



Fish Passage Center

Weekly Report #99 - 5

April 9, 1999

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SUMMARY OF EVENTS:

Water Supply: Temperatures are below normal and it is expected that light precipitation will continue during next week. Very minor snowmelt responses were detected in some Western Washington streams. Although it is second week of April, the current Pacific cold front has the potential to generate some locally heavy snows along the Cascades. It is expected that temperatures will rise by the end of the coming week causing minor increase in snowmelt. The October-March cumulative precipitation for the Columbia River above The Dalles was 116% and for the Snake River above Ice Harbor was 112% of average.

The new April Final Runoff Volume Forecast reflects the March weather conditions, showing a decrease or stagnation on some of the major sites compared to March Final. The greatest decreases of 18% occurred in the mid Snake basin at Brownlee reservoir. Smaller decreases of 2% were observed in the Upper Columbia area at Libby reservoir. The January-July forecast for the Columbia River above The Dalles is 128 MAF, or 121% of average; this is 2% lower than the March Final. The summary of the Runoff Volume for different sites through January-March period is given in the following Table:

Location	Period	March 99 Final		April 99 Final	
		MAF	%	MAF	%
Libby	Apr-Sep	7.53	111	7.39	109
Hungry Horse	Apr-Sep	2.48	114	2.38	109
Grand Coulee	Jan-Jul	74.1	117	73.8	117
The Dalles	Jan-Jul	130	123	128.0	121
Lower Granite	Jan-Jul	37.9	127	36.5	123
Dworshak	Apr-Jul	3.6	133	3.4	126
Brownlee	Apr-Jul	8.38	145	7.36	127

System Storage: The system continues to be operated for flood control with special operations for maintenance purposes. On April 20, the federal regulators have an obligation to meet reservoir elevations specified in the Biological Opinion in order to assure reservoir refill by June 30. Current SSARR projection, as of April 6, 1999, is showing that Libby and Hungry Horse will be below BiOp required elevations on April 20.

Hungry Horse continues to be drafted below the end of April flood control elevation for maintenance work. The reservoir will be at minimum outflow of 145 cfs during coming week.

Libby continues to be at minimum outflow of 4 kcfs. COE decided at the beginning of March to operate Libby at minimum outflow in order to refill the reservoir to an April 30 elevation that will enable the refill of the pool by June 30, while meeting flow requirements for sturgeon spawning. The reservoir was drafted to flood control elevations during the January through February period. The failure to refill the reservoir by April 20 will result in shifting some of the spring runoff volume into summer operations.

Arrow reservoir continues to be operated with a steady outflow of 20 kcfs to limit trout spawning areas during the April-May period. This operation and low precipitation continue to affect inflows to Grand Coulee, resulting in outflows decreasing from 108.5 kcfs on April 3 to 86.7 kcfs on April 8 although the reservoir has been drafted from 1244.8 ft on April 2 to 1238.2 ft on April 8.

Dworshak reservoir outflow was 9.8 kcfs as of April 8, and it will decrease to an outflow of 8 kcfs for a few days until the required end of April flood control elevation is reached. Once is reached required elevation, Dworshak Dam is projected to pass the inflow.

Brownlee reservoir was at the required flood control elevation at the end of March, and it will continue to draft to the April flood control elevation. Inflows in the mid-Snake reach decreased to 35-36 kcfs, after being in the range of 60-65 kcfs during the previous weeks. Outflows at Hells Canyon Dam are in the range of 40 kcfs, still requiring spill. A summary of the current elevations on April 8 along with the BiOp required elevations on April 20 and the April flood control elevations are given in the following table:

Reservoir	Actual elev. as of April 8 [ft]	Flood Control Elev. Ft	
		April 20 Bio Req.	April 30 Projected
Libby	2323.96	2332.9	2339.8
Hungry Horse	3483.09	3497.8	3491.0
Grand Coulee	1238.20	1228.2	1220.2
Brownlee	1999.04	1992.8	1976.0
Dworshak	1445.82	1445.0	1445.0

Upper Snake reservoirs:

Currently all reservoirs continue to be operated for flood control. As of April 8, BOR has refilled American Falls to 93% of full, and drafted Palisades as required for flood control to 35% of full (from 42% of full on April 1). Intensive drafting of Palisades for flood control resulted in increased flows at Milner to 13.7 kcfs compared to 8 kcfs during the previous week.

Streamflow: Spring flow target based on the March Final Runoff Volume Forecast is 100 kcfs at Lower Granite; and 260 kcfs at McNary. The COE's SSARR projections are showing that seasonal spring flow targets at both projects will be met during the entire spring season. However, flow targets at both projects were not met during the past week. The most recent SSARR is showing that flow targets will not be met at Lower Granite by April 20 and at McNary by April 27.

Daily average flows at Priest Rapids were fluctuating from 136.0 kcfs to 157.1 kcfs during April 2-8. Flows decreased to 136.0 kcfs on April 3, decreased to 157.1 kcfs as on April 5 and then decreased to 148.3 kcfs as on April 8. Hourly flows at Priest Rapids exhibit significant fluctuations compared to the hourly flow management of the

previous week. Flows decreased from 151.4 kcfs at 2100 to 108.2 kcfs at 2400 on April 3. Recuperation of the flows was later and at slower rate than flow decreases. Flows also decreased rapidly from 160.2 kcfs at 2100 to 122.8 kcfs at 2400 on April 8. The total range of daily hourly fluctuations is presented in the following table:

Date	Average Daily Flow at Priest Rapids [kcfs]	Hourly fluctuations [kcfs]
April 2	143.1	138.5-155.6
April 3	136.0	115.8-151.4
April 4	140.3	98.4-153.1
April 5	157.1	147.1-159.9
April 6	152.1	143.5-161.6
April 7	149.0	138.3-160.5
April 8	148.3	122.8-161.5

The average discharge for the major run-off projects for March 26 through April 8 are given in the following Table:

Project	Average Discharge [kcfs]	
	March 26-April 1	April 2-8
<i>Priest Rapids</i>	151.2	146.6
<i>McNary</i>	277.1	240.8
<i>Lower Granite</i>	109.4	80.79
<i>Bonneville</i>	304.4	261.9

The fishery agencies requirement to meet the minimum flow request at Bonneville Dam during the entire fall season has been met. However, hourly flows have been fluctuating below Bonneville at higher than requested levels, and a few instance of stranded fall chinook, coho and chum juveniles have been noted. Preliminary observations indicate that hourly fluctuations when flows exceed 270 kcfs result in stranding. This area is undergoing extensive monitoring and study to determine the best operational regime to protect spawning and emergence. Flows are required for protection of fall chinook on Ives Island.

Spill: Dworshak Dam approaches elevation 1445 for flood control purposes. Outflow from the project decreased on April 3rd, and by April 4th spill ceased. Spill continues at the Hells Canyon complex due to high inflows to Brownlee and the need to achieve its flood control elevation. No spill occurred in the Mid Columbia. Spill for fish passage was initiated on the evening of April 2nd at Lower Granite, Little Goose and Lower Monumental Dams. Spill at Ice Harbor was initiated the following evening.

In the Lower Columbia excess hydraulic capacity spill occurred at McNary Dam and Bonneville dams. Limited spill also occurred at John Day during the beginning of the week, while no spill occurred at The Dalles. The fishery agencies and tribes submitted a System Operational Request for spill to begin in the lower Columbia. Due to system conditions, BPA could not implement the SOR, and instead but proposed alternative implementation.

The total dissolved gas waivers are in place for 1999. Levels of total dissolved gas were below the waivers at all locations measured. Monitoring for signs of gas bubble trauma (GBT) on fish collected through the Smolt Monitoring Program was initiated this past week. One yearling chinook with bubbles in its fins was detected at Lower Granite Dam on April 5, 1999.

Smolt Monitoring. In the Snake River basin, flows have been lower this week and passage indices of hatchery chinook and wild steelhead have dropped from last week's level at Lower Granite Dam. Wild chinook and hatchery steelhead passage indices have remained steadily high for this early in the season at Lower Granite Dam with weekly average passage indices of 2,456 and 2,825 fish per day, respectively. Collection numbers have been quite variable this week at the traps on the Salmon, Snake, Imnaha, and Grande Ronde rivers. PIT tag detections of hatchery chinook at Lower Granite Dam continue to be virtually of Lookingglass Hatchery origin (hatchery release and inriver tagging of this stock at the Grande Ronde River trap). We project that about 5% of the Lookingglass Hatchery chinook population has passed Lower Granite Dam to date, with some of these fish reaching as far as Bonneville Dam this week. PIT tag wild

chinook detected at Lower Granite Dam have been from each of the four upriver tributaries, wild steelhead have been from the Clearwater, Salmon, and Grande Ronde rivers, and hatchery steelhead have been from the Grande Ronde River and releases into the mainstem Snake River below Hells Canyon.

In the Columbia River basin, this week of sampling at Rock Island Dam produced a few chinook fry (fish less than or equal to 60 mm) each day and increasing numbers of yearling chinook by week's end. The collections this week at McNary Dam were dominated by yearling chinook (most yearlings are likely Ringold Hatchery fish due to release time and similarity of proportion of ad-clip fish in collection at McNary Dam to that in the Ringold Hatchery population.). The subyearling chinook observed at McNary Dam were fry. With the lower flows this week compared to last week, the hatchery steelhead and wild sockeye/kokanee passage indices were decreasing this week at McNary Dam. Wild steelhead passage indice had large day-to-day variability this week. Overall, the movement of wild and hatchery steelhead into the lower Columbia River has been earlier this year, apparently due in part to the high flows in latter March. The early movement of wild and hatchery steelhead in the lower Columbia is also noticed at Bonneville Dam with hatchery steelhead dominating the collections this week. The Bonneville Dam collections also contained fairly steady numbers of yearling chinook, increasing numbers of coho, and decreasing numbers of subyearling chinook and sockeye/kokanee.

Monitoring at John Day Dam resumed late this week. Sampling has not been possible since dewatering of the bypass channel the afternoon of April 2 to investigate and repair the primary dewatering screen cleaner system. The facility was watered-up again the afternoon of April 7 and monitoring resumed 8 p.m. that day providing a 4-hr passage index for April 7. On April 8, the first full sample day since the repair, yearling chinook has dominated with a passage indices of 4,120 fish, followed by hatchery steelhead with a passage index of 2,450 fish and wild steelhead with a passage index of 330 fish. In addition to the above

problem, the reported passage indices on April 2 were biased high due to a malfunction of the 3-way sampler gate. This malfunction resulted in all fish in the bypass channel being routed into the sample tank for an unknown duration (probably less than an hour) during the midnight to 3 a.m. sampling period. By assuming a similar level of passage during the 3 hours after midnight to the 3 hours before midnight, we project that the passage index for the 12 hrs of monitoring on April 2 should be closer to 2,582 yearling chinook, 8 subyearling chinook, 16 coho, 2,819 hatchery steelhead, and 2,015 wild steelhead.

Adult Fish Passage: Adult fish counting is ongoing at mainstem Corps of Engineer projects on a 16-h per day basis (for reporting purposes). Fish counting is scheduled to begin next week (April 15) at the Mid-Columbia projects except for Wells Dam where counting will start on May 1. All adult fish passage facilities at COE and PUD projects were operating at or near full criteria through the week.

At Bonneville Dam, daily passage counts of spring chinook increased throughout the week, but remained well below the 1998 and 10-year average count. Through April 8, a total of 763 adult spring chinook have been counted; this total was 26% and 20% of the respective 1998 and 10-year average. A high daily count occurred on April 8 when 160 adult chinook were tallied. Of the adult chinook above Bonneville Dam, 53 have been reported at The Dalles Dam, 19 at John Day Dam, 8 at McNary Dam, and 3 at Ice Harbor Dam in the Snake River. Of interest is that a wild PIT tagged adult spring chinook was recorded passing through the adult sampling facility at Lower Granite Dam in late March before the counting began. The code indicated that it was marked as a juvenile fish in Catherine Creek (Grande Ronde basin).

At Bonneville Dam, the daily count of steelhead adults was down to 25 fish per day on April 8, with the cumulative count for the season at 581. Of this total, 12% (70 fish) were reported as "wild" origin steelhead. The steelhead that resided in the pools will be moving upstream to complete spawning this spring. At Lower Granite Dam, steelhead passage since March 1 totaled 2,554, about 75%

and 67% of the respective 1998 and 10-year average. Of the total, 12% (303 fish) were recorded as being "wild" origin steelhead.

Hatchery Releases: The Hatchery Release tables show the number of fish released from Columbia River basin hatcheries during the past two weeks and for the upcoming two weeks. The schedules will be changed as they are received from the coordinators or hatcheries. During the past two weeks, approximately 15.6 million anadromous salmon were released from hatcheries, acclimation ponds, or were directly planted into streams. For the upcoming two weeks, about 22.5 million salmon are scheduled for release from basin hatcheries into the rivers and tributaries above Bonneville Dam. Greater than 79 million juvenile salmon of hatchery origin were scheduled for release into streams above Bonneville Dam for the 1999 Migration Year. Overall, the 1999 migration of salmon to the ocean will include millions of anadromous salmon from the Snake and Columbia rivers that were released from Columbia basin hatcheries.

Lower Columbia River (above Bonneville Dam to McNary Dam) – Release of yearling spring chinook from Klickitat Hatchery, Umatilla River acclimation ponds, and from Warm Springs NFH have been made to date. Carson, Little White Salmon, Round Butte, and other acclimation facilities are expected to release spring chinook during the upcoming two weeks. Approximately 3 million coho salmon were released in the Umatilla and Klickitat rivers during the past two weeks. Volitional release of coho will be made from Klickitat Hatchery as normal. Also, yearling fall chinook have been released in the Umatilla River with another release scheduled during the next two weeks from Thornhollow Acclimation Pond in the Umatilla River. Steelhead releases were started or have been completed in the Umatilla, Hood, Deschutes rivers with other releases scheduled for other streams during the next two weeks.

Mid-Columbia River – The release of 876,000 yearling spring chinook from Ringold Hatchery was completed on April 4, with Entiat Hatchery releasing spring chinook on April 7. Spring chinook will

be released into the Yakama, Wenatchee and Methow River basins during the upcoming weeks. Steelhead will be released into the Wenatchee, Methow, Okanogan, and Entiat rivers during the next three weeks. Many of these steelhead will be listed under the ESA this year. Coho will be released from acclimation sites and ponds in the Mid-Columbia with the Wenatchee River slated to receive coho this season. The sockeye (Osoyoos stock) were released on April 7 from the Cassimer Bar facility.

Snake River – Yearling spring and summer chinook were released from hatcheries into the Clearwater, Salmon, Grande Ronde, Imnaha, and Tucannon, River basins either during the week or over the past few weeks. Both volitional and direct stream releases have been used from the hatcheries. Most spring and summer chinook releases will be completed by the end of next week. Large numbers of steelhead, coho, and chinook were released from hatcheries, acclimation ponds during the week or are scheduled for the next two weeks. Yearling fall chinook have been released onsite into the Snake River from Lyons Ferry Hatchery. The Lyons Ferry Hatchery yearling fall chinook present in the acclimation ponds upriver in the Clearwater and Snake rivers are slated to be released by mid-April.

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

Date	Grand Coulee		Chief Joseph		Wells		Rocky Reach		Rock Island		Wanapum		Priest Rapids	
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
03/26/99	125.9	0.0	133.6	0.0	134.9	0.0	134.0	2.5	132.3	0.0	135.5	0.0	138.4	0.0
03/27/99	141.4	0.0	132.9	2.0	135.9	0.0	143.1	6.2	144.0	0.0	142.9	1.4	142.4	1.8
03/28/99	126.7	0.0	137.0	0.7	144.1	0.0	152.6	0.2	152.4	0.0	153.1	0.3	155.2	0.0
03/29/99	151.5	0.0	148.4	0.4	147.1	0.0	149.1	4.4	147.8	0.0	153.8	0.0	156.9	0.0
03/30/99	136.7	0.0	142.8	0.2	146.6	0.0	151.2	0.1	153.0	0.0	154.7	0.0	157.8	0.0
03/31/99	129.5	0.0	139.6	0.0	141.3	0.0	148.6	0.0	148.5	0.0	153.3	0.0	153.4	0.0
04/01/99	126.6	0.0	129.8	0.0	134.0	0.0	144.7	0.0	144.5	0.0	152.1	0.0	154.3	0.0
04/02/99	124.7	0.0	128.1	0.0	130.2	0.0	136.1	0.0	135.0	0.0	137.5	0.0	143.1	0.0
04/03/99	121.6	0.0	120.4	0.0	123.3	0.0	130.9	0.0	131.6	0.0	135.6	0.0	136.0	0.0
04/04/99	143.6	0.0	149.5	0.0	142.8	0.0	148.8	0.0	145.9	0.0	142.8	0.0	140.3	0.0
04/05/99	140.4	0.0	144.3	0.0	146.8	0.0	150.9	0.0	151.0	0.0	153.4	0.0	157.1	0.0
04/06/99	131.6	0.0	137.3	0.0	140.7	0.0	149.1	0.0	149.5	0.0	151.3	0.0	152.1	0.0
04/07/99	127.4	0.0	131.0	0.0	134.8	0.0	142.7	0.0	142.9	0.0	143.8	0.0	149.0	0.0
04/08/99	89.4	0.0	94.0	0.0	111.5	1.7	120.0	0.0	120.3	0.0	143.7	0.0	148.3	0.0

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

Date	Dworshak		Brownlee		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
03/26/99	14.0	3.6	---	---	123.4	17.4	121.3	51.6	128.4	5.0	129.4	39.5
03/27/99	14.0	3.6	---	---	127.9	41.1	124.7	40.0	133.2	10.5	136.5	46.4
03/28/99	15.3	4.9	---	---	121.3	34.0	122.6	37.3	131.5	9.2	134.8	44.9
03/29/99	15.9	5.6	---	---	112.9	1.6	114.0	35.0	121.7	0.9	122.3	36.9
03/30/99	16.0	5.7	---	---	99.4	0.7	106.6	41.3	113.6	0.4	113.8	28.9
03/31/99	16.0	5.6	---	---	95.5	0.0	103.6	23.7	112.3	0.0	122.5	31.5
04/01/99	16.0	5.6	---	---	85.2	0.0	85.1	0.0	92.6	0.0	88.5	0.4
04/02/99	16.0	5.6	---	---	86.3	13.7	86.7	12.4	90.9	8.5	92.6	1.3
04/03/99	12.0	1.7	---	---	89.2	27.5	93.0	24.8	100.3	17.1	101.3	26.4
04/04/99	40.3	0.0	---	---	83.3	26.5	80.3	20.6	86.1	16.5	91.5	60.2
04/05/99	10.3	0.0	---	---	79.6	30.6	76.5	24.0	81.9	16.9	85.9	59.7
04/06/99	10.3	0.0	---	---	76.9	29.8	72.1	24.6	75.4	16.8	77.9	57.1
04/07/99	10.4	0.0	---	---	75.7	31.8	71.6	25.2	74.2	18.1	77.7	57.5
04/08/99	9.8	0.0	---	---	74.5	32.4	72.1	28.3	76.5	17.9	80.5	59.3

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

Date	McNary		John Day		The Dalles		Bonneville			
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
03/26/99	264.4	88.9	268.4	0.0	274.7	25.0	292.4	108.5	83.1	91.6
03/27/99	285.8	108.7	297.2	13.7	285.8	31.0	299.5	110.3	82.0	98.0
03/28/99	290.0	113.5	326.0	41.0	327.4	25.0	330.1	110.3	86.6	124.0
03/29/99	292.4	120.7	291.0	19.1	296.0	35.0	309.7	81.7	78.6	140.2
03/30/99	277.2	105.8	293.8	31.0	285.7	14.0	298.3	80.0	77.4	131.7
03/31/99	290.9	114.2	297.9	38.5	295.7	15.0	308.7	80.8	83.1	135.6
04/01/99	239.2	63.7	260.5	2.7	269.0	0.0	292.4	63.1	82.3	137.8
04/02/99	260.3	80.1	270.2	7.3	271.3	0.0	277.5	48.0	82.8	137.5
04/03/99	239.7	60.1	255.4	0.0	256.4	0.0	256.4	34.4	75.2	137.6
04/04/99	222.3	44.3	260.8	0.0	266.0	0.0	273.0	50.0	74.6	139.2
04/05/99	226.3	50.1	246.2	0.0	244.8	0.0	269.9	49.3	72.4	139.0
04/06/99	247.4	71.5	247.9	0.0	248.9	0.0	265.6	41.1	77.9	137.4
04/07/99	240.4	67.6	244.6	0.0	252.7	0.0	246.8	21.8	81.9	133.9
04/08/99	249.5	74.6	260.9	0.0	253.4	2.0	243.9	12.7	82.5	139.5

Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High²

Total Dissolved Gas Saturation Data at Upper Columbia Sites

Date	<u>Can. Boundary</u>			<u>Grand Coulee</u>			<u>Tlwr G. Coulee</u>			<u>Chief Joseph</u>			<u>Wells</u>			<u>Rocky Reach</u>								
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>			
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg		
3/26	130	131	131	24	105	105	106	24	103	104	105	24	---	---	---	0	---	---	---	0	---	---	---	0
3/27	128	130	131	24	104	105	105	24	103	103	103	24	---	---	---	0	---	---	---	0	---	---	---	0
3/28	125	125	126	24	104	104	105	23	102	103	103	19	---	---	---	0	---	---	---	0	---	---	---	0
3/29	124	124	124	24	105	105	105	23	103	103	105	23	---	---	---	0	---	---	---	0	---	---	---	0
3/30	122	123	124	24	105	105	106	23	103	104	105	23	---	---	---	0	---	---	---	0	---	---	---	0
3/31	122	123	123	23	105	105	105	23	103	103	104	19	---	---	---	0	---	---	---	0	---	---	---	0
4/1	120	121	123	24	104	104	105	23	102	103	103	23	---	---	---	0	---	---	---	0	101	103	104	23
4/2	122	123	123	23	105	106	106	23	103	103	104	23	---	---	---	0	104	104	104	15	102	104	109	24
4/3	116	121	122	24	105	106	109	24	103	104	104	23	---	---	---	0	104	104	105	16	108	109	113	23
4/4	111	111	112	23	105	105	106	23	103	103	104	23	---	---	---	0	104	104	104	20	111	112	113	20
4/5	108	111	112	24	105	105	106	24	103	103	103	24	---	---	---	0	104	104	104	23	107	112	114	24
4/6	106	108	111	24	105	106	107	24	102	103	103	24	---	---	---	0	104	105	108	23	103	104	104	23
4/7	106	107	111	24	105	106	106	24	103	104	104	24	---	---	---	0	103	103	104	11	102	104	105	23
4/8	105	106	110	24	106	106	106	24	103	104	104	24	---	---	---	0	104	104	104	6	104	104	105	22

Total Dissolved Gas Saturation Data at Mid Columbia Sites

Date	<u>Tlwr. Rocky R.</u>			<u>Rock Island</u>			<u>Tlwr. Rock Island</u>			<u>Wanapum</u>			<u>Tlwr Wanapum</u>			<u>Priest Rapids</u>								
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>			
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg		
3/26	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/27	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/28	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/29	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/30	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/31	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
4/1	102	102	103	21	101	102	102	23	103	103	103	23	---	---	---	0	---	---	---	0	---	---	---	0
4/2	103	104	104	24	103	103	103	24	104	104	105	22	---	---	---	0	---	---	---	0	---	---	---	0
4/3	104	104	104	22	103	104	104	24	104	104	105	24	---	---	---	0	---	---	---	0	---	---	---	0
4/4	---	---	---	0	103	103	103	19	104	104	104	19	---	---	---	0	---	---	---	0	---	---	---	0
4/5	---	---	---	0	103	103	104	24	104	104	104	24	---	---	---	0	---	---	---	0	---	---	---	0
4/6	---	---	---	0	102	103	103	23	103	104	104	21	---	---	---	0	---	---	---	0	---	---	---	0
4/7	---	---	---	0	103	104	104	23	104	104	105	21	---	---	---	0	---	---	---	0	---	---	---	0
4/8	---	---	---	0	103	103	104	22	104	104	105	22	---	---	---	0	---	---	---	0	---	---	---	0

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

Date	<u>Dwnstr P Rapids</u>			<u>Dworshak</u>			<u>Clearwater</u>			<u>Snake-Lewiston</u>			<u>Lower Granite</u>			<u>Tlwr L. Granite</u>								
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>			
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg		
3/26	---	---	---	0	---	---	---	0	---	---	---	0	102	103	103	24	106	106	107	24	110	114	121	24
3/27	---	---	---	0	---	---	---	0	---	---	---	0	102	102	103	24	105	106	106	24	115	122	124	24
3/28	---	---	---	0	107	107	111	10	---	---	---	0	103	104	104	24	104	104	105	24	114	121	122	24
3/29	---	---	---	0	112	112	113	24	106	106	106	8	104	104	104	24	106	106	106	24	107	107	110	24
3/30	---	---	---	0	112	113	113	24	106	107	107	24	104	104	105	24	107	107	107	24	107	107	110	24
3/31	---	---	---	0	113	113	113	7	107	107	108	16	104	105	107	16	107	107	107	16	107	107	107	16
4/1	---	---	---	0	112	112	113	23	107	108	108	24	104	106	107	24	105	105	105	24	105	106	106	24
4/2	---	---	---	0	107	108	108	23	---	---	---	0	105	106	108	24	106	107	109	24	109	113	119	24
4/3	---	---	---	0	103	105	107	21	---	---	---	0	104	105	106	21	106	106	106	24	112	118	119	24
4/4	---	---	---	0	99	99	99	10	100	100	100	17	101	101	102	17	106	106	106	24	111	115	117	24
4/5	---	---	---	0	100	100	101	22	999	999	999	99	101	102	104	22	106	107	107	23	111	115	117	23
4/6	---	---	---	0	99	99	100	20	100	101	101	24	101	102	103	24	104	104	105	24	111	115	117	24
4/7	---	---	---	0	99	99	100	10	101	102	103	24	102	104	106	24	106	107	108	22	111	116	117	23
4/8	---	---	---	0	100	100	100	5	100	101	101	24	101	102	103	24	105	106	106	24	112	117	118	24

Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High²

Total Dissolved Gas Saturation Data at Snake Sites

Date	<u>Little Goose</u>				<u>Tlwtr L. Goose</u>				<u>Lower Mon.</u>				<u>Tlwtr L. Mon</u>				<u>Ice Harbor</u>				<u>Tlwtr Ice Harbor</u>				
	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	
3/26	108	109	111	24	119	120	123	24	115	117	118	24	114	115	116	24	116	117	117	24	112	113	114	24	
3/27	106	108	109	24	117	117	117	24	116	117	118	24	113	113	113	24	111	111	113	24	113	113	113	24	
3/28	106	107	109	24	116	117	117	24	114	114	115	24	111	111	112	24	112	112	114	24	113	114	114	24	
3/29	113	115	116	24	117	118	120	24	115	115	116	24	113	113	114	24	113	113	114	24	113	113	114	24	
3/30	113	115	116	24	118	120	124	24	114	115	117	24	112	112	113	24	112	112	113	18	111	112	112	23	
3/31	108	108	110	16	113	113	114	16	115	115	117	9	113	113	114	16	112	112	113	14	111	111	112	16	
4/1	105	106	107	24	105	106	107	24	113	116	118	24	111	112	113	24	112	112	113	19	110	110	111	24	
4/2	106	106	107	24	109	112	119	24	109	109	110	23	111	112	116	22	114	115	116	24	111	112	112	24	
4/3	105	106	106	24	112	119	120	24	106	106	107	24	112	115	117	21	112	113	114	24	111	111	112	24	
4/4	105	105	105	23	111	117	119	23	111	114	115	23	113	114	117	19	110	110	111	23	111	112	113	23	
4/5	108	110	111	23	115	119	120	23	111	113	116	23	112	114	116	18	109	110	112	22	112	113	114	22	
4/6	110	112	113	24	115	120	120	23	110	112	114	24	113	114	116	24	111	112	113	24	111	112	114	24	
4/7	112	114	117	24	116	120	120	24	114	115	117	24	114	116	117	24	113	114	114	24	110	111	112	24	
4/8	112	113	114	24	115	120	120	24	115	117	118	24	116	116	117	24	113	113	114	24	111	112	115	24	

Total Dissolved Gas Saturation Data at Lower Columbia Sites

Date	<u>McNary-Oregon</u>				<u>McNary-Wash.</u>				<u>Tlwtr McNary</u>				<u>John Day</u>				<u>Tlwtr John Day</u>				<u>The Dalles</u>				
	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	
3/26	108	108	108	24	104	105	106	24	116	116	118	24	---	---	---	0	106	106	106	24	---	---	---	0	
3/27	106	107	108	24	103	103	104	24	117	118	118	24	---	---	---	0	109	112	115	23	---	---	---	0	
3/28	105	106	106	24	102	103	103	24	118	118	118	24	---	---	---	0	115	116	117	24	---	---	---	0	
3/29	106	107	107	24	103	104	104	24	118	119	120	24	---	---	---	0	111	113	115	24	---	---	---	0	
3/30	108	108	109	24	104	104	104	24	117	118	118	24	---	---	---	0	114	114	120	24	---	---	---	0	
3/31	108	108	108	14	103	104	104	16	118	118	118	15	107	108	108	24	115	116	118	24	106	106	106	15	
4/1	---	---	---	0	103	103	103	18	113	114	117	23	108	108	108	21	108	109	115	23	106	106	107	24	
4/2	---	---	---	0	104	105	107	21	115	115	116	24	108	108	109	22	109	110	115	24	106	107	107	24	
4/3	---	---	---	0	104	105	105	16	114	114	114	24	107	108	108	23	107	107	108	23	105	106	107	23	
4/4	---	---	---	0	104	105	105	18	113	113	113	24	106	107	107	23	106	106	107	23	105	105	105	23	
4/5	---	---	---	0	105	105	105	23	112	112	113	22	106	106	107	24	106	106	106	24	105	105	106	24	
4/6	---	---	---	0	105	105	106	24	114	114	115	24	105	105	106	22	105	105	105	24	104	104	105	23	
4/7	---	---	---	0	107	108	110	24	114	115	116	24	106	106	106	21	105	105	106	24	105	105	105	23	
4/8	---	---	---	0	106	106	107	24	115	116	116	24	105	105	106	23	105	105	105	24	104	104	105	23	

Total Dissolved Gas Saturation Data at Lower Columbia Sites

Date	<u>Dnstr T. Dalles</u>				<u>Bonneville</u>				<u>Warrendale</u>				<u>Skamania</u>				<u>CamasWash.</u>				<u>Wauna Mill</u>				
	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	
3/26	---	---	---	0	107	107	108	24	113	114	114	24	112	115	117	24	114	115	115	24	---	---	---	0	
3/27	---	---	---	0	105	106	106	24	112	113	114	24	111	113	115	24	110	112	114	24	---	---	---	0	
3/28	---	---	---	0	106	107	108	24	114	115	115	24	112	113	114	24	111	113	114	23	---	---	---	0	
3/29	---	---	---	0	108	108	108	24	113	114	115	24	110	111	112	24	111	111	111	23	---	---	---	0	
3/30	109	110	113	23	108	109	110	24	113	114	116	24	111	111	112	24	111	113	114	23	---	---	---	0	
3/31	109	110	114	24	107	108	109	24	112	113	113	24	109	110	110	24	110	110	111	24	---	---	---	0	
4/1	108	109	109	23	106	107	107	24	112	112	113	24	109	110	110	24	110	111	112	23	---	---	---	0	
4/2	108	109	109	24	106	106	107	24	111	111	111	24	108	109	109	24	109	109	110	24	---	---	---	0	
4/3	107	108	109	23	105	105	106	23	108	109	110	23	106	107	108	23	106	107	108	23	---	---	---	0	
4/4	106	106	107	24	104	105	105	23	110	110	110	23	107	107	108	23	107	107	108	23	---	---	---	0	
4/5	107	108	108	24	104	105	105	24	110	110	111	24	107	107	108	24	107	107	108	24	---	---	---	0	
4/6	106	106	107	24	105	105	105	23	110	110	110	23	107	108	108	23	107	108	109	24	---	---	---	0	
4/7	106	106	107	24	105	105	106	23	107	108	110	23	106	107	108	23	106	107	108	24	---	---	---	0	
4/8	104	105	106	24	104	104	105	23	106	108	110	23	105	106	108	23	106	107	107	24	---	---	---	0	

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

Site	Date	Species	Number of Fish	Number w GBT signs	Number w Fin Signs	% Fin GBT	% Severe Fin GBT	Number of Fish with Fin GBT Listed by Highest Rank				Fish with L. Line GBT	
								Rank 1	Rank 2	Rank 3	Rank 4	Num Fish	Avg. Rank
Lower Granite Dam													
	04/05/99	Yearling Chinook	92	1	1	1.08%	0.00%	1	0	0	0	0	0
	04/05/99	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1
Little Goose Dam													
	04/07/99	Yearling Chinook	52	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/07/99	Steelhead	86	0	0	0.00%	0.00%	0	0	0	0	0	0
Lower Monumental Dam													
	04/05/99	SubYrlg Chinook	1	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/05/99	Yearling Chinook	49	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/05/99	Steelhead	10	0	0	0.00%	0.00%	0	0	0	0	0	0
Ice Harbor Dam													
	04/06/99	Yearling Chinook	9	0	0	0.00%	0.00%	0	0	0	0	0	0
McNary Dam													
	04/05/99	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/05/99	Steelhead	8	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/08/99	Yearling Chinook	100	4	0	0.00%	0.00%	0	0	0	0	4	1
	04/08/99	Steelhead	6	0	0	0.00%	0.00%	0	0	0	0	0	0
Bonneville Dam													
	04/05/99	Yearling Chinook	56	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/05/99	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/08/99	Yearling Chinook	74	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/08/99	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1
Rock Island Dam													
	04/05/99	Yearling Chinook	1	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/05/99	Steelhead	1	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/08/99	Yearling Chinook	27	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/08/99	Steelhead	3	0	0	0.00%	0.00%	0	0	0	0	0	0

Hatchery Release Summary For the Last Two Weeks From 3/26/99 to 4/8/99

Hatchery	Species...	Migration Year Released	Number	...Release Dates... Begin...	...End	Release Site	River Name
Colville Tribe							
Cassimer Bar							
	Sockeye	1999	13,396	04/07/99	04/07/99	Okanogan R	Okanogan River
	Agency Totals:		13,396	.....		
IDFG							
Clearwater							
SP	Chinook	1999	300,000	04/01/99	04/15/99	Red River Acclim Pd	S Fk Clearwater River
McCall							
SU	Chinook	1999	122,900	04/05/99	04/15/99	S Fk Salmon R	Salmon River
SU	Chinook	1999	1,017,650	04/05/99	04/15/99	S Fk Salmon R	Salmon River
Niagara Springs							
SU	Steelhead	1999	657,665	03/22/99	04/04/99	Hells Canyon Dam	Snake River
SU	Steelhead	1999	30,369	04/05/99	04/05/99	Pine Bar/Salmon R	Salmon River
SU	Steelhead	1999	150,000	04/07/99	04/09/99	Hammer Cr	Salmon River
Rapid River							
SP	Chinook	1999	2,847,500	03/16/99	04/15/99	Rapid River H	Little Salmon River
	Agency Totals:		5,126,084	.....		
Nez Perce Tribe							
Clearwater							
SP	Chinook	1999	287,900	03/23/99	03/26/99	Selway R	Clearwater Rvr M F
SP	Chinook	1999	148,400	03/29/99	03/30/99	Lolo Cr	Clearwater Rvr M F
Lookingglass							
SP	Chinook	1999	12,061	04/01/99	04/15/99	Lostine R	Grande Ronde River
Lyons Ferry							
FA	Chinook	1999	150,000	03/25/99	04/12/99	Cpt John Acclim Pd	Snake River
McCall							
SU	Chinook	1999	39,000	04/05/99	04/15/99	S Fk Salmon R	Salmon River
Powell							
SP	Chinook	1999	48,900	04/05/99	04/05/99	Papoose Cr	Clearwater Rvr M F
SP	Chinook	1999	77,900	04/06/99	04/06/99	Lochsa R	Clearwater Rvr M F
SP	Chinook	1999	19,600	04/08/99	04/08/99	Lochsa R	Clearwater Rvr M F
	Agency Totals:		783,761	.....		
ODFW							
Big Canyon							
SU	Steelhead	1999	120,000	04/06/99	04/06/99	Big Canyon H	Grande Ronde River
SU	Steelhead	1999	120,000	04/08/99	04/21/99	Big Canyon H	Grande Ronde River

Hatchery Release Summary For the Last Two Weeks From 3/26/99 to 4/8/99

Hatchery	Species...	Migration	Year Released	...Release Dates...		Release Site	River Name
				Begin...	...End		
Cascade							
	Coho	1999	250,000	03/30/99	04/08/99	Umatilla R	Umatilla River
Lower Herman C							
	Coho	1999	500,000	03/20/99	03/31/99	Umatilla R	Umatilla River
Imnaha							
	SP Chinook	1999	96,300	03/16/99	04/15/99	Imnaha Acclim Pd	Imnaha River
	SP Chinook	1999	89,000	03/16/99	04/15/99	Imnaha Acclim Pd	Imnaha River
Irrigon							
	SU Steelhead	1999	137,500	04/01/99	04/15/99	Wallowa Acclim Pd	Grande Ronde River
	SU Steelhead	1999	125,000	04/05/99	04/09/99	Grande Ronde R	Grande Ronde River
Lookingglass							
	SP Chinook	1999	312,000	03/15/99	04/01/99	Lookingglass H	Grande Ronde River
	SP Chinook	1997	167	03/30/99	03/30/99	Lookingglass H	Grande Ronde River
	SP Chinook	1999	10,300	04/05/99	04/06/99	Imnaha R	Imnaha River
Oak Springs							
	SU Steelhead	1999	61,000	04/07/99	04/09/99	Hood R	Hood River
Round Butte							
	SU Steelhead	1999	162,000	04/05/99	04/19/99	Bel. Pelton Dam	Deschutes River
Wallowa							
	SU Steelhead	1999	217,000	03/31/99	03/31/99	Wallowa Acclim Pd	Grande Ronde River
	SU Steelhead	1999	217,000	04/01/99	04/19/99	Wallowa Acclim Pd	Grande Ronde River
Agency Totals:				2,417,267	.....	
USFWS							
Dworshak							
	SP Chinook	1999	1,050,000	04/07/99	04/08/99	Dworshak H	Clearwater Rvr M F
Entiat							
	SP Chinook	1999	354,000	04/07/99	04/07/99	Entiat H	Entiat River
Kooskia							
	SP Chinook	1999	50,000	04/06/99	04/06/99	Clear Cr	Clearwater Rvr M F
	SP Chinook	1999	630,000	04/06/99	04/06/99	Kooskia H	Clearwater Rvr M F
Agency Totals:				2,084,000	.....	
WDFW							
Lyons Ferry							
	FA Chinook	1999	450,000	03/25/99	04/12/99	Lyons Ferry H	Snake River
	SU Steelhead	1999	250,000	03/25/99	04/30/99	Cottonwood Acclim Pd	Grande Ronde River
	SU Steelhead	1999	125,000	03/25/99	04/30/99	Dayton Acclim Pd	Walla Walla River

Hatchery Release Summary
For the Last Two Weeks
From 3/26/99 to 4/8/99

Hatchery	Species...	Migration Year	Released	...Release Dates...		Release Site	River Name
				Begin...	...End		
Ringold							
	SU Steelhead	1999	181,000	03/17/99	03/26/99	Ringold Springs H	Mid-Columbia River
	SP Chinook	1999	876,000	04/01/99	04/04/99	Ringold Springs H	Mid-Columbia River
Tucannon							
	SP Chinook	1999	25,000	03/09/99	04/20/99	Curl Lake	Tucannon River
Washougal							
	Coho	1999	2,527,000	03/29/99	04/05/99	Klickitat R	Klickitat River
Wells							
	SU Chinook	1999	589,900	04/05/99	04/26/99	Similkameen Acclim Pd	Okanogan River
Agency Totals:			5,023,900	.....		
Warm Springs Tribe							
Oak Springs							
	SU Steelhead	1999	20,000	04/06/99	04/06/99	W Fk Hood R	Hood River
Round Butte							
	SP Chinook	1999	30,000	04/05/99	04/15/99	Hood R	Hood River
	SP Chinook	1999	40,000	04/08/99	04/21/99	W Fk Hood R	Hood River
	SP Chinook	1999	55,000	04/08/99	04/21/99	W Fk Hood R	Hood River
Agency Totals:			145,000	.....		
Total Release..			15,593,408				

Hatchery Release Summary For the Next Two Weeks From 4/9/99 to 4/22/99

Hatchery	Species...	Migration	Year Released	...Release Dates...		Release Site	River Name	
				Begin...	...End			
IDFG								
Clearwater								
	SP	Chinook	1999	665,000	04/15/99	04/15/99	Crooked R Acclim Pd	S Fk Clearwater River
	SU	Steelhead	1999	5,000	04/20/99	04/20/99	S FK Red R	Clearwater Rvr M F
Magic Valley								
	SU	Steelhead	1999	360,200	04/10/99	04/20/99	Little Salmon R	Salmon River
	SU	Steelhead	1999	30,000	04/10/99	04/30/99	Sawtooth H	Salmon River
	SU	Steelhead	1999	343,640	04/15/99	04/20/99	Lemhi R	Salmon River
	SU	Steelhead	1999	293,930	04/20/99	04/23/99	McNabb/Salmon R	Salmon River
	SU	Steelhead	1999	119,970	04/21/99	04/23/99	Shoup Br (Salmon R)	Salmon River
Niagara Springs								
	SU	Steelhead	1999	830,000	04/11/99	04/29/99	Pahsimeroi H	Pahsimeroi River
Pahsimeroi								
	SU	Chinook	1999	135,650	04/12/99	04/12/99	Pahsimeroi H	Pahsimeroi River
Powell								
	SP	Chinook	1999	334,800	04/14/99	04/15/99	Powell Acclim Pd	Lochsa River
Sawtooth								
	SP	Chinook	1999	107,000	04/16/99	04/16/99	Sawtooth H	Salmon River
	SP	Chinook	1999	118,000	04/16/99	04/16/99	Sawtooth H	Salmon River
Agency Totals:				3,343,190	.....		
Nez Perce Tribe								
Lyons Ferry								
	FA	Chinook	1999	228,000	04/12/99	04/15/99	Clearwater R	Clearwater Rvr M F
	FA	Chinook	1999	150,000	04/12/99	04/15/99	Pittsburg Landing	Snake River
Agency Totals:				378,000	.....		
ODFW								
Cascade								
		Coho	1999	750,000	04/10/99	04/20/99	Umatilla R	Umatilla River
Li Sheep								
	SU	Steelhead	1999	210,000	04/13/99	04/13/99	L Sheep Acclim Pd	Imnaha River
Round Butte								
	SP	Chinook	1999	310,000	04/12/99	04/15/99	Bel. Pelton Dam	Deschutes River
Agency Totals:				1,270,000	.....		

Hatchery Release Summary
For the Next Two Weeks
From 4/9/99 to 4/22/99

Hatchery	Species...	Migration	Year Released	Number	...Release Dates...	Begin...	...End	Release Site	River Name
Umatilla Tribe									
Bonifer									
	SU	Steelhead	1999	50,000	04/10/99	04/20/99		Bonifer Acclim Pd	Umatilla River
	SU	Steelhead	1999	50,000	04/20/99	04/20/99		Bonifer Acclim Pd	Umatilla River
Imeques									
	SP	Chinook	1999	275,000	04/10/99	04/20/99		Imeques Acclim Pd	Umatilla River
Minthorn									
	SU	Steelhead	1999	50,000	04/10/99	04/20/99		Minthorn Acclim Pd	Umatilla River
Thornhollow									
	FA	Chinook	1999	240,000	04/10/99	04/20/99		Thornhollow Acclim Pd	Umatilla River
Agency Totals:665,000									
USFWS									
Carson									
	SP	Chinook	1999	1,421,000	04/20/99	04/20/99		Carson H	Wind River
Dworshak									
	SU	Steelhead	1999	200,000	04/19/99	04/23/99		Clear Cr	Clearwater Rvr M F
	SU	Steelhead	1999	600,000	04/19/99	04/23/99		S Fk Clearwater R	Clearwater Rvr M F
Hagerman									
	SU	Steelhead	1999	410,000	04/14/99	05/10/99		Little Salmon R	Salmon River
	SU	Steelhead	1999	230,000	04/19/99	04/23/99		Sawtooth H	Salmon River
Leavenworth									
	SP	Chinook	1999	1,650,000	04/19/99	04/19/99		Leavenworth H	Wenatchee River
L White Salmon									
	SP	Chinook	1999	1,077,000	04/20/99	04/20/99		Little White Salmon H	Little White Salmon River
Spring Creek									
	FA	Chinook	1999	3,600,000	04/22/99	04/22/99		Spring Creek H	Columbia River
Willard									
		Coho	1999	2,126,000	04/19/99	04/19/99		Little White Salmon R	Little White Salmon River
Winthrop									
	SU	Steelhead	1999	113,000	04/14/99	05/15/99		Winthrop H	Methow River
	SP	Chinook	1999	545,000	04/15/99	04/15/99		Winthrop H	Methow River
Agency Totals: 11,972,000									

Hatchery Release Summary
For the Next Two Weeks
From 4/9/99 to 4/22/99

Hatchery	Species...	Migration	Year Released	...Release Dates...		Release Site	River Name	
				Begin...	...End			
WDFW								
Chewuch								
	SP	Chinook	1999	132,900	04/15/99	05/01/99	Chewuch R	Methow River
Chiwawa								
	SP	Chinook	1999	266,500	04/15/99	04/30/99	Chiwawa H	Wenatchee River
	SU	Steelhead	1999	187,400	04/22/99	05/07/99	Chiwawa H	Wenatchee River
East Bank								
	SU	Chinook	1999	442,000	04/15/99	04/30/99	Dryden Acclim Pd	Wenatchee River
Klickitat								
		Coho	1999	1,150,000	04/15/99	06/10/99	Klickitat H	Klickitat River
Lyons Ferry								
	SU	Steelhead	1999	175,000	04/15/99	04/30/99	Walla Walla R	Walla Walla River
	SU	Steelhead	1999	80,000	04/15/99	04/15/99	Lyons Ferry H	Snake River
	SU	Steelhead	1999	160,000	04/20/99	04/20/99	Tucannon R	Tucannon River
Methow								
	SP	Chinook	1999	26,850	04/15/99	04/25/99	Twisp R	Methow River
	SP	Chinook	1999	334,000	04/15/99	04/25/99	Methow H	Methow River
Skamania								
	WM	Steelhead	1999	10,000	04/15/99	04/30/99	Rock Cr	Columbia River
	SU	Steelhead	1999	120,000	04/15/99	04/30/99	Klickitat R	Klickitat River
	WM	Steelhead	1999	40,000	04/15/99	04/30/99	Northwestern Lake	White Salmon River
	SU	Steelhead	1999	50,000	04/15/99	04/30/99	Little White Salmon R	Little White Salmon River
Turtle Rock								
	SU	Chinook	1999	203,000	04/20/99	04/30/99	Turtle Rock H	Mid-Columbia River
	SU	Steelhead	1999	40,000	04/20/99	04/30/99	Entiat R	Entiat River
	SU	Steelhead	1999	145,000	04/20/99	04/30/99	Wenatchee R	Wenatchee River
Wells								
	SU	Chinook	1999	410,000	04/12/99	04/19/99	Wells H	Mid-Columbia River
	SU	Steelhead	1999	50,000	04/15/99	04/30/99	Okanogan R	Okanogan River
	SU	Steelhead	1999	250,000	04/15/99	05/05/99	Methow R	Methow River
	SU	Steelhead	1999	236,000	04/15/99	05/05/99	Wells H	Mid-Columbia River
	SU	Steelhead	1999	118,500	04/20/99	04/30/99	Chewuch R	Methow River
	SU	Steelhead	1999	100,000	04/20/99	05/20/99	Winthrop H	Methow River
Agency Totals:				4,727,150	.....		

Hatchery Release Summary For the Next Two Weeks From 4/9/99 to 4/22/99

Hatchery	Species...	Migration Year	Released	...Release Dates...		Release Site	River Name
				Begin...	...End		
Warm Spgs Tribe							
Oak Springs							
W	Steelhead	1999	52,000	04/14/99	05/04/99	E Fk Hood R	Hood River
	Agency Totals:		52,000	.....		
Yakima Tribe							
Leavenworth							
	Coho	1999	67,500	04/10/99	04/10/99	Nason Cr	Wenatchee River
	Agency Totals:		67,500	.....		
	Total Release..		22,474,840				

Two-Week Summary of Passage Indices

Yearling Chinook

Date	Hatchery							Hatchery/Wild Combined			
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
03/26/99	---	0	42	32	404	---	---	---	---	---	409
03/27/99	---	---	---	---	679	---	---	---	---	---	255
03/28/99	---	134	---	---	509	---	---	---	---	---	534
03/29/99	195	45	87	16	1,086	---	---	---	---	---	535
03/30/99	---	20	66	---	1,042	---	---	---	919	---	493
03/31/99	659	56	48	27	1,450	---	---	---	1,955	---	634
04/01/99	273	53	195	15	1,333	---	---	7	2,783	657	853
04/02/99	365	89	352	38	867	91	960	1	4,303	6,424	570
04/03/99	---	81	---	---	1,231	240	1,420	8	4,688	---	513
04/04/99	---	333	---	---	860	137	671	1	12,401	---	750
04/05/99	8	173	93	159	480	133	686	1	21,251	---	807
04/06/99	56	91	47	75	184	190	1,584	0	51,167	---	777
04/07/99	235	1,823	17	78	656	248	2,138	85	55,483	1,500	824
04/08/99	353	250	10	81	639	480	3,157	79	30,148	4,120	842
Total:	2,144	3,148	957	521	11,420	1,519	10,616	182	185,098	12,701	8,796
# Days:	8	13	10	9	14	7	7	8	10	4	14
Average:	268	242	96	58	816	217	1,517	23	18,510	3,175	628

Wild Yearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
03/26/99	---	0	25	86	231	---	---
03/27/99	---	---	---	---	393	---	---
03/28/99	---	224	---	---	1,123	---	---
03/29/99	47	75	11	38	2,320	---	---
03/30/99	---	52	38	---	3,095	---	---
03/31/99	150	198	25	54	3,190	---	---
04/01/99	128	258	35	37	4,417	---	---
04/02/99	125	215	36	71	2,400	64	110
04/03/99	---	106	---	---	3,789	121	133
04/04/99	---	101	---	---	1,816	118	94
04/05/99	0	73	13	261	2,194	90	83
04/06/99	23	142	20	87	1,710	227	161
04/07/99	76	152	10	91	2,722	250	123
04/08/99	59	29	13	36	2,558	663	178
Total:	608	1,625	226	761	31,958	1,533	882
# Days:	8	13	10	9	14	7	7
Average:	76	125	23	85	2,283	219	126

Wild Subyearling Chinook

	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
03/26/99	0	---	---
03/27/99	0	---	---
03/28/99	0	---	---
03/29/99	13	---	---
03/30/99	0	---	---
03/31/99	0	---	---
04/01/99	83	---	---
04/02/99	0	0	0
04/03/99	0	0	7
04/04/99	0	0	0
04/05/99	50	0	0
04/06/99	0	0	1
04/07/99	0	0	0
04/08/99	36	0	0
Total:	182	0	8
# Days:	14	7	7
Average:	13	0	1

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

Smolt indices, wild & hatchery or combined, are presented in the following order: yearling chinook (chinook 1's), subyearling chinook (chinook 0's), steelhead, coho, and sockeye. Two classes of fish counts are shown in these tables: collection counts, which account for sample rates but are not adjusted for flow; and passage indices, which are collection counts divided by the proportion of water passing through the sampling system. Collection counts may be constrained due to sampling effort or river flow. Passage indices are not population estimates, but are used to adjust collection counts for daily fluctuations in the site's or project's operations. The classes of counts presented in the report are defined below for each site. Most samples occur over a 24 hour period that spans two calendar days. In this report, the date shown corresponds with the sample end date.

Two-Week Summary of Passage Indices

Date	Hatchery Subyearling Chinook							Combined Subyearling Chinook			
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
03/26/99	---	0	0	0	0	---	---	---	---	---	177
03/27/99	---	---	---	---	0	---	---	---	---	---	184
03/28/99	---	0	---	---	0	---	---	---	---	---	445
03/29/99	0	0	0	0	0	---	---	---	---	---	229
03/30/99	---	0	0	---	0	---	---	---	539	---	299
03/31/99	0	0	0	0	0	---	---	---	1,919	---	86
04/01/99	0	0	0	0	0	---	---	4	2,088	0	96
04/02/99	0	0	0	0	0	0	0	15	1,831	51	130
04/03/99	---	0	---	---	0	0	0	6	1,115	---	39
04/04/99	---	0	---	---	0	0	0	14	456	---	141
04/05/99	0	0	0	0	0	0	0	9	146	---	58
04/06/99	0	0	0	0	0	0	0	9	326	---	79
04/07/99	0	0	0	0	0	0	0	26	2,510	0	93
04/08/99	0	0	0	0	0	0	0	25	998	0	80
Total:	0	0	0	0	0	0	0	108	11,928	51	2,136
# Days:	8	13	10	9	14	7	7	8	10	4	14
Average:	0	0	0	0	0	0	0	14	1,193	13	153

Date	All Coho										
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
03/26/99	---	0	0	0	12	---	---	---	---	---	0
03/27/99	---	---	---	---	12	---	---	---	---	---	0
03/28/99	---	0	---	---	0	---	---	---	---	---	0
03/29/99	0	0	0	0	107	---	---	---	---	---	0
03/30/99	---	0	0	---	61	---	---	---	0	---	0
03/31/99	0	0	0	0	10	---	---	---	0	---	43
04/01/99	0	0	0	0	0	---	---	0	0	14	124
04/02/99	0	0	0	0	17	0	0	0	0	103	324
04/03/99	---	0	---	---	0	0	0	5	0	---	250
04/04/99	---	0	---	---	0	0	0	0	0	---	368
04/05/99	0	0	0	1	0	8	0	1	0	---	346
04/06/99	0	0	0	4	0	0	0	0	41	---	369
04/07/99	0	0	0	0	0	0	0	1	0	80	371
04/08/99	0	0	0	0	0	0	0	0	71	50	671
Total:	0	0	0	5	219	8	0	7	112	247	2,866
# Days:	8	13	10	9	14	7	7	8	10	4	14
Average:	0	0	0	1	16	1	0	1	11	62	205

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)
03/26/99	---	0	0	1	35	---	---	---	---	---	0
03/27/99	---	---	---	---	155	---	---	---	---	---	0
03/28/99	---	0	---	---	763	---	---	---	---	---	0
03/29/99	0	0	1	2	965	---	---	---	---	---	31
03/30/99	---	0	0	---	1,420	---	---	---	11,600	---	90
03/31/99	0	0	0	6	1,930	---	---	---	19,787	---	288
04/01/99	0	0	0	4	1,800	---	---	1	16,227	1,950	440
04/02/99	0	0	0	5	2,033	66	80	0	7,289	10,330	648
04/03/99	---	0	---	---	3,982	154	44	0	2,973	---	1,039
04/04/99	---	0	---	---	2,031	68	65	0	3,435	---	1,174
04/05/99	0	0	27	34	1,312	125	15	0	3,318	---	1,685
04/06/99	0	0	39	21	2,197	309	95	3	3,273	---	1,277
04/07/99	0	0	12	28	5,253	649	54	0	976	1,500	1,137
04/08/99	0	0	5	29	2,967	765	149	1	713	2,450	1,286
Total:	0	0	84	130	26,843	2,136	502	5	69,591	16,230	9,095
# Days:	8	13	10	9	14	7	7	8	10	4	14
Average:	0	0	8	14	1,917	305	72	1	6,959	4,058	650

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)
03/26/99	---	0	31	6	243	---	---	---	---	---	14
03/27/99	---	---	---	---	214	---	---	---	---	---	42
03/28/99	---	16	---	---	793	---	---	---	---	---	44
03/29/99	1	5	17	4	1,220	---	---	---	---	---	92
03/30/99	---	1	0	---	1,318	---	---	---	135	---	90
03/31/99	0	6	5	1	1,150	---	---	---	132	---	101
04/01/99	0	8	2	1	1,283	---	---	3	569	230	110
04/02/99	0	3	3	1	817	118	280	1	255	2,878	246
04/03/99	---	3	---	---	1,834	160	311	4	116	---	131
04/04/99	---	2	---	---	788	75	152	0	510	---	71
04/05/99	0	1	0	3	480	208	83	3	561	---	130
04/06/99	0	1	2	2	376	265	210	3	858	---	184
04/07/99	0	2	1	1	733	277	100	9	418	140	70
04/08/99	0	1	0	1	320	455	141	5	285	330	137
Total:	1	49	61	20	11,569	1,558	1,277	28	3,839	3,578	1,462
# Days:	8	13	10	9	14	7	7	8	10	4	14
Average:	0	4	6	2	826	223	182	4	384	895	104

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 Indi-

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)
03/26/99	---	0	0	0	0	---	---	---	---	---	0
03/27/99	---	---	---	---	0	---	---	---	---	---	0
03/28/99	---	0	---	---	0	---	---	---	---	---	0
03/29/99	0	0	0	0	0	---	---	---	---	---	0
03/30/99	---	0	0	---	0	---	---	---	0	---	0
03/31/99	0	0	0	0	0	---	---	---	0	---	0
04/01/99	0	0	0	0	0	---	---	0	0	0	0
04/02/99	0	0	0	0	0	0	0	0	0	0	0
04/03/99	---	0	---	---	0	0	0	0	0	---	0
04/04/99	---	0	---	---	0	0	0	0	0	---	0
04/05/99	0	0	0	0	0	0	0	0	0	---	14
04/06/99	0	0	0	0	0	0	0	0	0	---	0
04/07/99	0	0	0	0	0	0	0	1	0	0	0
04/08/99	0	0	0	0	0	0	0	1	0	0	0
Total:	0	0	0	0	0	0	0	2	0	0	14
# Days:	8	13	10	9	14	7	7	8	10	4	14
Average:	0	0	0	0	0	0	0	0	0	0	1

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)
03/26/99	---	0	0	1	81	---	---	---	---	---	41
03/27/99	---	---	---	---	36	---	---	---	---	---	14
03/28/99	---	0	---	---	210	---	---	---	---	---	0
03/29/99	0	0	0	0	201	---	---	---	---	---	15
03/30/99	---	0	0	---	235	---	---	---	0	---	0
03/31/99	0	0	0	0	170	---	---	---	0	---	0
04/01/99	0	0	0	0	233	---	---	0	127	0	28
04/02/99	0	0	0	0	67	35	10	0	29	0	13
04/03/99	---	0	---	---	217	43	15	0	29	---	66
04/04/99	---	0	---	---	47	27	7	0	54	---	14
04/05/99	0	0	0	0	0	21	45	0	24	---	14
04/06/99	0	0	0	0	62	38	32	0	82	---	0
04/07/99	0	0	0	0	12	15	31	1	0	0	35
04/08/99	0	0	0	1	53	17	7	0	0	0	46
Total:	0	0	0	2	1,624	196	147	1	345	0	286
# Days:	8	13	10	9	14	7	7	8	10	4	14
Average:	0	0	0	0	116	28	21	0	35	0	20

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 April 8, 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	763	4	2,987	1	3,790	11	0	0	0	0	0	0	0	0	0	0	0	0
TDA	53	0	810	0	1,027	4	0	0	0	0	0	0	0	0	0	0	0	0
JDA	19	0	245	0	354	6	0	0	0	0	0	0	0	0	0	0	0	0
MCN	8	0	71	0	130	2	0	0	0	0	0	0	0	0	0	0	0	0
IHR	3	0	25	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0
LMN	0	0	6	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0
LGS	0	0	0	0	X	X	0	0	0	0	X	X	0	0	0	0	X	X
LWG	0	0	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
PRD	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
RIS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
RRH	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
WEL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

DAM	Coho						Sockeye			Steelhead				
	1999		1998		10-Yr Avg.		10-Yr			10-Yr			Wild	Wild
	Adult	Jack	Adult	Jack	Adult	Jack	1999	1998	Avg.	1999	1998	Avg.	1999	1998
BON	0	0	0	0	0	0	0	0	0	581	803	1,218	70	166
TDA	0	0	0	0	0	0	0	0	0	64	350	637	28	94
JDA	0	0	0	0	0	0	0	0	0	964	1,538	975	132	19
MCN	0	0	0	0	0	0	0	0	0	64	757	1,000	9	204
IHR	0	0	0	0	0	0	0	0	0	271	909	1,193	69	203
LMN	0	0	0	0	0	0	0	0	0	109	651	798	21	127
LGS	0	0	0	0	X	X	0	0	X	455	936	X	129	185
LWG	0	0	0	0	0	0	0	0	0	2,554	3,389	3,818	303	419
PRD	---	---	---	---	---	---	---	---	---	---	---	---	---	---
RIS	---	---	---	---	---	---	---	---	---	---	---	---	---	---
RRH	---	---	---	---	---	---	---	---	---	---	---	---	---	---
WEL	---	---	---	---	---	---	---	---	---	---	---	---	---	---

* LGS is through 04/07, LMN is through 04/06. They are doing video counts only.

*PRD, RIS, RRH, & WEL are not yet collecting data.

*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, RIS, and RRH, are not reporting Wild Steelhead numbers.

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

Two-Week Transportation Summary
from 03/26/99 to 04/08/99

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
LOWER GRANITE DAM						
Collected	34,893	146	29,129	187	1,348	65,703
Bypassed	1,156	0	846	1	0	2,003
Trucked	29,736	126	23,030	183	1,219	54,294
Barged	3,620	20	5,141	0	34	8,815
Total Transported	33,356	146	28,171	183	1,253	63,109
LITTLE GOOSE DAM						
Collected	2,102	0	2,529	6	148	4,785
Bypassed	0	0	0	0	0	0
Trucked	1,001	0	1,128	5	120	2,254
Barged	1,043	0	1,381	0	20	2,444
Total Transported	2,044	0	2,509	5	140	4,698
LOWER MONUMENTAL DAM						
Collected	9,395	7	1,498	0	119	11,019
Bypassed	51	1	10	0	1	63
Trucked	4,879	6	1,133	0	88	6,106
Barged	4,434	0	354	0	29	4,817
Total Transported	9,313	6	1,487	0	117	10,923
M McNARY DAM						
Collected	135,121	8,108	48,116	80	241	191,666
Bypassed	134,414	8,084	48,108	80	241	190,927
Trucked	0	0	0	0	0	0
Barged	0	0	0	0	0	0
Total Transported	0	0	0	0	0	0
PROJECT TOTALS						
Collected	181,511	8,261	81,272	273	1,856	273,173
Bypassed	135,621	8,085	48,964	81	242	192,993
Trucked	35,616	132	25,291	188	1,427	62,654
Barged	9,097	20	6,876	0	83	16,076
Total Transported	44,713	152	32,167	188	1,510	78,730

Transportation Summary Report
Cumulative Transportation Summary
through 04/08/99

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
LOWER GRANITE DAM						
Collected	34,893	146	29,129	187	1,348	65,703
Bypassed	1,156	0	846	1	0	2,003
Trucked	29,736	126	23,030	183	1,219	54,294
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