.2	168.9
06/06/99	159.3	0.0	160.0	17.7	180.4	14.0	180.7	7.6	189.4	40.9	181.3	46.4	191.3	142.7
06/07/99	151.3	0.0	157.9	16.2	186.6	33.4	189.3	20.5	197.4	40.7	190.6	38.8	207.1	156.9
06/08/99	145.9	0.0	151.0	0.0	188.1	39.2	185.4	14.8	192.8	40.6	188.5	38.7	202.9	153.9
06/09/99	165.6	0.0	158.8	17.3	186.3	36.3	190.5	22.8	199.6	40.4	198.0	42.6	217.9	165.3
06/10/99	170.2	0.0	170.4	23.6	191.6	28.8	187.6	19.6	190.3	18.9	183.8	38.2	193.8	146.1
06/11/99	168.5	0.0	178.8	0.0	197.8	24.8	198.6	37.9	200.2	1.9	196.1	54.9	207.9	161.1
06/12/99	127.5	0.0	133.9	0.0	164.6	14.8	175.5	12.7	184.4	0.2	189.0	51.1	208.2	150.4
06/13/99	153.3	0.0	146.7	0.0	156.6	12.9	155.1	2.3	162.7	0.0	154.4	11.7	166.6	116.9
06/14/99	147.6	0.0	158.6	0.0	191.8	31.3	190.9	35.5	198.1	3.5	189.8	49.9	183.0	79.4
06/15/99	132.2	0.0	129.6	0.0	158.6	16.0	163.2	11.5	180.5	0.6	181.7	30.3	192.4	64.1
06/16/99	121.5	0.0	120.6	0.0	177.6	36.2	178.6	28.2	193.7	0.9	187.6	36.7	191.0	84.0
06/17/99	119.0	0.2	---	---	154.5	13.3	160.2	9.1	181.9	7.7	179.6	21.0	185.1	70.1

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

Date	Dworshak		Brownlee Canyon		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
06/04/99	1.4	0.0	44.5	31.1	152.5	59.0	148.1	39.3	154.0	37.6	156.2	95.9
06/05/99	1.3	0.0	46.4	31.1	151.7	56.4	143.1	37.1	149.2	37.5	153.8	84.3
06/06/99	1.3	0.0	47.5	31.1	146.5	51.0	139.1	29.5	145.1	28.6	148.6	75.3
06/07/99	1.3	0.0	49.3	39.5	138.3	44.5	131.5	21.9	138.1	18.6	141.3	70.3
06/08/99	1.4	0.0	46.1	39.8	137.7	59.5	132.5	24.7	139.0	20.8	142.4	70.2
06/09/99	1.4	0.0	44.6	36.4	129.8	42.8	125.1	33.5	129.7	24.9	131.4	74.0
06/10/99	1.4	0.0	43.5	36.3	118.3	36.7	113.9	20.2	120.8	15.2	124.8	68.0
06/11/99	1.4	0.0	40.8	36.1	108.8	32.0	105.8	19.7	110.2	14.9	114.1	67.8
06/12/99	1.4	0.0	40.0	31.2	107.6	35.5	106.0	20.2	109.4	15.3	113.9	68.1
06/13/99	1.4	0.0	39.8	32.4	108.2	33.1	104.7	21.0	108.5	17.9	110.5	66.7
06/14/99	1.3	0.0	38.0	33.4	118.8	36.1	112.6	22.8	119.1	16.8	121.9	66.7
06/15/99	1.3	0.0	44.3	30.7	131.4	41.2	125.3	24.3	132.5	17.6	135.3	64.2
06/16/99	1.4	0.0	43.6	30.4	147.7	51.9	141.3	29.3	147.4	30.9	149.1	72.3
06/17/99	1.4	0.0	---	---	156.0	56.0	146.7	41.4	153.5	31.5	158.2	68.5

**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		
06/04/99	351.2	181.0	379.0	119.6	379.3	210.0	382.6	154.9	84.2	134.3
06/05/99	369.4	200.7	371.1	117.6	365.5	203.0	372.1	146.6	83.5	132.8
06/06/99	349.8	179.9	391.3	116.1	373.9	210.0	382.4	154.3	84.7	134.2
06/07/99	338.9	169.8	344.4	83.8	342.4	121.5	352.4	131.0	81.5	130.8
06/08/99	332.9	169.3	352.8	87.5	337.9	102.9	363.8	140.2	80.7	133.7
06/09/99	355.8	190.1	361.8	102.1	365.6	189.1	351.0	128.5	81.7	131.6
06/10/99	323.0	153.1	352.2	88.2	338.8	209.0	354.4	130.7	80.8	133.7
06/11/99	297.0	129.4	312.9	54.3	306.7	195.8	332.1	114.7	83.1	125.1
06/12/99	315.2	148.7	331.7	105.2	330.5	127.2	321.6	107.0	83.2	122.2
06/13/99	299.8	136.9	302.8	95.8	293.0	89.5	305.2	89.8	82.5	123.7
06/14/99	299.7	136.5	323.4	103.3	317.7	99.8	332.0	114.4	80.2	128.2
06/15/99	321.0	171.1	293.2	54.8	281.8	160.5	308.3	88.2	80.9	130.0
06/16/99	334.3	173.6	348.2	74.4	343.7	207.3	327.8	117.4	73.5	127.7
06/17/99	360.7	196.3	380.1	99.4	369.4	210.0	373.0	154.5	74.6	134.6

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

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

Date	<u>Can. Boundary</u>			<u>Grand Coulee</u>				<u>Tlwr G. Coulee</u>				<u>Chief Joseph</u>				<u>Tlwr C. Joseph</u>				<u>Wells</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	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
6/4	122	122	123	24	112	113	113	24	111	111	112	24	111	111	111	23	111	112	112	23	---	---	---	0
6/5	123	123	123	24	113	113	114	24	111	112	112	20	110	111	111	23	112	112	112	23	---	---	---	0
6/6	122	123	123	24	113	113	113	24	110	111	111	24	109	110	110	23	117	124	138	23	---	---	---	0
6/7	122	123	124	24	112	113	113	24	111	111	111	24	110	110	110	23	117	123	135	23	---	---	---	0
6/8	122	122	123	24	113	113	114	24	111	111	112	24	110	110	111	23	111	111	112	23	110	110	111	9
6/9	121	121	122	24	113	114	114	24	111	112	112	20	110	110	111	23	118	124	135	23	---	---	---	0
6/10	122	122	123	24	---	---	---	0	112	112	113	24	111	111	112	23	121	129	137	23	111	111	114	11
6/11	121	121	122	24	---	---	---	0	112	112	113	20	111	112	112	23	111	111	112	23	114	114	114	6
6/12	120	120	121	24	---	---	---	0	112	113	114	20	112	112	113	24	112	113	113	24	---	---	---	0
6/13	120	120	121	24	---	---	---	0	112	113	113	24	112	113	113	23	113	113	114	23	---	---	---	0
6/14	121	122	122	24	---	---	---	0	113	113	114	24	113	114	114	24	113	113	114	24	---	---	---	0
6/15	120	121	121	24	---	---	---	0	114	115	115	24	114	115	117	23	114	114	115	23	112	112	112	1
6/16	121	121	122	24	116	116	116	24	114	114	115	24	115	116	116	23	114	115	115	23	111	111	111	2
6/17	121	122	123	24	115	115	115	24	113	114	114	24	115	116	117	23	115	116	122	23	---	---	---	0

note: Grand Coulee Forebay had a malfunctioning monitor June 10 to June 15.

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

Date	<u>Rocky Reach</u>			<u>Tlwr. Rocky R.</u>				<u>Rock Island</u>				<u>Tlwr Rock Is.</u>				<u>Wanapum</u>				<u>Dnstrm Wanapum</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	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
6/4	110	110	111	24	113	114	121	24	110	111	112	24	118	119	119	22	110	111	111	24	118	120	123	24
6/5	111	111	114	24	114	116	119	24	112	113	114	24	120	121	123	24	111	111	111	24	119	120	121	24
6/6	113	115	116	24	114	118	119	24	110	111	112	24	119	121	122	23	111	112	113	24	117	118	118	24
6/7	109	109	110	23	111	112	118	22	108	109	110	23	117	117	118	22	113	114	115	24	117	118	120	24
6/8	112	114	116	22	114	116	120	22	109	110	110	22	118	119	121	22	113	113	114	24	117	118	120	24
6/9	113	113	114	22	116	117	120	22	111	112	113	24	121	121	122	24	112	113	114	24	116	117	117	24
6/10	114	115	116	24	116	118	121	23	113	115	117	24	119	120	121	22	114	115	116	24	119	120	120	24
6/11	112	113	115	24	115	116	119	23	113	113	114	24	115	116	118	21	116	117	119	24	119	120	121	24
6/12	114	115	116	24	116	117	120	22	114	115	116	24	116	117	118	24	115	116	118	24	119	120	121	24
6/13	112	113	113	23	113	113	113	23	111	112	112	23	112	113	113	23	115	116	117	24	119	120	121	24
6/14	112	112	112	22	115	117	122	21	112	113	113	22	114	116	118	21	115	116	118	24	120	121	122	24
6/15	114	114	115	24	116	117	119	23	114	114	115	24	116	117	118	24	114	115	118	24	116	118	121	24
6/16	114	115	116	24	116	117	120	24	113	114	115	24	114	116	118	23	111	112	112	24	115	117	121	24
6/17	114	116	116	24	116	117	118	23	111	112	114	23	114	115	117	23	---	---	---	0	---	---	---	0

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

Date	<u>Priest Rapids</u>			<u>Dwnstr P. Rapids</u>				<u>Dworshak</u>				<u>Clearwater</u>				<u>Anatone</u>				<u>Snake-Lewiston</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	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
6/4	112	114	116	24	121	121	122	24	---	---	---	0	---	---	---	0	109	110	110	24	102	103	104	24
6/5	113	115	116	24	121	122	123	24	---	---	---	0	---	---	---	0	109	109	110	24	101	102	102	24
6/6	112	113	114	24	120	120	120	24	---	---	---	0	---	---	---	0	108	109	109	24	101	101	102	24
6/7	114	115	115	24	120	121	121	24	109	111	112	24	104	105	105	24	108	109	109	24	101	102	103	24
6/8	115	115	116	24	121	121	121	24	108	109	111	24	102	102	103	18	108	108	109	24	101	102	102	24
6/9	114	114	116	24	121	122	122	24	107	108	109	24	---	---	---	0	109	109	110	24	102	103	104	24
6/10	114	115	115	24	121	121	122	24	109	110	111	24	---	---	---	0	108	109	110	24	103	104	105	24
6/11	117	119	120	24	121	122	122	24	---	---	---	0	---	---	---	0	108	108	109	24	103	104	105	24
6/12	119	121	123	24	122	123	123	24	---	---	---	0	---	---	---	0	108	108	109	24	103	104	105	24
6/13	117	117	118	24	121	121	122	24	108	109	110	24	---	---	---	0	107	107	107	24	102	103	104	24
6/14	118	122	124	24	120	121	124	24	---	---	---	0	---	---	---	0	107	108	108	24	103	104	104	24
6/15	122	123	124	24	122	122	123	24	110	112	113	24	---	---	---	0	108	108	109	24	103	105	106	24
6/16	113	114	116	24	118	120	120	24	109	110	111	23	---	---	---	0	107	108	109	24	103	104	104	23
6/17	---	---	---	0	---	---	---	0	108	109	110	24	---	---	---	0	108	109	110	24	104	104	105	24

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

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

Date	<u>Lower Granite</u>			<u>Tlwr L. Granite</u>				<u>Little Goose</u>				<u>Tlwr L. Goose</u>				<u>Lower Mon.</u>				<u>Tlwr L. Mon</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>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>Avg</u>		<u>Avg</u>	<u>High</u>	<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>Avg</u>	
6/4	107	108	108	24	121	122	122	24	119	120	120	24	119	119	120	15	119	120	120	24	124	124	126	24
6/5	108	108	108	24	120	122	123	24	117	118	118	24	118	118	119	16	118	119	120	24	123	125	127	24
6/6	106	107	107	24	117	121	122	24	115	115	116	24	117	117	118	3	116	116	117	24	120	122	123	24
6/7	107	107	109	24	117	121	121	24	115	116	117	24	115	116	117	16	116	117	117	24	118	121	123	24
6/8	106	106	107	14	119	120	125	14	114	116	117	24	115	116	117	15	116	117	117	24	118	120	121	24
6/9	---	---	---	0	---	---	---	0	114	116	118	24	118	118	121	14	115	116	116	24	119	122	124	24
6/10	106	106	107	10	115	115	121	10	120	121	121	24	118	118	119	13	118	119	120	24	119	120	121	24
6/11	108	108	110	24	114	119	120	24	115	118	121	24	116	118	118	21	119	121	123	24	118	119	120	24
6/12	108	109	110	23	113	118	119	23	116	118	120	23	117	117	118	8	119	120	121	24	119	120	120	24
6/13	108	109	111	24	113	118	120	24	116	118	122	24	---	---	---	0	118	119	121	24	118	119	121	24
6/14	108	109	110	24	114	119	120	24	118	120	122	24	116	118	118	24	118	119	121	24	120	121	124	24
6/15	107	107	107	5	120	120	120	5	116	118	121	24	116	118	119	24	119	120	121	24	120	122	123	24
6/16	---	---	---	0	---	---	---	0	113	113	115	9	117	117	118	8	117	118	119	24	121	124	127	24
6/17	107	108	109	23	118	118	122	13	115	116	118	24	119	120	121	24	116	118	118	24	122	124	127	24

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

Date	<u>Ice Harbor</u>			<u>Tlwr Ice Harbor</u>				<u>Pasco</u>				<u>McNary-Oregon</u>				<u>McNary-Wash</u>				<u>Tlwr McNary</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>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>Avg</u>		<u>Avg</u>	<u>High</u>	<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>Avg</u>	
6/4	119	120	120	24	122	122	124	24	---	---	---	0	116	117	118	24	114	114	115	24	125	125	125	24
6/5	118	118	119	24	120	122	123	24	---	---	---	0	114	115	116	24	112	113	114	24	125	127	130	24
6/6	116	116	116	24	119	121	122	24	---	---	---	0	111	112	112	24	110	110	111	24	123	124	124	24
6/7	115	116	116	24	118	121	122	24	---	---	---	0	112	113	115	24	111	112	113	24	123	124	124	24
6/8	115	116	116	24	118	120	121	24	---	---	---	0	113	114	115	24	112	112	112	24	123	123	124	23
6/9	115	115	115	24	118	119	120	24	---	---	---	0	114	115	118	17	113	114	115	23	124	125	125	23
6/10	116	116	117	24	117	119	120	24	---	---	---	0	114	116	117	20	114	115	116	20	123	124	125	20
6/11	117	118	119	24	117	119	120	24	---	---	---	0	116	117	119	24	116	116	117	24	121	121	121	24
6/12	118	119	120	24	117	119	120	24	---	---	---	0	116	117	117	24	116	117	117	24	121	122	123	24
6/13	119	119	119	24	117	119	121	24	---	---	---	0	117	118	119	24	118	120	121	24	121	121	122	24
6/14	119	120	121	24	117	119	121	24	---	---	---	0	118	119	120	24	119	120	120	24	121	121	123	24
6/15	119	119	120	24	118	120	121	24	---	---	---	0	119	120	123	23	119	120	121	23	123	124	125	23
6/16	117	118	119	24	119	120	122	24	---	---	---	0	117	118	119	24	116	116	117	24	123	124	124	24
6/17	117	117	118	24	118	120	121	24	---	---	---	0	115	116	117	24	115	117	118	24	124	125	125	24

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

Date	<u>John Day</u>			<u>Tlwr John Day</u>				<u>The Dalles</u>				<u>Dnstr T. Dalles</u>				<u>Bonneville</u>				<u>Warrendale</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>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>Avg</u>		<u>Avg</u>	<u>High</u>	<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>Avg</u>	
6/4	109	109	110	16	121	121	121	24	108	109	109	23	117	118	119	24	111	111	112	23	117	118	118	23
6/5	113	113	125	8	121	121	122	24	110	111	111	23	118	118	119	24	113	113	114	23	118	118	120	23
6/6	109	110	111	23	121	121	121	24	110	110	111	23	118	118	119	24	115	115	116	23	120	120	121	23
6/7	108	109	109	22	119	121	122	24	110	110	111	23	115	116	118	24	116	116	116	23	120	121	121	23
6/8	109	109	111	18	120	121	122	21	108	109	109	23	113	114	115	24	113	114	116	23	119	120	121	23
6/9	110	111	112	23	122	123	126	23	109	110	111	19	117	120	122	24	112	112	113	23	117	118	118	23
6/10	112	112	112	23	121	123	124	24	110	111	112	23	120	120	121	24	115	116	117	23	120	121	121	23
6/11	113	115	116	24	118	122	123	24	110	112	113	24	121	121	122	24	112	116	118	24	120	121	121	24
6/12	117	119	121	24	122	122	123	24	112	113	114	23	119	120	122	24	109	109	110	24	119	120	120	24
6/13	119	119	120	23	122	122	123	24	113	114	115	23	119	120	121	24	108	108	110	23	117	119	120	23
6/14	119	120	122	24	123	123	123	24	115	116	117	23	120	121	122	24	108	109	110	24	119	119	120	24
6/15	118	119	119	23	120	122	122	24	114	115	117	23	121	121	122	24	108	109	110	23	117	118	120	23
6/16	116	116	117	23	121	123	124	21	111	111	112	23	120	120	121	24	105	105	106	23	116	117	117	23
6/17	114	114	115	23	124	124	124	24	111	112	112	23	120	121	121	24	107	107	108	23	119	120	120	23

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

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

Date	<u>Skamainia</u>				<u>Camas\Wash.</u>				
	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>	
	Avg	Avg	High	hr		Avg	Avg	High	hr
6/4	113	114	114	23	115	116	116	24	
6/5	114	115	115	23	115	116	116	24	
6/6	116	117	117	23	117	117	118	24	
6/7	116	117	117	23	118	119	119	24	
6/8	115	116	117	23	117	118	118	20	
6/9	113	114	114	23	---	---	---	0	
6/10	116	119	120	23	117	118	119	20	
6/11	119	120	120	24	119	120	120	24	
6/12	120	120	120	24	119	120	121	24	
6/13	118	119	120	23	120	121	122	24	
6/14	119	119	120	24	118	120	121	24	
6/15	117	119	120	23	118	119	119	24	
6/16	116	116	116	23	116	117	118	24	
6/17	118	119	120	23	118	119	119	24	



## 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>													
	06/14/99	Yearling Chinook	8	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/14/99	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	0	0.0
<b>Little Goose Dam</b>													
	06/09/99	Yearling Chinook	82	1	0	0.00%	0.00%	0	0	0	0	1	1.0
	06/09/99	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1.0
	06/16/99	Yearling Chinook	38	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/16/99	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
<b>Lower Monumental Dam</b>													
	06/14/99	Yearling Chinook	12	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/14/99	Steelhead	99	8	3	6.06%	0.00%	3	1	0	0	5	1.0
<b>Ice Harbor Dam</b>													
	06/08/99	Yearling Chinook	23	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/08/99	Steelhead	27	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/11/99	Yearling Chinook	6	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/11/99	Steelhead	7	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/15/99	Yearling Chinook	40	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/15/99	Steelhead	32	4	4	12.50%	0.00%	3	1	0	0	0	0.0
<b>McNary Dam</b>													
	06/10/99	Subyear. Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/14/99	Subyear. Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/14/99	Steelhead	24	1	0	0.00%	0.00%	0	0	0	0	1	1.0
	06/17/99	Subyear. Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1.0
	06/17/99	Steelhead	5	0	0	0.00%	0.00%	0	0	0	0	0	0.0
<b>Bonneville Dam</b>													
	06/10/99	Subyear. Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/10/99	Steelhead	31	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/14/99	Subyear. Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/14/99	Steelhead	42	0	0	0.00%	0.00%	0	0	0	0	0	0.0
<b>Rock Island Dam</b>													
	06/10/99	Yearling Chinook	44	2	2	4.54%	0.00%	2	0	0	0	0	0.0
	06/10/99	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/14/99	Yearling Chinook	58	2	2	3.44%	0.00%	2	0	0	0	0	0.0
	06/14/99	Steelhead	100	2	1	1.00%	0.00%	1	0	0	0	1	1.0
	06/17/99	Subyear. Chinook	36	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/17/99	Steelhead	90	1	0	0.00%	0.00%	0	0	0	0	1	1.0

## Hatchery Release Summary For the Last Two Weeks From 6/4/99 to 6/17/99

Hatchery	Species...	Migration	Year	Number		...Release Dates...		Release Site	River Name
				Released	Begin	..End			
<b>Nez Perce Tribe</b>									
<b>Lyons Ferry</b>	FA	Chinook	1999	322,928	6/5/99	6/5/99	Cpt John Acclim Pd	Snake River	
			<b>Agency Total:</b>	<b>322,928</b>					
<b>WDFW</b>									
<b>Klickitat</b>	FA	Chinook	1999	4,300,000	6/3/99	6/30/99	Klickitat H	Klickitat River	
<b>Lyons Ferry</b>	FA	Chinook	1999	200,000	6/15/99	6/15/99	Lyons Ferry H	Snake River	
<b>Priest Rapids</b>	FA	Chinook	1999	6,544,000	6/14/99	6/23/99	Priest Rapids H	Mid-Columbia River	
<b>Turtle Rock</b>	SU	Chinook	1999	300,000	6/16/99	6/20/99	Turtle Rock H	Mid-Columbia River	
<b>Wells</b>	SU	Chinook	1999	381,867	4/15/99	6/9/99	Wells H	Mid-Columbia River	
	SU	Steelhead	1999	148,000	4/20/99	6/5/99	Winthrop H	Methow River	
	SU	Chinook	1999	390,000	6/14/99	6/30/99	Wells H	Mid-Columbia River	
			<b>Agency Total:</b>	<b>12,263,867</b>					
<b>Yakima Tribe</b>									
<b>Prosser</b>	FA	Chinook	1999	1,690,000	5/24/99	6/4/99	Prosser Acclim Pd	Yakama River	
	FA	Chinook	1999	79,000	5/25/99	6/4/99	Prosser Acclim Pd	Yakama River	
			<b>Agency Total:</b>	<b>1,769,000</b>					
			<b>Total Release:</b>	<b>14,355,795</b>					

## Hatchery Release Summary For the Next Two Weeks From 6/18/99 to 7/1/99

Hatchery	Species...	Migration	Year	Number		...Release Dates...		Release Site	River Name
				Released	Begin	End			
<b>USFWS</b>									
<b>L White Salmon</b>	FA	Chinook	1999	2,100,000	6/24/99	6/24/99	Little White Salmon H	Little White Salmon River	
			<b>Agency Total:</b>	<b>2,100,000</b>					
<b>WDFW</b>									
<b>Ringold</b>	FA	Chinook	1999	3,500,000	6/23/99	6/30/99	Ringold Springs H	Mid-Columbia River	
<b>Turtle Rock</b>	SU	Chinook	1999	305,000	6/22/99	6/26/99	Turtle Rock H	Mid-Columbia River	
			<b>Agency Total:</b>	<b>3,805,000</b>					
			<b>Total Release:</b>	<b>5,905,000</b>					

## Two-Week Summary of Passage Indices

Date	Yearling Chinook							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)
06/04/99	---	---	---	---	1,844	5,910	266	215	9,000	13,847	4,878
06/05/99	---	1	---	---	2,091	2,418	557	233	9,221	25,520	3,520
06/06/99	---	---	---	---	2,084	2,358	1,125	125	6,267	31,834	2,159
06/07/99	---	1	---	---	2,194	1,396	1,310	186	8,778	17,072	2,780
06/08/99	---	0	---	---	3,354	1,458	649	106	7,221	21,571	2,549
06/09/99	---	0	---	---	1,285	1,525	645	130	---	3,349	1,004
06/10/99	---	0	---	---	522	1,259	1,027	78	---	4,409	958
06/11/99	---	0	---	---	578	1,726	660	87	923	5,813	408
06/12/99	---	---	---	---	248	804	2,099	140	1,854	4,118	1,070
06/13/99	---	---	---	---	449	535	343	95	2,932	2,023	323
06/14/99	---	0	---	---	189	247	370	88	2,479	1,089	966
06/15/99	---	0	---	---	430	462	556	51	2,318	1,093	629
06/16/99	---	0	---	---	1,055	525	750	36	1,783	2,885	87
06/17/99	---	0	---	---	984	506	765	5	2,512	3,172	171
<b>Total:</b>	0	2	0	0	17,307	21,129	11,122	1,575	55,288	137,795	21,502
<b># Days:</b>	0	10	0	0	14	14	14	14	12	14	14
<b>Average:</b>	0	0	0	0	1,236	1,509	794	113	4,607	9,843	1,536

### Wild Yearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
06/04/99	---	---	---	---	2,645	8,169	1,596
06/05/99	---	5	---	---	3,110	4,015	1,670
06/06/99	---	---	---	---	3,142	1,965	2,250
06/07/99	---	19	---	---	5,839	2,373	1,244
06/08/99	---	16	---	---	8,112	3,526	788
06/09/99	---	17	---	---	2,809	2,463	834
06/10/99	---	8	---	---	1,690	2,372	1,952
06/11/99	---	27	---	---	1,317	3,962	1,007
06/12/99	---	---	---	---	780	3,948	347
06/13/99	---	---	---	---	550	1,606	1,247
06/14/99	---	11	---	---	569	1,046	1,251
06/15/99	---	5	---	---	1,208	1,484	1,668
06/16/99	---	2	---	---	3,122	1,439	1,222
06/17/99	---	4	---	---	2,396	1,291	2,615
<b>Total:</b>	0	114	0	0	37,289	39,659	19,691
<b># Days:</b>	0	10	0	0	14	14	14
<b>Average:</b>	0	11	0	0	2,664	2,833	1,407

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

### Combined Subyearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
06/04/99	---	---	---	---	0	24	0	72	90,024	6,922	5,499
06/05/99	---	0	---	---	28	68	40	79	54,496	15,180	8,910
06/06/99	---	---	---	---	128	0	26	80	50,381	26,065	11,324
06/07/99	---	0	---	---	433	0	95	32	65,285	28,388	11,415
06/08/99	---	0	---	---	12,797	0	46	62	84,000	50,932	25,881
06/09/99	---	0	---	---	22,766	32	0	31	---	13,815	18,136
06/10/99	---	0	---	---	17,553	269	34	30	---	29,860	19,282
06/11/99	---	0	---	---	8,606	491	625	27	29,023	42,507	27,103
06/12/99	---	---	---	---	2,942	1,482	139	37	26,339	17,857	29,231
06/13/99	---	---	---	---	2,322	4,464	217	32	15,639	11,083	12,701
06/14/99	---	0	---	---	1,922	2,166	127	28	18,261	16,767	17,428
06/15/99	---	0	---	---	2,146	1,385	174	67	15,991	8,362	13,753
06/16/99	---	1	---	---	2,374	1,606	230	185	17,400	29,488	8,669
06/17/99	---	0	---	---	1,715	2,403	2,015	379	19,343	51,622	11,945
<b>Total:</b>	0	1	0	0	75,732	14,390	3,768	1,141	486,182	348,848	221,277
<b># Days:</b>	0	10	0	0	14	14	14	14	12	14	14
<b>Average:</b>	0	0	0	0	5,409	1,028	269	82	40,515	24,918	15,806

### All Coho

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
06/04/99	---	---	---	---	2,244	3,993	1,064	1,105	15,272	19,378	8,337
06/05/99	---	0	---	---	1,927	3,632	954	1,300	14,114	31,240	7,519
06/06/99	---	---	---	---	2,116	2,351	997	937	8,592	18,160	5,155
06/07/99	---	0	---	---	2,142	1,614	662	821	7,717	19,256	4,591
06/08/99	---	0	---	---	2,383	1,173	696	618	14,729	16,179	6,987
06/09/99	---	0	---	---	1,941	825	872	524	---	7,535	2,636
06/10/99	---	0	---	---	771	1,213	753	535	---	7,816	2,682
06/11/99	---	0	---	---	469	555	521	484	2,220	10,536	2,157
06/12/99	---	---	---	---	284	616	555	488	4,112	7,520	2,872
06/13/99	---	---	---	---	274	347	416	348	2,869	4,676	1,722
06/14/99	---	0	---	---	285	399	393	597	3,042	5,712	3,059
06/15/99	---	0	---	---	307	445	382	794	2,689	2,083	3,106
06/16/99	---	0	---	---	660	349	387	510	3,393	3,860	1,474
06/17/99	---	0	---	---	303	407	459	52	2,986	4,263	1,048
<b>Total:</b>	0	0	0	0	16,106	17,919	9,111	9,113	81,735	158,214	53,345
<b># Days:</b>	0	10	0	0	14	14	14	14	12	14	14
<b>Average:</b>	0	0	0	0	1,150	1,280	651	651	6,811	11,301	3,810

#### Definitions for Smolt Index Counts

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

## 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)
06/04/99	---	---	---	---	13,947	17,363	5,852	271	7,309	29,926	6,652
06/05/99	---	29	---	---	22,158	14,594	6,480	260	8,132	24,200	3,781
06/06/99	---	---	---	---	17,251	14,418	6,059	167	3,127	35,893	3,040
06/07/99	---	156	---	---	12,823	11,945	5,027	151	2,087	18,660	2,569
06/08/99	---	150	---	---	11,450	6,845	4,174	166	2,150	15,779	3,603
06/09/99	---	247	---	---	5,885	4,502	4,495	124	---	4,814	2,008
06/10/99	---	121	---	---	3,555	5,032	5,069	32	---	3,407	1,468
06/11/99	---	87	---	---	3,212	5,531	3,627	184	661	3,996	2,448
06/12/99	---	---	---	---	2,162	2,368	2,585	180	1,459	4,731	620
06/13/99	---	---	---	---	1,622	2,577	1,789	157	1,090	4,926	753
06/14/99	---	67	---	---	1,708	1,934	2,128	198	1,467	3,401	1,328
06/15/99	---	268	---	---	3,042	2,412	1,772	329	971	1,592	1,479
06/16/99	---	67	---	---	6,507	2,508	1,887	290	652	1,976	650
06/17/99	---	69	---	---	12,712	3,040	2,066	68	606	1,997	98
<b>Total:</b>	0	1,261	0	0	118,034	95,069	53,010	2,577	29,711	155,298	30,497
<b># Days:</b>	0	10	0	0	14	14	14	14	12	14	14
<b>Average:</b>	0	126	0	0	8,431	6,791	3,786	184	2,476	11,093	2,178

### 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)
06/04/99	---	---	---	---	2,244	2,438	1,729	117	1,761	8,400	1,064
06/05/99	---	13	---	---	5,422	2,810	835	123	920	9,240	608
06/06/99	---	---	---	---	2,758	1,408	614	114	1,344	9,828	837
06/07/99	---	19	---	---	2,192	1,541	668	107	208	5,955	379
06/08/99	---	16	---	---	2,059	901	371	77	409	4,194	1,230
06/09/99	---	32	---	---	1,135	856	588	105	---	1,884	251
06/10/99	---	12	---	---	547	1,166	531	108	---	802	511
06/11/99	---	10	---	---	523	769	399	89	95	1,635	466
06/12/99	---	---	---	---	319	430	382	193	324	1,312	394
06/13/99	---	---	---	---	475	565	217	156	287	2,463	377
06/14/99	---	7	---	---	189	246	357	147	225	839	443
06/15/99	---	14	---	---	518	248	313	254	194	1,056	518
06/16/99	---	3	---	---	997	299	375	157	261	1,976	43
06/17/99	---	1	---	---	934	400	434	107	43	1,619	171
<b>Total:</b>	0	127	0	0	20,312	14,077	7,813	1,854	6,071	51,203	7,292
<b># Days:</b>	0	10	0	0	14	14	14	14	12	14	14
<b>Average:</b>	0	13	0	0	1,451	1,006	558	132	506	3,657	521

**Definitions for Smolt Index Counts.**

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

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

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

BO1 (Index)= Bonneville Dam First Powerhouse Bypass Trap : Passage Index Counts : Passage Index = Collection Counts / {Powerhouse 1 Flow / (Powerhouses 1 & 2 +Flow + 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)
06/04/99	---	---	---	---	160	357	399	51	650	1,531	577
06/05/99	---	0	---	---	165	414	318	64	1,227	2,860	217
06/06/99	---	---	---	---	96	268	332	51	670	1,709	132
06/07/99	---	0	---	---	280	474	142	25	938	993	126
06/08/99	---	0	---	---	99	214	93	21	401	599	264
06/09/99	---	0	---	---	210	222	209	21	---	628	126
06/10/99	---	0	---	---	124	101	171	16	---	200	0
06/11/99	---	0	---	---	73	93	87	3	81	182	58
06/12/99	---	---	---	---	71	32	104	9	216	511	0
06/13/99	---	---	---	---	0	31	36	6	287	337	0
06/14/99	---	0	---	---	24	0	81	19	394	44	40
06/15/99	---	0	---	---	47	49	116	26	261	122	37
06/16/99	---	0	---	---	29	25	36	12	217	185	0
06/17/99	---	0	---	---	101	25	38	20	43	142	24
<b>Total:</b>	0	0	0	0	1,479	2,305	2,162	344	5,385	10,043	1,601
<b># Days:</b>	0	10	0	0	14	14	14	14	12	14	14
<b>Average:</b>	0	0	0	0	106	165	154	25	449	717	114

### 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)
06/04/99	---	---	---	---	0	183	0	8	4,658	3,913	798
06/05/99	---	0	---	---	54	211	199	5	6,289	3,740	565
06/06/99	---	---	---	---	64	142	102	4	3,241	5,982	485
06/07/99	---	0	---	---	153	197	47	4	3,860	3,176	295
06/08/99	---	0	---	---	49	34	70	0	1,905	1,997	659
06/09/99	---	0	---	---	90	37	19	2	---	1,047	251
06/10/99	---	0	---	---	75	136	34	0	---	601	128
06/11/99	---	0	---	---	0	32	69	3	340	1,272	117
06/12/99	---	---	---	---	0	65	121	5	1,299	1,039	225
06/13/99	---	---	---	---	49	63	54	1	574	425	161
06/14/99	---	0	---	---	0	32	35	0	563	559	121
06/15/99	---	0	---	---	24	62	58	6	560	203	37
06/16/99	---	0	---	---	29	26	36	2	739	481	43
06/17/99	---	0	---	---	26	0	26	2	433	378	49
<b>Total:</b>	0	0	0	0	613	1,220	870	42	24,461	24,813	3,934
<b># Days:</b>	0	10	0	0	14	14	14	14	12	14	14
<b>Average:</b>	0	0	0	0	44	87	62	3	2,038	1,772	281

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 17, 1999**

DAM	Spring Chinook						Summer Chinook						Fall Chinook					
	1999		1998		10-Yr Avg.		1999		1998		10-Yr Avg.		1999		1998		10-Yr Avg.	
	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	38,664	8,691	38,342	775	66,606	2,467	5,264	1,270	6,919	540	6,579	472	0	0	0	0	0	0
TDA	17,563	6,180	25,225	518	39,635	1,617	3,003	772	4,205	208	4,183	267	0	0	0	0	0	0
JDA	15,409	5,089	21,820	378	31,309	1,325	2,628	590	3,720	139	3,082	200	0	0	0	0	0	0
MCN	9,258	3,961	19,415	337	30,860	1,525	1,165	366	2,722	100	2,407	173	0	0	0	0	0	0
IHR	5,335	2,648	12,434	130	16,094	620	1,096	275	1,765	44	1,100	63	0	0	0	0	0	0
LMN	3,924	2,726	10,598	131	15,276	682	333	108	381	11	326	19	0	0	0	0	0	0
LGS	3,278	2,619	10,512	118	**	**	236	85	358	5	**	**	0	0	0	0	**	**
LWG	3,322	2,407	9,854	109	13,146	573	0	0	0	0	0	0	0	0	0	0	0	0
PRD	4,129	744	4,124	37	9,804	151	126	25	165	1	200	6	0	0	0	0	0	0
RIS	3,255	869	3,084	51	7,146	154	0	0	0	0	0	0	0	0	0	0	0	0
RRH	1,332	216	721	49	1,609	35	0	0	0	0	0	0	0	0	0	0	0	0
WEL	20	36	1	22	798	34	0	0	0	0	0	0	0	0	0	0	0	0

DAM	Coho						Sockeye			Steelhead			
	1999		1998		10-Yr Avg.		10-Yr			10-Yr			Wild
	Adult	Jack	Adult	Jack	Adult	Jack	1999	1998	Avg.	1999	1998	Avg.	1999
BON	0	0	0	0	0	0	1,252	880	2,932	4,446	5,235	7,924	602
TDA	0	0	0	0	0	0	741	332	1,487	1,137	1,827	2,681	139
JDA	1	0	0	0	0	0	564	179	927	4,062	6,371	3,788	991
MCN	0	1	0	0	0	0	167	82	513	804	2,158	3,074	136
IHR	0	0	0	0	0	0	0	0	0	848	1,842	2,845	307
LMN	0	0	0	0	0	0	0	0	0	597	1,606	2,478	119
LGS	0	0	0	0	**	**	0	0	**	932	2,058	**	314
LWG	0	0	0	0	0	0	0	0	0	3,043	4,354	5,674	544
PRD	0	0	0	0	0	0	26	26	143	43	29	93	0
RIS	0	0	0	0	0	0	12	9	20	16	41	132	32
RRH	0	0	0	0	0	0	44	28	10	47	95	89	32
WEL	0	0	0	0	0	0	0	0	1	13	8	38	7

LMN, RIS and RRH are through 6/15 - LGS and PRD are through 6/16.

\*WEL - WDFW is trapping Spring Chinook on both fish ladders, 3 days per week starting 06/14.

Bonneville and Lower Granite were doing video counts only until April 1, 1999. These counts were 8 hour daytime video counts.

\*\*Adult count records at Little Goose Dam have been maintained since 1991, visual counts were not conducted at Little Goose Dam between 1982 and 1990.

Historic counts (pre-1996) were obtained from CRITFC and compiled by the FPC.

Historic counts 1997 to present were obtained from the Corps of Engineers.

NOTE: PRD is not reporting Wild Steelhead numbers.

No Video counts at Lower Granite Dam on 3/1/99 and 3/2/99.

**Transportation Summary Report**  
**Two-Week Transportation Summary**  
 from 06/04/99 to 06/17/99

	Yearling Subyearling		Steelhead	Coho	Sockeye	Total
	Chinook	Chinook				
<b>LOWER GRANITE DAM</b>						
Collected	35,924	50,725	89,515	10,387	1,357	187,908
Bypassed	944	0	1,724	0	0	2,668
Trucked	0	0	0	0	0	0
Barged	34,836	50,326	87,722	10,352	1,329	184,565
<b>Total Transported</b>	<b>34,836</b>	<b>50,326</b>	<b>87,722</b>	<b>10,352</b>	<b>1,329</b>	<b>184,565</b>
<b>LITTLE GOOSE DAM</b>						
Collected	45,458	9,624	80,869	13,288	2,684	151,923
Bypassed	0	0	0	0	0	0
Trucked	0	0	0	0	0	0
Barged	43,211	8,264	78,471	12,932	2,543	145,421
<b>Total Transported</b>	<b>43,211</b>	<b>8,264</b>	<b>78,471</b>	<b>12,932</b>	<b>2,543</b>	<b>145,421</b>
<b>LOWER MONUMENTAL DAM</b>						
Collected	25,379	3,070	49,595	7,435	2,455	87,934
Bypassed	34	0	200	0	0	234
Trucked	0	0	0	0	0	0
Barged	25,289	3,062	49,330	7,432	2,447	87,560
<b>Total Transported</b>	<b>25,289</b>	<b>3,062</b>	<b>49,330</b>	<b>7,432</b>	<b>2,447</b>	<b>87,560</b>
<b>M McNARY DAM</b>						
Collected	26,896	237,871	17,363	39,849	14,462	336,441
Bypassed	26,823	237,260	17,347	39,826	14,428	335,684
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	133,657	301,290	237,342	70,959	20,958	764,206
Bypassed	27,801	237,260	19,271	39,826	14,428	338,586
Trucked	0	0	0	0	0	0
Barged	103,336	61,652	215,523	30,716	6,319	417,546
<b>Total Transported</b>	<b>103,336</b>	<b>61,652</b>	<b>215,523</b>	<b>30,716</b>	<b>6,319</b>	<b>417,546</b>



**Transportation Summary Report  
Cumulative Transportation Summary  
through 06/17/99**

	Yearling		Subyearling Chinook	Steelhead	Coho	Sockeye	Total
	Chinook	Chinook					
<b>LOWER GRANITE DAM</b>							
Collected	2,157,821	52,391	3,299,957	75,194	16,965	5,602,328	
Bypassed	115,693	0	265,551	14,608	1,640	397,492	
Trucked	29,736	126	23,030	183	1,219	54,294	
Barged	1,999,027	51,866	3,010,481	60,218	13,699	5,135,291	
<b>Total Transported</b>	<b>2,028,763</b>	<b>51,992</b>	<b>3,033,511</b>	<b>60,401</b>	<b>14,918</b>	<b>5,189,585</b>	
<b>LITTLE GOOSE DAM</b>							
Collected	3,504,036	9,774	3,099,000	114,607	19,885	6,747,302	
Bypassed	19,783	0	158,018	4,195	299	182,295	
Trucked	1,001	0	1,128	5	120	2,254	
Barged	3,459,215	8,414	2,934,698	109,929	18,279	6,530,535	
<b>Total Transported</b>	<b>3,460,216</b>	<b>8,414</b>	<b>2,935,826</b>	<b>109,934</b>	<b>18,399</b>	<b>6,532,789</b>	
<b>LOWER MONUMENTAL DAM</b>							
Collected	1,880,203	3,277	1,958,611	50,090	12,269	3,904,450	
Bypassed	148,536	1	250,913	7,795	596	407,841	
Trucked	4,879	6	1,133	0	88	6,106	
Barged	1,724,857	3,262	1,705,957	42,296	11,560	3,487,932	
<b>Total Transported</b>	<b>1,729,736</b>	<b>3,268</b>	<b>1,707,090</b>	<b>42,296</b>	<b>11,648</b>	<b>3,494,038</b>	
<b>M McNARY DAM</b>							
Collected	2,098,648	414,807	530,399	132,455	781,299	3,957,608	
Bypassed	2,096,245	414,090	530,216	132,397	780,719	3,953,667	
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	9,640,708	480,249	8,887,967	372,346	830,418	20,211,688	
Bypassed	2,380,257	414,091	1,204,698	158,995	783,254	4,941,295	
Trucked	35,616	132	25,291	188	1,427	62,654	
Barged	7,183,099	63,542	7,651,136	212,443	43,538	15,153,758	
<b>Total Transported</b>	<b>7,218,715</b>	<b>63,674</b>	<b>7,676,427</b>	<b>212,631</b>	<b>44,965</b>	<b>15,216,412</b>	