Fish Passage Center

Weekly Report #99 - 19

July 16, 1999

2501 SW First Ave., Suite 230
Portland, OR 97201-4752
phone: 503/230-4582
fax: 503/230-7559

SUMMARY OF EVENTS:

Water Supply: Warm weather was prevailing over the region during the past week. Basins in the north and west of the Cascades were experiencing minor snowmelts. The region is currently under the influence of a cold weather front dropping in from British Columbia, and was expected to last through the upcoming weekend. It is expected that the warming weather will resume next week.

Precipitation above Grand Coulee was 123% of normal, the Snake River above Ice Harbor was 28% of normal, and the Columbia River above The Dalles was 95% of normal for the period of July 1-13. The subbasins with the highest precipitation were in the Eastern slopes Washington Cascades with 192%, Okanogan with 154%, and Central Washington with 146%. The lowest precipitation was recorded at Snake River Basin: Snake River Plain with 1%, Owyhee/Malheur basin with 5%, and Harney/Malheur basin with 9%.

The new July 99 Final Runoff Volume Forecast was issued and it is similar to the July Early Runoff Volume Forecast. Changes are in the range of –4% to 4% compared to the June Final for the major subbasins in the region. The highest increases are in the mid Snake River basin because of the increased precipitation during June. The runoff volume forecast for Brownlee reservoir increased 4% compared to the June Final. Runoff Volume for the Hungry Horse decreased 4% and Libby increased 3% due to the intense precipitation in the region. Runoff Volume Forecast for Columbia River above The Dalles is 116% of average and is the same as in the June Final.

The summary of the July Final and June Final Runoff Column Forecasts is given in the following Table:

Location	Period	July 99 Final		June 99 Final	
		MAF	%	MAF	%
Libby	Apr-Sep	**7.37**	**109**	7.17	106
Hungry Horse	Apr-Sep	**2.16**	**99**	2.24	103
Grand Coulee	Jan-Jul	**72.0**	**114**	72.2	114
The Dalles	Jan-Jul	**123.0**	**116**	123.0	116
Lower Granite	Jan-Jul	**35.7**	**120**	35.7	120
Dworshak	Apr-Jul	**3.09**	**114**	3.13	116
Brownlee	Apr-Jul	**7.75**	**134**	7.51	130

System Storage: The system continues to be managed for the summer season. Major system reservoirs are continuing the refill operations. Drafting for flow augmentation commenced at the Upper Snake and Brownlee reservoirs for improving flows at Lower Granite.

- Hungry Horse continues with refill. The reservoir is projected to be surcharged to 3561 ft (1 ft above the full pool elevation) by July 15, instead of full on June 30 as required by Biological Opinion. The actual daily average outflows were in the range of 190 cfs to 2.88 kcfs for the period of July 9-15.
- Libby continues with refill, with minimum required outflows of at least 8 kcfs as required for bull trout to the end of July. The most recent flow projections are showing that Libby reservoir will be refilled by the end of July.
- Arrow reservoir increased outflows from the range of 28-34 kcfs to the range of 54-58 kcfs during the past week. It is planned to continue with similar outflows during coming week. The reservoir is operated under USA-Canadian Treaty.
- Grand Coulee reservoir continues refilling toward its full pool elevation. It is projected that the reservoir will be operating in top foot

from the second week of July through the end of July. Daily average outflows were in the range of 142.2 kcfs to 182.9 kcfs during the same period.

- Dworshak reservoir continues to refill with minimum daily average outflows of 1.5 kcfs to 3.5 kcfs. The project will not fill this year. The latest flow projections are showing that the reservoir will refill to elevation of 1594.6 ft, that is 5.4 ft below full pool by July 17. The federal regulators decided to start drafting Dworshak as soon as it is needed to maintain minimum required flows of 54 kcfs by BiOp at Lower Granite.
- Brownlee reservoir continues with drafting for flow augmentation at Lower Granite. The reservoir is projected to be drafted at a rate of 1 ft/day. Idaho Power Company will deliver its portion of the flow augmentation required by BiOp by the end of the July if it continues drafting at this rate. Resulting outflows at Hells Canyon Dam are in the range of 19 kcfs-25 kcfs.

A summary of the current elevations on July 15 is given in the following Table:

Reservoir	Actual elev. As of July 15	Max Reservoir pool [ft]
Libby	2446.54	2459
Hungry Horse	3559.67	3560
Grand Coulee	1289.35	1290
Brownlee	2071.4*	2077
Dworshak	1593.41	1600

* as of July 14

Upper Snake reservoirs:

Flow augmentation for flows at Lower Granite began in the Upper Snake on July 1. High temperatures and low precipitation in the basin are resulting in high irrigation withdrawals at diversions. It is anticipated by BOR that flow augmentation will continue through the beginning of the September at a rate of 1.5 kcfs from Milner. The system is currently at 94% of capacity. The major draft for flow augmentation is from American Falls reservoir, currently at 88% of full capacity.

Boise and Payette River Basins:

The Boise River system (Anderson Ranch, Arrowrock and Lucky Peak) is at 96% of capacity. The daily average outflow from Boise River system is 1.2 kcfs (as of July 15), with a portion of flow augmentation of 400 cfs. Flow augmentation commenced around July 5 and it is anticipated that it will continue through August 29. The Payette River system (Cascade, Deadwood) is at 97% of capacity. The daily average outflow from Payette river system decreased from 3.2 kcfs (as of July 8) to 2.2 kcfs (as of July 15).

Streamflow: The Biological Opinion summer flow targets are: 53.96 kcfs at Lower Granite and 200 kcfs at McNary. Daily average flows at Lower Granite continued to decrease from 58.2 kcfs on July 9 to 53.2 kcfs on July 15. Flow augmentation from Brownlee and BOR reservoirs is already underway. It may be necessary to start intensive drafting of Dworshak for flow augmentation during next week in order to keep flows up to the minimum required levels by BiOp. McNary daily average flows continued fluctuating during the past week from 285.9 kcfs on July 14 to 249.4 kcfs on July 10. Flows in the mid Columbia are not decreasing as the outflows from the Upper Columbia increased during the past week.

Daily average flows at Priest Rapids were fluctuating in the range of 177.1 kcfs to 228.7 kcfs in the period of July 9-15. 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]
July 9	177.1	160.6-191.9
July 10	202.8	182.9-226.3
July 11	190.0	158.9-227.4
July 12	194.1	183.0-219.1
July 13	225.1	202.9-262.2
July 14	228.7	195.0-254.8
July 15	192.1	236.2-151.2

The weekly average discharges for the major run-of river projects for July 2-15 period are given in the following Table:

Project	Average Discharge [kcfs]	
	July 9-15	July 2-8
Priest Rapids	201.4	184.98
McNary	265.3	261.3
Lower Granite	54.2	62.9
Bonneville	271.9	271.96

Spill: The NMFS Biological Opinion summer spill program is being implemented at Ice Harbor, John Day, and Bonneville dams, while spill at The Dalles Dam continues at research levels and spill at McNary Dam continues at levels in excess of its hydraulic capacity. The FERC summer spill programs are being implemented at the Mid-Columbia River dams. Monitoring for signs of gas bubble trauma (GBT) on subyearling chinook collected through the Smolt Monitoring Program at Rock Island, McNary, and Bonneville dams showed only a few fish with signs of GBT this week.

Smolt Monitoring. In the Snake River, subyearling chinook passage indices at Lower Granite Dam increased again this week to levels above 1,500 fish per day in six of the days. This week's average daily PIT tag detections of wild fall chinook tagged in the Snake River and hatchery fall chinook tagged at Big Canyon Creek acclimation pond were twice that of last week's average, while that of hatchery fall chinook tagged at Captain Johns Rapids acclimation pond remained similar across both weeks. Subyearling chinook passage indices at Little Goose and Lower Monumental dams where substantially lower this week compared to last week's level, averaging approximately 54% and 63% lower, respectively, at these two dams. The "PIT tag diversion over-ride of the sample timer" mode of operation went into effect this week at the Snake River dams (0700 DST July 14 at Lower Granite Dam; 0700 DST July 10 at Little Goose Dam; 1500 DST July 10 at Lower Monumental Dam). In this operational mode, PIT tag diversion gates operated to deflect PIT tagged fish back to the river during both sampling and non-sampling time intervals.

In the mid-Columbia River, subyearling chinook passage indices at Rock Island Dam increased this week to levels substantially higher than occurred last week. The first subyearling chinook passage index at Rock Island Dam above 1,000 fish per day occurred this week during the 24-hour sampling period ending 0900 July 14.

In the lower Columbia River, subyearling chinook passage indices continued a decreasing trend at all three monitoring site this week, dropping approximately 28% at McNary Dam, 34% at John Day Dam, and 39% at Bonneville Dam compared to last week's average.

Adult Fish Passage: Summer chinook counts at Bonneville Dam ranged between 448 and 667 for the week 7/09 through 7/15. The summer chinook count at Bonneville Dam was 20,763, approximately 117% and 122% of the respective 1998 count and 10-year average through July 15. The summer chinook count at The Dalles, John Day and McNary dams was 17,206, 15,600 and near 12,000, respectively. The turnoff into the Snake River (Ice Harbor Dam count) was 3,549, with almost 8,600 summer chinook counted into the Mid-Columbia (Priest Rapids Dam count). The Snake River total was less than the 1998 and 10-year average while the Mid-Columbia count was about equal to the 1998 and 10-year average at Priest Rapids, but should exceed both counts based on the number of summer chinook still passing the project.

Jack summer chinook counted at Snake River projects has exceeded expectations with Ice Harbor Dam reporting 1,200 and Lower Granite Dam reporting almost 1,400. These totals are 3-5 times greater than the 1998 and 10-year average at Snake River projects.

Adult sockeye counts have peaked at Bonneville Dam and are now tailing off. The daily counts at Bonneville ranged between 512 and 238 with the total count through July 15 of 16,595. This total remained greater than the 1998 count but only 40% of the 10-yr average. Based on sampling by CRITFC at Bonneville Dam, about 80% of the

sampled fish were 4-year old fish (1.2) with approximately 9% being age 3. Sockeye passage is peaking at Mid-Columbia projects with the season total at Priest Rapids now 9,218. Based on the sockeye counts at Rock Island and Rocky Reach dams, it appears that at least one half of the fish will be destined for Lake Osoyoos (Okanogan R basin). During the week, adult sockeye have been counted at all four Snake River projects with Lower Granite Dam totaling 5 through the reporting week. Whether these fish continue on to Red Fish Lake on the upper Salmon River is unknown, but that is the "hoped for" scenario for sockeye passing upstream of Lower Granite Dam.

Steelhead passage increased through the week at Bonneville Dam. Daily counts ranged between 680 and 1,274 with counts greater than 1,000 per day through most of the week (ave. 1019 per day). Through July 15, steelhead passage at Bonneville totaled 19,148 and was 87% of the 1998 total and 89% of the 10-year average. Steelhead numbers are now increasing at all upstream projects with about 100 per day now passing into the Snake River.

Coho salmon will begin passing Bonneville Dam in late July and on through November.

Hatchery Releases:. No releases were scheduled for the next two weeks. Numbers of juvenile hatchery fish released either in 1999 or late summer or fall 1998 that were expected to migrate in 1999 can be found in the FPC Web Page under 1999 Hatchery Release Schedule.

Daily Average Flow and Spill (in kcfs) at Mid-Columbia Projects

	Grand Coulee		Chief Joseph		Wells		Rocky Reach		Rock Island		Wanapum		Priest Rapids	
Date	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
07/02/99	140.7	0.1	148.4	0.0	163.0	13.2	170.7	21.5	180.3	14.9	182.7	22.8	185.8	48.2
07/03/99	151.7	0.1	154.8	0.0	171.5	13.2	175.4	17.4	183.1	11.7	184.5	27.6	188.3	53.2
07/04/99	151.8	0.1	152.0	0.0	167.0	13.2	167.3	1.2	174.0	6.6	182.7	27.4	187.6	56.7
07/05/99	155.5	0.1	159.5	0.0	173.3	13.2	176.2	9.0	182.0	0.0	175.0	26.7	174.8	52.6
07/06/99	158.6	0.1	155.4	0.0	168.3	15.0	175.1	7.1	183.8	0.2	184.1	34.1	179.8	55.7
07/07/99	155.9	0.1	160.8	0.0	177.2	13.2	182.2	20.7	188.7	5.7	188.0	31.4	189.0	57.6
07/08/99	150.8	0.1	146.4	0.0	165.2	13.2	173.3	18.9	183.0	9.3	187.3	29.2	189.6	57.0
07/09/99	166.0	0.1	162.3	0.0	175.3	13.2	177.8	21.8	182.2	9.3	179.3	27.0	177.1	53.5
07/10/99	160.2	0.1	165.8	0.0	180.3	13.2	194.8	25.9	201.5	9.4	204.7	43.6	202.8	66.9
07/11/99	142.2	0.1	146.0	0.0	163.2	13.2	174.9	9.7	185.6	9.6	190.5	36.2	190.0	62.3
07/12/99	163.0	0.1	159.0	0.0	178.3	12.2	185.9	17.7	195.2	8.1	195.8	34.8	194.1	62.5
07/13/99	179.2	0.1	183.6	0.0	208.3	50.2	207.4	47.9	216.8	14.1	222.3	65.3	225.1	105.0
07/14/99	160.7	0.1	171.0	0.0	194.0	54.3	203.2	35.3	207.6	14.5	224.9	69.9	228.7	95.5
07/15/99	180.6	0.1	171.0	0.0	184.5	10.9	187.9	29.6	189.4	20.6	191.1	40.7	192.1	71.6

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

	Dworshak		Brownlee	Hells Canyon	Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
Date	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
07/02/99	1.5	0.0	19.6	15.4	78.1	1.9	81.3	0.0	83.7	0.0	85.6	65.1
07/03/99	1.5	0.0	19.8	22.5	68.2	0.0	69.6	0.0	71.0	0.0	73.1	57.6
07/04/99	1.5	0.0	16.7	17.9	64.7	0.0	66.3	0.0	69.7	0.0	75.4	60.7
07/05/99	1.5	0.0	16.9	17.3	60.0	0.0	60.8	0.0	61.8	0.0	63.4	52.3
07/06/99	1.5	0.0	16.6	16.3	59.5	0.0	60.1	0.0	62.4	0.0	68.1	51.4
07/07/99	1.5	0.0	15.6	13.9	55.2	0.0	56.5	0.0	57.2	0.0	59.5	50.2
07/08/99	1.5	0.0	15.2	20.6	54.6	0.0	56.0	0.0	58.3	0.0	62.5	49.3
07/09/99	1.5	0.0	15.1	19.1	58.2	0.0	59.7	0.0	62.1	0.0	64.9	51.9
07/10/99	1.5	0.0	15.0	18.9	55.2	0.0	55.9	0.0	57.3	0.0	58.7	45.0
07/11/99	1.5	0.0	14.6	19.0	53.3	0.0	53.6	0.0	52.5	0.0	59.1	42.7
07/12/99	1.5	0.0	13.9	18.2	54.1	0.0	53.9	0.0	54.1	0.0	59.1	41.1
07/13/99	1.5	0.0	14.3	21.5	51.1	0.0	51.6	0.0	53.9	0.0	55.9	40.2
07/14/99	1.5	0.0	13.8	22.8	54.0	0.0	54.0	0.0	55.4	0.0	57.7	45.1
07/15/99	3.5	0.0	---	---	53.2	0.0	53.2	0.0	54.8	0.0	57.9	44.4

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

	McNary		John Day		The Dalles			Bonneville		
Date	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
07/02/99	293.9	130.7	309.2	80.8	302.5	89.8	298.8	83.3	80.3	126.0
07/03/99	264.1	102.8	277.3	45.4	279.7	157.7	286.9	83.3	78.1	116.3
07/04/99	261.0	99.7	262.5	35.2	262.3	165.5	277.8	83.5	78.6	106.5
07/05/99	255.0	98.3	270.4	38.5	272.3	174.2	265.3	83.4	78.9	93.8
07/06/99	257.6	102.9	249.3	80.6	249.1	93.5	258.6	82.9	79.5	87.0
07/07/99	237.8	77.6	234.7	84.0	230.0	69.4	248.7	83.4	74.4	81.7
07/08/99	259.8	97.3	268.2	98.0	262.9	79.7	267.6	83.8	79.1	95.1
07/09/99	252.0	89.7	269.9	59.6	275.3	158.3	270.2	86.4	73.8	100.8
07/10/99	249.4	87.6	223.5	57.3	221.3	138.8	244.7	86.0	73.8	75.7
07/11/99	277.9	115.3	282.4	66.5	281.3	171.0	272.4	85.2	80.6	97.4
07/12/99	251.0	91.5	266.1	111.5	261.9	99.5	289.6	82.4	77.6	120.4
07/13/99	263.3	104.2	245.5	101.7	234.8	70.9	246.2	82.1	71.9	83.0
07/14/99	285.9	128.5	287.1	116.1	285.0	85.2	272.5	83.8	77.4	102.2
07/15/99	277.3	114.4	294.5	68.7	298.4	163.3	307.4	100.2	81.1	116.9

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

	Can. Boundary				Grand Coulee				Tlwtr G. Coulee				Chief Joseph				Tlwtr C. Joseph			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/2	122	123	124	24	118	118	118	24	115	115	115	24	116	116	116	23	115	116	116	23
7/3	119	119	120	24	118	118	118	24	114	114	115	24	115	115	115	23	114	115	115	23
7/4	118	119	120	24	117	117	117	24	113	113	114	24	114	114	115	23	113	114	115	23
7/5	118	119	120	24	116	116	117	24	112	113	113	24	114	114	114	23	113	113	114	23
7/6	118	119	119	24	117	117	118	24	113	114	114	24	114	115	116	23	113	113	114	23
7/7	118	118	119	24	117	118	118	24	113	114	115	24	114	115	116	23	---	---	---	0
7/8	116	116	116	24	116	116	116	24	114	114	115	24	113	113	113	23	---	---	---	0
7/9	117	118	119	24	116	116	116	24	113	113	114	24	113	114	115	24	---	---	---	0
7/10	118	118	119	24	116	116	117	24	113	114	114	24	115	115	115	24	---	---	---	0
7/11	119	120	121	24	116	116	117	24	114	114	115	24	114	115	115	23	---	---	---	0
7/12	119	120	122	24	117	117	117	24	114	114	115	20	115	115	115	23	---	---	---	0
7/13	120	121	122	24	117	117	118	24	114	115	115	24	115	116	116	23	---	---	---	0
7/14	121	122	123	24	117	117	118	24	114	115	115	24	115	115	116	23	---	---	---	0
7/15	121	122	123	24	117	117	117	24	114	114	115	24	113	113	114	23	113	113	115	23

Total Dissolved Gas Saturation Data at Mid Columbia River Sites

	Wells				Rocky Reach				Tlwtr Rocky R.				Rock Island				Tlwtr Rock Isl			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/2	112	112	112	4	110	111	111	22	113	113	114	20	111	111	112	23	115	115	115	23
7/3	---	---	---	0	110	110	111	24	113	113	113	24	110	110	111	24	114	114	115	23
7/4	---	---	---	0	110	110	111	24	112	112	112	24	109	109	110	24	112	113	114	24
7/5	---	---	---	0	110	110	111	24	112	113	116	24	108	109	110	24	111	112	112	24
7/6	113	113	114	8	111	112	112	22	114	114	116	21	110	111	111	22	113	114	115	21
7/7	113	113	114	7	111	112	113	24	114	115	115	23	111	111	112	22	114	115	115	22
7/8	---	---	---	0	109	109	110	21	112	112	112	18	108	109	110	21	113	114	114	19
7/9	---	---	---	0	109	110	111	24	113	113	114	24	109	110	111	24	114	115	115	24
7/10	---	---	---	0	110	110	111	24	114	114	115	24	111	112	112	24	115	115	115	24
7/11	---	---	---	0	110	110	111	24	113	114	115	24	111	112	112	24	115	115	115	24
7/12	---	---	---	0	111	111	112	23	114	115	117	23	111	111	112	23	114	115	116	22
7/13	---	---	---	0	112	113	114	22	116	117	123	21	114	115	115	24	117	119	120	22
7/14	---	---	---	0	116	118	122	24	117	121	125	24	115	117	119	23	119	120	122	23
7/15	---	---	---	0	114	114	116	24	118	119	120	22	111	113	115	23	119	120	121	23

Total Dissolved Gas Saturation at Mid Columbia River Sites, and Dworshak

	Wanapum				Dwns Wanapum				Priest Rapids				Dwns P Rapids				Dworshak			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/2	110	111	112	24	112	113	116	24	113	115	116	24	114	116	118	24	108	109	110	24
7/3	111	112	112	24	113	113	113	24	111	113	114	24	114	115	116	24	---	---	---	0
7/4	110	111	111	24	112	113	113	24	112	112	113	24	115	115	116	24	---	---	---	0
7/5	111	112	113	24	112	112	114	24	112	113	114	24	115	116	117	24	---	---	---	0
7/6	112	114	116	24	113	114	118	24	115	117	121	24	117	118	121	24	110	114	115	24
7/7	109	110	112	24	111	112	116	24	112	112	113	24	115	116	116	24	111	113	114	24
7/8	110	112	118	23	110	110	112	24	111	111	112	24	114	115	116	24	107	108	109	24
7/9	113	114	116	24	113	114	114	24	113	114	115	24	115	116	117	24	102	103	104	24
7/10	113	114	115	24	115	116	116	24	116	118	121	24	118	119	120	24	102	103	104	24
7/11	113	114	115	24	115	116	116	24	117	118	120	24	119	119	119	24	108	109	110	24
7/12	113	114	116	24	115	116	117	24	114	115	115	24	117	118	119	24	108	109	110	24
7/13	112	113	113	24	117	119	123	24	117	119	122	24	121	121	122	24	108	109	110	24
7/14	111	111	112	24	116	118	120	24	117	119	123	24	120	120	121	24	108	109	109	24
7/15	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	106	108	116	24

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

Total Dissolved Gas Saturation Data at Clearwater and Snake River Sites

	Clearwater				Anatone				Snake-Lewiston				Lower Granite				Tlwtr L. Granite			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/2	102	102	103	23	105	105	106	24	102	103	104	24	106	107	113	24	105	106	107	24
7/3	---	---	---	0	105	106	106	24	102	104	105	24	104	105	105	24	104	104	104	24
7/4	---	---	---	0	104	104	105	24	101	102	103	22	103	104	104	24	102	103	103	24
7/5	---	---	---	0	104	106	106	24	102	104	106	24	104	106	107	24	102	102	103	24
7/6	103	105	106	24	105	106	107	24	103	105	107	24	106	107	110	23	103	104	105	23
7/7	102	103	104	24	104	104	105	24	102	103	104	24	103	104	106	24	103	103	104	24
7/8	102	103	104	24	104	105	105	24	102	104	105	23	104	105	106	24	102	103	103	23
7/9	102	103	104	24	104	105	105	24	103	105	106	24	105	106	108	24	103	103	104	24
7/10	102	104	104	24	104	105	105	24	103	105	106	24	105	106	108	24	103	103	103	24
7/11	102	104	104	24	104	105	105	24	103	105	107	24	105	107	108	24	103	103	104	24
7/12	102	104	105	24	104	105	106	24	103	105	107	24	106	107	107	24	103	104	104	24
7/13	102	104	105	24	104	105	106	24	103	105	106	24	106	106	107	24	104	104	105	24
7/14	102	103	104	24	103	104	105	24	102	103	104	24	104	105	106	24	103	103	104	24
7/15	102	104	105	24	103	104	105	24	102	104	105	24	104	105	108	24	102	103	103	24

Total Dissolved Gas Saturation Data at Lower Snake River Sites

	Little Goose				Tlwtr L. Goose				L. Monumental				Tlwtr L. Monum				Ice Harbor			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/2	106	106	107	24	106	106	106	24	108	108	109	24	107	108	108	24	110	110	111	24
7/3	104	105	105	24	104	104	105	24	106	107	107	24	105	106	106	24	108	108	109	24
7/4	103	103	104	24	103	103	104	24	104	105	106	24	103	104	104	24	106	106	107	24
7/5	104	106	107	24	102	103	103	24	104	104	106	24	102	103	104	24	104	105	106	24
7/6	104	107	111	24	103	104	104	24	104	105	107	24	103	104	104	24	105	106	107	24
7/7	102	103	105	24	102	102	104	24	103	103	107	24	102	102	103	21	103	104	105	24
7/8	102	103	106	24	101	101	101	24	103	104	106	24	101	101	102	24	103	104	105	24
7/9	104	105	107	24	100	101	101	24	103	104	105	24	101	102	103	24	102	103	104	24
7/10	107	108	114	24	100	101	101	24	104	105	107	24	101	102	102	24	102	103	104	24
7/11	107	108	111	24	101	102	102	24	102	103	104	24	104	107	112	24	103	104	104	24
7/12	106	106	107	24	102	102	103	24	104	104	107	24	102	103	104	24	104	104	105	24
7/13	105	106	108	24	103	103	104	24	105	105	107	24	103	104	104	24	104	105	106	24
7/14	103	104	104	24	102	102	103	24	105	105	105	24	102	103	104	24	104	105	105	24
7/15	103	104	107	24	101	101	101	24	104	105	106	24	103	103	104	24	104	105	108	24

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

	Twtr Ice Har.				Pasco				McNary-Oregon				McNary-Wash.				Tlwtr McNary			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/2	115	117	119	24	---	---	---	0	111	111	112	24	111	111	112	24	120	120	121	24
7/3	114	115	115	24	---	---	---	0	110	111	112	24	110	110	111	24	119	120	121	24
7/4	114	115	115	24	---	---	---	0	109	109	110	24	109	110	110	24	119	120	120	24
7/5	113	114	115	24	---	---	---	0	109	110	112	24	110	112	113	24	118	119	119	24
7/6	114	115	116	20	---	---	---	0	110	111	112	22	112	114	116	24	119	120	120	24
7/7	112	114	114	24	---	---	---	0	109	109	110	24	111	112	114	24	116	117	118	24
7/8	113	114	115	24	---	---	---	0	108	109	110	24	109	111	112	24	118	119	119	24
7/9	112	114	115	24	---	---	---	0	108	110	111	24	111	112	113	24	117	118	119	24
7/10	112	114	115	24	---	---	---	0	110	111	112	22	113	115	118	22	116	117	118	22
7/11	112	114	115	24	---	---	---	0	112	114	120	24	115	116	118	24	120	120	121	24
7/12	111	114	117	24	---	---	---	0	114	116	119	24	116	118	120	24	117	121	123	24
7/13	110	113	115	24	---	---	---	0	115	116	118	24	117	118	119	24	119	120	121	24
7/14	111	112	114	23	---	---	---	0	113	113	116	10	114	114	117	15	120	120	122	15
7/15	109	110	112	24	---	---	---	0	111	112	112	24	111	113	114	24	120	121	121	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

	John Day				Tlwtr John Day				The Dalles				Dnstr T. Dalles				Bonneville			
	24 h	12 h		#	24 h	12 h		#	24h	12h		#	24h	12h		#	24h	12h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	AVG	High	hr
7/2	108	108	109	23	121	122	122	23	107	107	108	23	112	112	113	23	101	101	102	23
7/3	107	108	108	23	114	118	122	22	108	110	111	23	115	117	117	24	102	102	102	23
7/4	106	106	107	23	113	118	119	24	105	105	106	23	115	116	117	24	102	103	104	23
7/5	106	107	108	23	113	118	121	24	105	107	108	23	116	117	118	24	104	105	106	23
7/6	107	108	111	23	120	121	121	21	107	109	111	23	114	116	118	24	107	107	108	22
7/7	107	107	108	24	118	119	120	20	107	108	109	23	112	113	114	24	102	104	105	23
7/8	107	108	110	22	118	119	120	24	109	111	113	23	113	115	117	24	101	102	103	23
7/9	108	110	112	24	112	117	118	24	111	112	115	22	117	119	120	24	104	105	106	24
7/10	108	109	110	24	112	115	118	24	109	112	114	24	117	118	119	23	107	107	108	23
7/11	108	109	111	23	113	118	121	24	109	111	114	23	118	119	119	24	106	107	107	23
7/12	111	112	113	19	119	120	122	24	110	113	115	23	115	117	118	24	105	106	106	23
7/13	113	113	114	23	119	120	120	24	112	113	114	22	115	115	116	24	104	105	106	23
7/14	110	110	111	23	120	120	121	24	109	110	110	22	113	114	115	24	101	101	102	23
7/15	110	111	112	23	115	119	120	24	111	112	114	23	116	118	119	24	102	103	104	23

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

	Warrendale				Skamania				Camas\Wash.			
	24 h	12 h		#	24 h	12 h		#	24h	12h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/2	111	111	111	13	111	112	113	23	112	113	114	24
7/3	112	113	114	23	112	112	115	23	112	113	115	24
7/4	113	113	115	23	112	112	113	23	111	113	114	24
7/5	114	115	116	23	114	115	116	23	113	115	117	24
7/6	116	116	118	21	116	116	118	23	115	116	118	24
7/7	112	113	116	20	113	115	117	23	113	113	114	24
7/8	112	112	113	23	111	112	114	23	112	114	116	23
7/9	114	114	115	21	113	114	116	24	113	114	116	24
7/10	116	117	118	24	116	117	118	24	115	117	119	24
7/11	115	116	117	23	116	117	119	23	116	118	119	24
7/12	115	115	117	23	115	115	116	23	115	116	118	24
7/13	114	115	116	23	114	116	117	23	114	116	118	24
7/14	111	112	113	23	111	112	115	23	111	112	114	24
7/15	113	114	116	23	113	114	115	23	112	114	115	24

Data derived from the Army Corps of Engineers and Grant Co. PUD

Gas Bubble Trauma Monitoring Results from Representative Sites for Steelhead and Subyearling chinook on the 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: Rank 1	Rank 2	Rank 3	Rank 4	Fish with L. Line GBT: Num Fish	Avg. Rank
McNary Dam													
	07/08/99	Subyearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	07/12/99	Subyearling Chinook	100	2	0	0.00%	0.00%	0	0	0	0	1	1.0
	07/15/99	Subyearling Chinook	100	3	2	2.00%	0.00%	2	0	0	0	1	1.0
Bonneville Dam													
	07/08/99	Subyearling Chinook	100	1	1	1.00%	0.00%	1	0	0	0	0	0.0
	07/12/99	Subyearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	07/15/99	Subyearling Chinook	100	1	1	1.00%	0.00%	1	0	0	0	0	0.0
Rock Island Dam													
	07/08/99	Subyearling Chinook	100	3	3	3.00%	0.00%	3	0	0	0	0	0.0
	07/08/99	Steelhead	18	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	07/12/99	Subyearling Chinook	100	5	3	3.00%	0.00%	2	1	0	0	2	1.0
	07/15/99	Subyearling Chinook	100	2	1	1.00%	0.00%	1	0	0	0	1	1.0

Two-Week Summary of Passage Indices

Yearling Chinook

	Hatchery							Hatchery/Wild Combined			
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
07/02/99	---	---	---	---	42	90	10	12	55	293	0
07/03/99	---	---	---	---	46	70	0	3	105	48	71
07/04/99	---	---	---	---	20	50	6	6	204	0	68
07/05/99	---	---	---	---	40	25	10	5	160	700	0
07/06/99	---	---	---	---	25	45	0	9	203	684	0
07/07/99	---	---	---	---	35	45	10	12	158	28	0
07/08/99	---	---	---	---	60	0	10	5	91	3	0
07/09/99	---	---	---	---	64	15	12	2	53	6	0
07/10/99	---	---	---	---	72	10	6	2	75	8	32
07/11/99	---	---	---	---	20	14	0	5	130	9	0
07/12/99	---	---	---	---	28	34	6	2	74	1,556	145
07/13/99	---	---	---	---	48	24	0	2	73	0	0
07/14/99	---	---	---	---	40	6	0	7	52	2	0
07/15/99	---	---	---	---	24	14	0	0	56	10	55
Total:	0	0	0	0	564	442	70	72	1,489	3,347	371
# Days:	0	0	0	0	14	14	14	14	14	14	14
Average:	0	0	0	0	40	32	5	5	106	239	27

Wild Yearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
07/02/99	---	---	---	---	52	220	60
07/03/99	---	---	---	---	97	230	10
07/04/99	---	---	---	---	285	305	48
07/05/99	---	---	---	---	135	185	10
07/06/99	---	---	---	---	50	190	30
07/07/99	---	---	---	---	40	170	30
07/08/99	---	---	---	---	40	45	10
07/09/99	---	---	---	---	36	85	0
07/10/99	---	---	---	---	64	31	24
07/11/99	---	---	---	---	35	76	0
07/12/99	---	---	---	---	96	62	0
07/13/99	---	---	---	---	52	46	0
07/14/99	---	---	---	---	40	46	0
07/15/99	---	---	---	---	12	48	0
Total:	0	0	0	0	1,034	1,739	222
# Days:	0	0	0	0	14	14	14
Average:	0	0	0	0	74	124	16

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)
07/02/99	---	---	---	---	1,919	1,660	2,560	112	88,872	68,552	34,766
07/03/99	---	---	---	---	1,831	1,773	4,410	49	96,674	105,319	30,081
07/04/99	---	---	---	---	1,820	1,314	3,150	40	225,406	60,507	24,331
07/05/99	---	---	---	---	920	1,421	1,650	65	201,697	85,957	20,092
07/06/99	---	---	---	---	1,305	1,376	3,780	185	144,034	53,042	12,669
07/07/99	---	---	---	---	715	1,327	3,950	223	101,742	35,190	14,293
07/08/99	---	---	---	---	1,016	522	1,240	215	63,451	38,093	16,243
07/09/99	---	---	---	---	1,652	443	1,956	224	92,960	25,738	14,217
07/10/99	---	---	---	---	1,820	658	2,532	149	131,085	17,524	10,403
07/11/99	---	---	---	---	415	603	936	137	94,702	53,646	14,597
07/12/99	---	---	---	---	1,536	532	552	185	71,029	55,532	18,139
07/13/99	---	---	---	---	1,756	492	432	435	104,107	41,360	14,471
07/14/99	---	---	---	---	2,032	622	340	1,257	89,996	48,501	8,440
07/15/99	---	---	---	---	2,008	973	1,024	411	76,453	53,408	13,145
Total:	0	0	0	0	20,745	13,716	28,512	3,687	1,582,208	742,369	245,887
# Days:	0	0	0	0	14	14	14	14	14	14	14
Average:	0	0	0	0	1,482	980	2,037	263	113,015	53,026	17,563

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)
07/02/99	---	---	---	---	84	90	0	26	116	450	72
07/03/99	---	---	---	---	67	40	30	16	52	67	0
07/04/99	---	---	---	---	85	35	6	5	238	347	0
07/05/99	---	---	---	---	45	15	0	20	481	350	32
07/06/99	---	---	---	---	25	25	10	7	153	234	31
07/07/99	---	---	---	---	70	10	0	11	95	31	32
07/08/99	---	---	---	---	28	10	0	15	91	16	33
07/09/99	---	---	---	---	84	25	12	13	56	12	35
07/10/99	---	---	---	---	44	12	0	8	91	4	0
07/11/99	---	---	---	---	20	2	0	5	0	1	33
07/12/99	---	---	---	---	48	36	0	6	99	0	36
07/13/99	---	---	---	---	20	8	0	5	49	2	0
07/14/99	---	---	---	---	16	0	0	7	0	5	34
07/15/99	---	---	---	---	28	6	0	2	84	1	18
Total:	0	0	0	0	664	314	58	146	1,605	1,520	356
# Days:	0	0	0	0	14	14	14	14	14	14	14
Average:	0	0	0	0	47	22	4	10	115	109	25

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)
07/02/99	---	---	---	---	465	110	120	21	109	892	0
07/03/99	---	---	---	---	497	100	50	29	288	14	0
07/04/99	---	---	---	---	460	60	42	23	272	0	68
07/05/99	---	---	---	---	215	45	40	23	481	175	0
07/06/99	---	---	---	---	300	31	10	18	203	12	63
07/07/99	---	---	---	---	220	40	10	9	126	19	0
07/08/99	---	---	---	---	240	15	20	11	213	19	0
07/09/99	---	---	---	---	260	30	12	13	209	8	0
07/10/99	---	---	---	---	428	38	18	21	121	1	0
07/11/99	---	---	---	---	165	24	12	8	227	1	0
07/12/99	---	---	---	---	312	32	12	22	99	264	0
07/13/99	---	---	---	---	252	26	12	16	122	0	0
07/14/99	---	---	---	---	240	24	12	30	104	254	0
07/15/99	---	---	---	---	180	22	28	8	134	0	0
Total:	0	0	0	0	4,234	597	398	252	2,708	1,659	131
# Days:	0	0	0	0	14	14	14	14	14	14	14
Average:	0	0	0	0	302	43	28	18	193	119	9

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)
07/02/99	---	---	---	---	37	20	10	67	0	312	0
07/03/99	---	---	---	---	31	30	0	38	0	227	0
07/04/99	---	---	---	---	50	5	0	23	34	520	0
07/05/99	---	---	---	---	30	10	0	12	0	175	0
07/06/99	---	---	---	---	20	0	0	28	51	228	0
07/07/99	---	---	---	---	10	0	0	20	0	19	0
07/08/99	---	---	---	---	20	5	10	18	0	51	0
07/09/99	---	---	---	---	20	5	0	27	0	6	0
07/10/99	---	---	---	---	24	4	0	11	0	12	0
07/11/99	---	---	---	---	5	6	0	6	0	1	0
07/12/99	---	---	---	---	16	2	0	14	0	5	0
07/13/99	---	---	---	---	16	0	0	14	0	266	33
07/14/99	---	---	---	---	12	2	0	12	0	32	0
07/15/99	---	---	---	---	4	0	0	10	0	202	0
Total:	0	0	0	0	295	89	20	300	85	2,056	33
# Days:	0	0	0	0	14	14	14	14	14	14	14
Average:	0	0	0	0	21	6	1	21	6	147	2

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 / (Power-house 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)
07/02/99	---	---	---	---	5	20	0	4	0	8	0
07/03/99	---	---	---	---	0	0	10	0	0	5	0
07/04/99	---	---	---	---	0	5	0	0	102	0	0
07/05/99	---	---	---	---	5	0	0	0	0	0	0
07/06/99	---	---	---	---	10	0	0	3	0	6	0
07/07/99	---	---	---	---	15	0	0	2	0	2	0
07/08/99	---	---	---	---	16	0	0	5	0	0	0
07/09/99	---	---	---	---	4	0	0	3	83	3	0
07/10/99	---	---	---	---	4	0	0	0	23	1	0
07/11/99	---	---	---	---	0	0	0	0	0	3	0
07/12/99	---	---	---	---	4	2	0	0	25	0	0
07/13/99	---	---	---	---	4	0	0	0	0	5	33
07/14/99	---	---	---	---	0	0	0	0	0	3	0
07/15/99	---	---	---	---	4	0	0	0	0	5	0
Total:	0	0	0	0	71	27	10	17	233	41	33
# Days:	0	0	0	0	14	14	14	14	14	14	14
Average:	0	0	0	0	5	2	1	1	17	3	2

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)
07/02/99	---	---	---	---	10	0	10	0	0	19	0
07/03/99	---	---	---	---	15	0	10	0	17	34	0
07/04/99	---	---	---	---	25	5	6	0	0	0	0
07/05/99	---	---	---	---	5	5	10	0	0	0	0
07/06/99	---	---	---	---	5	10	0	4	0	0	251
07/07/99	---	---	---	---	0	10	0	0	32	3	483
07/08/99	---	---	---	---	0	10	0	2	30	19	424
07/09/99	---	---	---	---	16	5	0	2	17	4	177
07/10/99	---	---	---	---	8	0	0	0	0	5	223
07/11/99	---	---	---	---	0	8	6	0	0	0	98
07/12/99	---	---	---	---	8	2	0	3	25	268	253
07/13/99	---	---	---	---	8	0	0	2	0	3	99
07/14/99	---	---	---	---	8	6	4	0	52	3	68
07/15/99	---	---	---	---	0	4	0	0	7	204	74
Total:	0	0	0	0	108	65	46	13	180	562	2,150
# Days:	0	0	0	0	14	14	14	14	14	14	14
Average:	0	0	0	0	8	5	3	1	13	40	154

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 July 15, 1999

	Spring Chinook						Summer Chinook						Fall Chinook					
	1999		1998		10-Yr Avg.		1999		1998		10-Yr Avg.		1999		1998		10-Yr Avg.	
DAM	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	38,669	8,691	38,342	775	66,606	2,467	20,763	3,240	17,738	2,089	17,046	1,983	0	0	0	0	0	0
TDA	17,563	6,180	25,225	518	39,635	1,617	17,206	2,451	13,107	1,050	13,755	1,322	0	0	0	0	0	0
JDA	15,409	5,089	21,820	378	31,309	1,325	15,600	1,835	13,368	919	12,705	1,225	0	0	0	0	0	0
MCN	9,258	3,961	19,415	337	30,860	1,525	11,659	1,512	13,271	878	12,773	1,087	0	0	0	0	0	0
IHR	5,335	2,648	12,434	130	16,094	620	3,549	1,203	5,264	283	4,133	363	0	0	0	0	0	0
LMN	3,924	2,726	10,598	131	15,276	682	2,936	1,167	3,923	260	3,811	354	0	0	0	0	0	0
LGS	3,450	2,656	10,512	118	**	**	2,908	1,357	3,984	269	**	**	0	0	0	0	**	**
LWG	3,322	2,407	9,854	109	13,146	573	2,794	1,383	4,055	269	3,852	357	0	0	0	0	0	0
PRD	4,129	744	4,124	37	9,804	151	8,564	220	8,559	183	8,463	245	0	0	0	0	0	0
RIS	3,312	915	3,187	54	7,271	160	5,115	425	6,342	339	5,649	237	0	0	0	0	0	0
RRH	1,399	252	762	54	1,670	39	1,726	171	2,386	58	1,514	67	0	0	0	0	0	0
WEL	*44	*72	6	24	902	41	*60	*22	136	33	232	19	0	0	0	0	0	0

	Coho						Sockeye			Steelhead			
	1999		1998		10-Yr Avg.				10-Yr			10-Yr	Wild
DAM	Adult	Jack	Adult	Jack	Adult	Jack	1999	1998	Avg.	1999	1998	Avg.	1999
BON	1	0	1	0	3	0	16,595	12,182	41,618	19,148	22,110	21,533	5,996
TDA	0	0	0	0	0	0	12,284	8,005	32,664	6,011	8,622	10,535	2,736
JDA	1	0	0	0	0	0	12,600	8,686	33,121	9,857	12,238	9,123	2054
MCN	0	1	0	0	0	0	9,782	8,263	33,188	2,773	5,917	7,325	403
IHR	0	0	0	0	0	0	4	1	3	1,896	3,733	4,647	445
LMN	0	0	0	0	1	0	3	0	2	1,001	2,495	3,487	172
LGS	0	0	0	0	**	**	4	1	**	1,274	2,601	**	345
LWG	0	0	0	0	0	0	5	0	2	3,331	4,815	6,145	592
PRD	0	0	0	0	0	0	9,218	8,142	29,194	234	215	460	***
RIS	0	0	0	0	1	0	5,316	5,680	17,045	83	134	345	72
RRH	8	0	0	0	0	0	2,565	2,398	7,136	82	156	205	44
WEL	0	0	0	0	0	0	91	221	1,291	17	8	67	7

WEL is through 07/06, LMN through 07/12, RIS, and RRH through 07/13, PRD and LGS through 07/14.

MCN is missing data for 07/14/99.

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

**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.

***PRD is not reporting Wild Steelhead numbers.

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

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.

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

Transportation Summary Report
Two-Week Transportation Summary
from 07/02/99 to 07/15/99

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
LOWER GRANITE DAM						
Collected	1,591	20,615	4,494	658	179	27,537
Bypassed	0	18	0	0	0	18
Trucked	1,379	18,157	3,837	593	159	24,125
Barged	189	2,201	615	61	12	3,078
Total Transported	**1,568**	**20,358**	**4,452**	**654**	**171**	**27,203**
LITTLE GOOSE DAM						
Collected	2,181	13,716	686	314	92	16,989
Bypassed	0	0	0	0	0	0
Trucked	2,162	13,592	669	314	91	16,828
Barged	0	0	0	0	0	0
Total Transported	**2,162**	**13,592**	**669**	**314**	**91**	**16,828**
LOWER MONUMENTAL DAM						
Collected	292	28,512	418	58	56	29,336
Bypassed	0	0	0	0	0	0
Trucked	289	28,453	413	58	56	29,269
Barged	0	0	0	0	0	0
Total Transported	**289**	**28,453**	**413**	**58**	**56**	**29,269**
MCNARY DAM						
Collected	902	955,581	1,688	973	249	959,393
Bypassed	0	32,395	0	0	0	32,395
Trucked	0	0	0	0	0	0
Barged	1,150	959,440	1,646	1,072	241	963,549
Total Transported	**1,150**	**959,440**	**1,646**	**1,072**	**241**	**963,549**
PROJECT TOTALS						
Collected	4,966	1,018,424	7,286	2,003	576	1,033,255
Bypassed	0	32,413	0	0	0	32,413
Trucked	3,830	60,202	4,919	965	306	70,222
Barged	1,339	961,641	2,261	1,133	253	966,627
Total Transported	**5,169**	**1,021,843**	**7,180**	**2,098**	**559**	**1,036,849**

Transportation Summary Report
Cumulative Transportation Summary
through 07/15/99

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
LOWER GRANITE DAM						
Collected	2,173,025	120,066	3,349,778	78,277	17,480	5,738,626
Bypassed	115,918	18	266,363	14,608	1,640	398,547
Trucked	31,853	24,786	29,392	1,160	1,395	88,586
Barged	2,011,776	94,052	3,053,028	62,315	14,012	5,235,183
Total Transported	**2,043,629**	**118,838**	**3,082,420**	**63,475**	**15,407**	**5,323,769**
LITTLE GOOSE DAM						
Collected	3,530,168	112,152	3,134,471	117,142	20,933	6,914,866
Bypassed	19,783	0	158,018	4,195	299	182,295
Trucked	6,378	30,854	3,203	788	505	41,728
Barged	3,481,142	77,971	2,969,994	111,937	18,954	6,659,998
Total Transported	**3,487,520**	**108,825**	**2,973,197**	**112,725**	**19,459**	**6,701,726**
LOWER MONUMENTAL DAM						
Collected	1,892,245	72,434	1,978,399	51,123	12,840	4,007,041
Bypassed	148,537	1	251,013	7,795	596	407,942
Trucked	5,286	38,952	1,873	88	184	46,383
Barged	1,736,425	33,327	1,724,869	43,237	12,032	3,549,890
Total Transported	**1,741,711**	**72,279**	**1,726,742**	**43,325**	**12,216**	**3,596,273**
MCNARY DAM						
Collected	2,104,223	3,077,631	536,488	140,594	782,349	6,641,285
Bypassed	2,098,392	788,239	532,579	137,083	781,069	4,337,362
Trucked	0	0	0	0	0	0
Barged	3,349	2,224,430	3,612	3,376	687	2,235,454
Total Transported	**3,349**	**2,224,430**	**3,612**	**3,376**	**687**	**2,235,454**
PROJECT TOTALS						
Collected	9,699,661	3,382,283	8,999,136	387,136	833,602	23,301,818
Bypassed	2,382,630	788,258	1,207,973	163,681	783,604	5,326,146
Trucked	43,517	94,592	34,468	2,036	2,084	176,697
Barged	7,232,692	2,429,780	7,751,503	220,865	45,685	17,680,525
Total Transported	**7,276,209**	**2,524,372**	**7,785,971**	**222,901**	**47,769**	**17,857,222**