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YAICIMA RIVER SPRING CHINOOK ENHANCEMENT STUDY APPENDSCES

Final Report 1991

DOE/BP-39461-8

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YAKIMA RIVER SPRING CHINOOK ENHANCEMENT STUDY
APPENDICES

Final Report
May 1991

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TABLE OF CONTENTS

Appendix A
Prosser Spring Chinook Adult Counts, 1982-1990 . . . . . A-l

Appendix B
Roza Spring Chinook Adult Counts, 1984- 1990 . . . . . B-l

Appendix C
Egg-to-Fry Survival Estimates . . . . . C-l

Appendix D
Experimental Protocol for Estimating Passage at
Prosser Juvenile Fish Trap . . . . . D-l

Appendix E
Prosser Juvenile Fish Outmigration Estimates . . . . . , . . E-l

APPENDIX A
PROSSER SPRING CHINOOK ADULT COUNTS, 1982-1990

Appendix Table A.1. Prosser diversion dam ladder counts for April 1982.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Apr	ns	ns	ns	ns	0	0	ns	ns
02-Apr	D	0	ns	ns	0	0	ns	ns
03-Apr	0	0	ns	ns	0	0	ns	ns
04-Apr	cl	0	ns	ns	0	0	ns	ns
05-Apr	0	0	ns	ns	0	0	ns	ns
06-Apr	0	0	ns	ns	0	0	ns	ns
07-Apr	0	0	ns	ns	0	0	ns	ns
08-Apr	ns	ns	ns	ns	0	0	ns	ns
09-Apr	ns	ns	ns	ns	0	0	ns	ns
10-Apr	ns	ns	ns	ns	0	0	ns	ns
11-Apr	ns	ns	ns	ns	0	0	ns	ns
12-Apr	ns	ns	ns	ns	0	0	ns	ns
13-Apr	ns	ns	ns	ns	0	0	ns	ns
14-Apr	ns	ns	ns	ns	0	0	ns	ns
15-Apr	ns	ns	ns	ns	0	0	ns	ns
16-Apr	ns	ns	ns	ns	0	0	ns	ns
17-Apr	ns	ns	ns	ns	0	0	ns	ns
18-Apr	ns	ns	ns	ns	D	0	ns	ns
19-Apr	0	0	ns	ns	0	0	ns	ns
20-Apr	0	0	ns	ns	0	0	ns	ns
21-Apr	0	0	ns	ns	0	0	ns	ns
22-Apr	0	D	ns	ns	0	0	ns	ns
23-Apr	0	0	ns	ns	0	0	ns	ns
24-Apr	0	0	ns	ns	0	0	ns	ns
25-Apr	0	0	ns	ns	0	0	ns	ns
26-Apr	0	0	ns	ns	0	0	ns	ns
27-Apr	0	0	ns	ns	0	0	ns	ns
28-Apr	0	0	ns	ns	0	0	ns	ns
29-Apr	0	0	ns	ns	0	0	ns	ns
30-Apr	0	0	ns	ns	0	0	ns	ns
April Total	0	0	ns	ns	0	0	ns	ns

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.2. Prosser diversion dam ladder counts for May 1982. Interpolation from 5/24 - 6/1 for center Ladder.

	DAILY				CUMULATIVE			
DATE	UCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01 -nay	0	0	ns	ns	0	D	ns	ns
02-May	2	0	ns	ns	2	0	ns	ns
03-May	0	0	ns	ns	2	0	ns	ns
04-May	D	0	ns	ns	2	0	ns	ns
OS-May	6	1	ns	ns	8	1	ns	ns
06-May	1	2	ns	ns	9	3	ns	ns
07-May	4	0	ns	ns	13	3	ns	ns
08-May	1	0	ns	ns	14	3	ns	ns
09-May	5	1	ns	ns	19	4	ns	ns
10-May	4	4	ns	ns	23	8	ns	ns
11 -May	23	5	ns	ns	46	13	ns	ns
12-May	35	3	ns	ns	81	16	ns	ns
13-May	49	2	ns	ns	130	18	ns	ns
14-May	21	0	ns	ns	151	18	ns	ns
15-May	31	2	ns	ns	182	20	ns	ns
16-May	32	D	ns	ns	214	20	ns	ns
17-May	34	4	ns	ns	248	24	ns	ns
18-May	30	0	ns	ns	278	24	ns	ns
19-May	20	0	ns	ns	298	24	ns	ns
20-May	70	D	ns	ns	368	24	ns	ns
21 -May	41	D	ns	ns	409	24	ns	ns
22-May	66	4	ns	ns	475	28	ns	ns
23-May	45	0	ns	ns	520	28	ns	ns
24-May	0	0	ns	ns	520	28	ns	ns
25-May	38	0	ns	ns	558	28	ns	ns
26-May	17	0	ns	ns	575	28	ns	ns
27-May	78	0	ns	ns	653	28	ns	ns
28-May	42	D	ns	ns	695	28	ns	ns
29-May	43	0	ns	ns	738	28	ns	ns
30-May	59	0	ns	ns	797	28	ns	ns
31 -Hay	32	0	ns	ns	a29	28	ns	ns
May Total	829	28	ns	ns	829	28	ns	ns

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.3. Prosser diversion dam ladder counts for June 1982.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	UCKA	WCKJ	HCKA	HCKJ
01-Jun	27	0	ns	ns	856	28	ns	ns
02-Jun	19	0	ns	ns	875	28	ns	ns
03-Jun	33	1	ns	ns	908	29	ns	ns
04-Jun	27	0	ns	ns	935	29	ns	ns
OS-Jun	43	0	ns	ns	978	29	ns	ns
06-Jun	14	D	ns	ns	992	29	ns	ns
07-Jun	16	1	ns	ns	1008	30	ns	ns
08-Jun	23	0	ns	ns	1031	30	ns	ns
09-Jun	34	1	ns	ns	1065	31	ns	ns
10-Jun	61	0	ns	ns	1126	31	ns	ns
11-Jun	87	2	ns	ns	1213	33	ns	ns
12-Jun	29	4	ns	ns	1242	37	ns	ns
13-Jun	26	3	ns	ns	1268	40	ns	ns
14-Jun	14	0	ns	ns	1282	40	ns	ns
15-Jun	12	1	ns	ns	1294	41	ns	ns
16-Jun	17	0	ns	ns	1311	41	ns	ns
17-Jun	13	0	ns	ns	1324	41	ns	ns
18-Jun	17	1	ns	ns	1341	42	ns	ns
19-Jun	15	0	ns	ns	1356	42	ns	ns
20-Jun	11	0	ns	ns	1367	42	ns	ns
21-Jun	9	0	ns	ns	1376	42	ns	ns
22-Jun	10	2	ns	ns	1386	44	ns	ns
23-Jun	7	0	ns	ns	1393	44	ns	ns
24-Jun	6	0	ns	ns	1399	44	ns	ns
25-Jun	1	0	ns	ns	1400	44	ns	ns
26-Jun	1	0	ns	ns	1401	44	ns	ns
27-Jun	6	0	ns	ns	1407	44	ns	ns
28-Jun	4	0	ns	ns	1411	44	ns	ns
29-Jun	6	0	ns	ns	1417	44	ns	ns
30-Jun	ns	ns	ns	ns	1417	44	ns	ns
June Total	588	16	ns	ns	1417	44	ns	ns

YCKA: Uild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.4. Prosser diversion dam ladder counts for April 1983.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Apr	ns	ns	ns	ns	0	0	ns	ns
02-Apr	ns	ns	ns	ns	0	0	ns	ns
03-Apr	ns	ns	ns	ns	0	0	ns	ns
04-Apr	ns	ns	ns	ns	0	0	ns	ns
OS-Apr	ns	ns	ns	ns	0	0	ns	ns
06-Apr	ns	ns	ns	ns	0	0	ns	ns
07-Apr	ns	ns	ns	ns	0	0	ns	ns
08-Apr	ns	ns	ns	ns	0	0	ns	ns
09-Apr	ns	ns	ns	ns	0	0	ns	ns
10-Apr	ns	ns	ns	ns	0	0	ns	ns
11 -Apr	ns	ns	ns	ns	0	0	ns	ns
12-Apr	ns	ns	ns	ns	0	0	ns	ns
13-Apr	ns	ns	ns	ns	0	0	ns	ns
14-Apr	ns	ns	ns	ns	0	0	ns	ns
15-Apr	ns	ns	ns	ns	0	0	ns	ns
16-Apr	ns	ns	ns	ns	0	0	ns	ns
17-Apr	ns	ns	ns	ns	0	0	ns	ns
18-Apr	ns	ns	ns	ns	0	0	ns	ns
19-Apr	ns	ns	ns	ns	0	0	ns	ns
20-Apr	ns	ns	ns	ns	0	0	ns	ns
21 -Apr	ns	ns	ns	ns	0	0	ns	ns
22-Apr	ns	ns	ns	ns	0	0	ns	ns
23-Apr	ns	ns	ns	ns	0	D	ns	ns
24-Apr	ns	ns	ns	ns	0	D	ns	ns
25 -Apr	0	0	ns	ns	0	0	ns	ns
26-Apr	1	D	ns	ns	1	0	ns	ns
27-Apr	D	0	ns	ns	1	0	ns	ns
28-Apr	5	0	ns	ns	6	0	ns	ns
29-Apr	4	0	ns	ns	10	0	ns	ns
30-Apr	2	2	ns	ns	12	2	ns	ns
Apri 1 Total	12	2	ns	ns	12	2	ns	ns

UCKA: Uild chinook adult
UCKJ: Wild chinook jock
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.5. Prosser diversion dam ladder counts for May 1983. Center ladder out 5/29 - 6/2 and no count either ladder 5/31.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01 -May	2	0	ns	ns	14	2	ns	ns
02-May	2	D	ns	ns	16	2	ns	ns
03-May	1	D	ns	ns	17	2	ns	ns
04-May	2	D	ns	ns	19	2	ns	ns
05-May	6	2	ns	ns	25	4	ns	ns
06-May	3	1	ns	ns	28	5	ns	ns
07-May	8	1	ns	ns	36	6	ns	ns
08-May	9	1	ns	ns	45	7	ns	ns
09-May	3	1	ns	ns	48	8	ns	ns
10-May	5	0	ns	ns	53	8	ns	ns
11-Hay	15	3	ns	ns	68	11	ns	ns
12-May	9	4	ns	ns	77	15	ns	ns
13-May	4	0	ns	ns	81	15	ns	ns
14-May	19	9	ns	ns	100	24	ns	ns
15-May	67	17	ns	ns	167	41	ns	ns
16-May	22	5	ns	ns	189	46	ns	ns
17-May	36	2	ns	ns	225	48	ns	ns
18-May	25	3	ns	ns	250	51	ns	ns
19-May	16	3	ns	ns	266	54	ns	ns
20-May	11	0	ns	ns	277	54	ns	ns
21 -May	8	0	ns	ns	285	54	ns	ns
22-May	24	3	ns	ns	309	57	ns	ns
23-May	31	2	ns	ns	340	59	ns	ns
24-May	33	4	ns	ns	373	63	ns	ns
25-May	28	2	ns	ns	401	65	ns	ns
26-May	47	5	ns	ns	448	70	ns	ns
27-May	39	3	ns	ns	487	73	ns	ns
28-May	17	0	ns	ns	504	73	ns	ns
29-May	9	0	ns	ns	513	73	ns	ns
30-May	1	D	ns	ns	514	73	ns	ns
31 -May	ns	ns	ns	ns	514	73	ns	ns
May Total	502	71	ns	ns	514	73	ns	ns

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.6. Prosser diversion dom Ladder counts for June 1983.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
DI-Jun	6	1	ns	ns	520	74	ns	ns
02-Jun	6	1	ns	ns	526	75	ns	ns
03-Jun	3	1	ns	ns	529	76	ns	ns
04-Jun	1	0	ns	ns	530	76	ns	ns
OS-Jun	3	D	ns	ns	533	76	ns	ns
06-Jun	0	0	ns	ns	533	76	ns	ns
07-Jun	1	0	ns	ns	534	76	ns	ns
08-Jun	4	1	ns	ns	538	77	ns	ns
09-Jun	5	0	ns	ns	543	77	ns	ns
10-Jun	3	1	ns	ns	546	78	ns	ns
11-JIM	1	0	ns	ns	547	78	ns	ns
12-Jun	3	D	ns	ns	550	78	ns	ns
13-Jun	5	1	ns	ns	555	79	ns	ns
14-Jun	10	2	ns	ns	565	81	ns	ns
15-Jun	6	1	ns	ns	571	82	ns	ns
16-Jun	7	1	ns	ns	578	83	ns	ns
17-Jun	6	1	ns	ns	584	84	ns	ns
18-Jun	6	0	ns	ns	590	a4	ns	ns
19-Jun	5	0	ns	ns	595	84	ns	ns
20-Jun	1	0	ns	ns	596	84	ns	ns
21-Jun	19	2	ns	ns	615	86	ns	ns
22-Jun	12	1	ns	ns	627	87	ns	ns
23-Jun	6	1	ns	ns	633	88	ns	ns
24-Jun	1	1	ns	ns	634	89	ns	ns
25-Jun	2	1	ns	ns	636	90	ns	ns
26-Jun	6	0	ns	ns	642	90	ns	ns
27-Jun	11	0	ns	ns	653	90	ns	ns
28-Jun	3	0	ns	ns	656	90	ns	ns
29-Jun	9	0	ns	ns	665	90	ns	ns
30-Jun	4	1	ns	ns	669	91	ns	ns
June Total	155	18	ns	ns	669	91	ns	ns

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.7. Prosser diversion dam Ladder counts for July 1983.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Jul	1	0	ns	ns	670	91	ns	ns
02-Jul	5	0	ns	ns	675	91	ns	ns
03-Jul	0	1	ns	ns	675	92	ns	ns
04- Jul	2	1	ns	ns	677	93	ns	ns
OS-Jul	6	9	ns	ns	683	102	ns	ns
06-Jul	1	0	ns	ns	684	102	ns	ns
07-Jul	3	1	ns	ns	687	103	ns	ns
08-Jul	2	0	ns	ns	689	103	ns	ns
09- Jul	1	0	ns	ns	690	103	ns	ns
10-Jul	1	0	ns	ns	691	103	ns	ns
11-Jul	0	0	ns	ns	691	103	ns	ns
12-Jul	ns	ns	ns	ns	691	103	ns	ns
13-Jul	ns	ns	ns	ns	691	103	ns	ns
14-Jul	ns	ns	ns	ns	691	103	ns	ns
15-Jul	ns	ns	ns	ns	691	103	ns	ns
16- Jul	ns	ns	ns	ns	691	103	ns	ns
17-Jul	ns	ns	ns	ns	691	103	ns	ns
18-Jul	ns	ns	ns	ns	691	103	ns	ns
19-Jul	ns	ns	ns	ns	691	103	ns	ns
20- Jul	ns	ns	ns	ns	691	103	ns	ns
21-Jul	ns	ns	ns	ns	691	103	ns	ns
22-Jul	ns	ns	ns	ns	691	103	ns	ns
23-Jul	ns	ns	ns	ns	691	103	ns	ns
24-Jul	ns	ns	ns	ns	691	103	ns	ns
25-Jul	ns	ns	ns	ns	691	103	ns	ns
26-Jul	ns	ns	ns	ns	691	103	ns	ns
27-Jul	ns	ns	ns	ns	691	103	ns	ns
28-Jul	ns	ns	ns	ns	691	103	ns	ns
29-Jul	ns	ns	ns	ns	691	103	ns	ns
30-Jul	ns	ns	ns	ns	691	103	ns	ns
31-Jul	ns	ns	ns	ns	691	103	ns	ns
July Total	22	12	ns	ns	691	103	ns	ns

UCKA: Uild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.8. Prosser diversion dam ladder counts for May 1984.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01 -May	0	D	ns	ns	0	0	ns	ns
02-May	6	0	ns	ns	6	0	ns	ns
03-May	8	2	ns	ns	14	2	ns	ns
04-May	20	0	ns	ns	34	2	ns	ns
05-May	15	D	ns	ns	49	2	ns	ns
06-May	28	0	ns	ns	77	2	ns	ns
Dir-May	7	0	ns	ns	a4	2	ns	ns
08-May	21	D	ns	ns	105	2	ns	ns
09-May	16	0	ns	ns	121	2	ns	ns
10-May	36	1	ns	ns	157	3	ns	ns
11 -May	46	5	ns	ns	203	a	ns	ns
12-May	23	0	ns	ns	226	8	ns	ns
13-May	115	4	ns	tls	341	12	ns	ns
14-May	134	2	ns	ns	475	14	ns	ns
15-May	156	3	ns	ns	631	17	ns	ns
16-May	140	0	ns	ns	771	17	ns	ns
17-May	134	2	ns	ns	905	19	ns	ns
18-May	144	2	ns	ns	1049	21	ns	ns
19-May	W	6	ns	ns	1148	27	ns	ns
20-May	82	3	ns	ns	1230	30	ns	ns
21 -May	70	1	ns	ns	1300	31	ns	ns
22-May	74	4	ns	ns	1374	35	ns	ns
23-May	72	3	ns	ns	1446	38	ns	ns
24-May	80	4	ns	ns	1526	42	ns	ns
25-May	69	6	ns	ns	1595	48	ns	ns
26-May	17	3	ns	ns	1612	51	ns	ns
27-May	8	0	ns	ns	1620	51	ns	ns
28-May	51	7	ns	ns	1671	58	ns	ns
29-Way	42	6	ns	ns	1713	64	ns	ns
30-May	85	6	ns	ns	1798	70	ns	ns
31 -May	65	11	ns	ns	la63	81	ns	ns
May Total	1863	81	ns	ns	1863	81	ns	ns

UCKA: Uild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.9. Prosser diversion dom ladder counts for June 1984.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jun	33	15	ns	ns	1896	96	ns	ns
02-Jun	40	13	ns	ns	1936	109	ns	ns
03-Jun	19	4	ns	ns	1955	113	ns	ns
04-Jun	45	9	ns	ns	2000	122	ns	ns
OS-Jun	30	8	ns	ns	2030	130	ns	ns
06-Jun	34	7	ns	ns	2064	137	ns	ns
07-Jun	24	10	ns	ns	2088	147	ns	ns
08-Jun	17	6	ns	ns	2105	153	ns	ns
09-Jun	6	2	ns	ns	2111	155	ns	ns
10-Jun	9	6	ns	ns	2120	161	ns	ns
II-Jun	11	5	ns	ns	2131	166	ns	ns
12-Jun	19	5	ns	ns	2150	171	ns	ns
13-Jun	20	4	ns	ns	2170	175	ns	ns
14-Jun	12	3	ns	ns	2182	178	ns	ns
15-Jun	21	0	ns	ns	2203	178	ns	ns
16-Jun	15	8	ns	ns	2218	186	ns	ns
17-Jun	14	5	ns	ns	2232	191	ns	ns
18-Jun	6	0	ns	ns	2238	191	ns	ns
19-Jun	5	3	ns	ns	2243	194	ns	ns
20-Jun	9	1	ns	ns	2252	195	ns	ns
21-Jun	15	3	ns	ns	2267	198	ns	ns
22-Jun	2	0	ns	ns	2269	198	ns	ns
23-Jun	5	1	ns	ns	2274	199	ns	ns
24-Jun	6	2	ns	ns	2280	201	ns	ns
25-Jun	6	4	ns	ns	2286	205	ns	ns
26-Jun	7	0	ns	ns	2293	205	ns	ns
27-Jun	3	1	ns	ns	2296	206	ns	ns
28-Jun	6	1	ns	ns	2302	207	ns	ns
29-Jun	1	0	ns	ns	2303	207	ns	ns
30-Jun	3	0	ns	ns	2306	207	ns	ns
June Total	443	126	ns	ns	2306	207	ns	ns

WCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.10. Prosser diversion dam ladder counts for July 1964.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
Ol-Jut	4	0	ns	ns	2310	207	ns	ns
02-Jul	6	1	ns	ns	2316	208	ns	ns
03-Jul	1	0	ns	ns	2317	208	ns	ns
04-Jul	4	0	ns	ns	2321	208	ns	ns
05-Jul	1	1	ns	ns	2322	209	ns	ns
06-Jul	3	0	ns	ns	2325	209	ns	ns
07-Jul	0	1	ns	ns	2325	210	ns	ns
08-Jul	3	2	ns	ns	2328	212	ns	ns
09-Jul	3	1	ns	ns	2331	213	ns	ns
10-Jul	4	2	ns	ns	2335	215	ns	ns
11-Jut	2	0	ns	ns	2337	215	ns	ns
12-Jul	0	0	ns	ns	2337	215	ns	ns
13- Jul	1	1	ns	ns	2338	216	ns	ns
14-Jul	1	0	ns	ns	2339	216	ns	ns
15-Jul	0	0	ns	ns	2339	216	ns	ns
16-Jul	0	0	ns	ns	2339	216	ns	ns
17-Jul	0	0	ns	ns	2339	216	ns	ns
18-Jul	0	1	ns	ns	2339	217	ns	ns
19-Jul	0	0	ns	ns	2339	217	ns	ns
20-Jul	0	0	ns	ns	2339	217	ns	ns
21-Jul	1	0	ns	ns	2340	217	ns	ns
22-Jul	0	0	ns	ns	2340	217	ns	ns
23-Jul	0	0	ns	ns	2340	217	ns	ns
24-Jul	0	0	ns	ns	2340	21.7	ns	ns
25-Jul	0	0	ns	ns	2340	217	ns	ns
26-Jul	0	0	ns	ns	2340	217	ns	ns
27- Jul	0	0	ns	ns	2340	217	ns	ns
28-Jul	0	0	ns	ns	2340	217	ns	ns
29-Jul	0	0	ns	ns	2340	217	ns	ns
30-Jul	0	0	ns	ns	2340	217	ns	ns
31-Jul	D	0	ns	ns	2340	217	ns	ns
July Total	34	10	ns	ns	2340	217	ns	ns

UCKA : Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.II. Prosser diversion dam ladder counts for April 1985.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Apr	0	0	ns	ns	0	0	ns	ns
02-Apr	0	0	ns	ns	0	0	ns	ns
03-Apr	0	0	ns	ns	0	0	ns	ns
04-Apr	0	0	ns	ns	0	0	ns	ns
OS-Apr	0	0	ns	ns	0	0	ns	ns
06-Apr	0	0	ns	ns	0	0	ns	ns
07-Apr	0	0	ns	ns	0	0	ns	ns
08-Apr	0	0	ns	ns	0	0	ns	ns
09-Apr	0	0	ns	ns	0	0	ns	ns
10-Apr	0	0	ns	ns	0	0	ns	ns
11-Apr	0	0	ns	ns	0	0	ns	ns
12-Apr	0	0	ns	ns	0	0	ns	ns
13-Apr	0	0	ns	ns	0	0	ns	ns
14-Apr	0	0	ns	ns	0	0	ns	ns
15-Apr	0	0	ns	ns	0	0	ns	ns
16-Apr	0	0	ns	ns	0	0	ns	ns
17-Apr	0	0	ns	ns	0	0	ns	ns
18-Apr	0	0	ns	ns	0	0	ns	ns
19-Apr	0	0	ns	ns	0	0	ns	ns
20-Apr	0	0	ns	ns	0	0	ns	ns
21-Apr	0	0	ns	ns	0	0	ns	ns
22-Apr	0	0	ns	ns	0	0	ns	ns
23-Apr	3	0	ns	ns	3	0	ns	ns
24-Apr	4	0	ns	ns	7	0	ns	ns
25-Apr	1	0	ns	ns	8	0	ns	ns
26-Apr	6	0	ns	ns	14	0	ns	ns
27-Apr	10	0	ns	ns	24	0	ns	ns
28-Apr	6	0	ns	ns	30	0	ns	ns
29-Apr	6	0	ns	ns	36	0	ns	ns
30-Apr	9	1	ns	ns	45	1	ns	ns
April Total	45	1	ns	ns	45	1	ns	ns

WCKA: Wild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.12. Prosser diversion dam ladder counts for May 1985.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01 -May	34	0	ns	ns	79	1	ns	ns
02-May	49	0	ns	ns	128	1	ns	ns
03-May	46	0	ns	ns	174	1	ns	ns
04-May	44	0	ns	ns	218	1	ns	ns
OS-May	14	1	ns	ns	232	2	ns	ns
06-May	70	0	ns	ns	302	2	ns	ns
07-May	53	3	ns	ns	355	5	ns	ns
08-May	54	1	ns	ns	409	6	ns	ns
09-May	86	1	ns	ns	495	7	ns	ns
10-May	39	0	ns	ns	534	7	ns	ns
11 -May	30	1	ns	ns	564	8	ns	ns
12-May	71	0	ns	ns	635	8	ns	ns
13-May	78	0	ns	ns	713	8	ns	ns
14-May	80	1	ns	ns	793	9	ns	ns
15-May	118	3	ns	ns	911	12	ns	ns
16-May	120	1	ns	ns	1031	13	ns	ns
17-May	40	1	ns	ns	1071	14	ns	ns
18-May	161	4	ns	ns	1232	18	ns	ns
19-May	150	0	ns	ns	1382	18	ns	ns
20-May	118	6	ns	ns	1500	24	ns	ns
21-May	112	13	ns	ns	1612	37	ns	ns
22-May	146	20	ns	ns	1758	57	ns	ns
23-May	134	13	ns	ns	1892	70	ns	ns
24-May	171	17	ns	ns	2063	87	ns	ns
25-May	101	4	ns	ns	2164	91	ns	ns
26-May	69	4	ns	ns	2233	95	ns	ns
27-May	84	19	ns	ns	2317	114	ns	ns
28-May	116	25	ns	ns	2433	139	ns	ns
29-May	135	11	ns	ns	2568	150	ns	ns
30-May	201	16	ns	ns	2769	166	ns	ns
31 -May	41	10	ns	ns	2810	176	ns	ns
May Total	2765	175	ns	ns	2810	176	ns	ns

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.13. Prosser diversion dam ladder counts for June 1985.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
DI-Jun	55	12	ns	ns	2865	188	ns	ns
02-Jun	225	63	ns	ns	3090	251	ns	ns
03-Jun	63	20	ns	ns	3153	271	ns	ns
04-Jun	106	30	ns	ns	3259	301	ns	ns
05-Jun	93	21	ns	ns	3352	322	ns	ns
06-Jun	47	1	ns	ns	3399	323	ns	ns
07-Jun	21	9	ns	ns	3420	332	ns	ns
08-Jun	40	3	ns	ns	3460	335	ns	ns
09-Jun	55	24	ns	ns	3515	359	ns	ns
10-Jun	24	3	ns	ns	3539	362	ns	ns
11-Jun	16	3	ns	ns	3555	365	ns	ns
12-Jun	35	6	ns	ns	3590	371	ns	ns
13-Jun	30	8	ns	ns	3620	379	ns	ns
14-Jun	20	3	ns	ns	3640	382	ns	ns
15-Jun	2	0	ns	ns	3642	382	ns	ns
16-Jun	13	8	ns	ns	3655	390	ns	ns
17-Jun	19	9	ns	ns	3674	399	ns	ns
18-Jun	7	5	ns	ns	3681	404	ns	ns
19-Jun	10	1	ns	ns	3691	405	ns	ns
20-Jun	6	2	ns	ns	3697	407	ns	ns
21-Jun	15	0	ns	ns	3712	407	ns	ns
22-Jun	10	3	ns	ns	3722	410	ns	ns
23-Jun	7	0	ns	ns	3729	410	ns	ns
24-Jun	7	1	ns	ns	3736	411	ns	ns
25-Jun	6	0	ns	ns	3742	411	ns	ns
26-Jun	8	1	ns	ns	3750	412	ns	ns
27-Jun	5	1	ns	ns	3755	413	ns	ns
28-Jun	6	1	ns	ns	3761	414	ns	ns
29-Jun	4	1	ns	ns	3765	415	ns	ns
30-Jun	7	1	ns	ns	3772	416	ns	ns
June Total	962	240	ns	ns	3772	416	ns	ns

UCKA: Uild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.14. Prosser diversion dam ladder counts for July 1985.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jul	3	5	ns	ns	3775	421	ns	ns
02-Jul	2	1	ns	ns	3777	422	ns	ns
03- Jut	1	1	ns	ns	3778	423	ns	ns
04-Jul	2	0	ns	ns	3780	423	ns	ns
OS-Jul	0	D	ns	ns	3780	423	ns	ns
06-Jul	1	0	ns	ns	3781	423	ns	ns
07-Jul	0	0	ns	ns	3781	423	ns	ns
08-Jul	0	0	ns	ns	3781	423	ns	ns
09-Jul	0	0	ns	ns	3781	423	ns	ns
10-Jul	2	0	ns	ns	3783	423	ns	ns
11-Jul	D	0	ns	ns	3783	423	ns	ns
12-Jul	0	0	ns	ns	3783	423	ns	ns
13-Jul	D	0	ns	ns	3783	423	ns	ns
14-Jul	0	0	ns	ns	3783	423	ns	ns
15-Jul	0	0	ns	ns	3783	423	ns	ns
16-Jul	0	0	ns	ns	3783	423	ns	ns
17-Jul	0	0	ns	ns	3783	423	ns	ns
18-Jul	0	0	ns	ns	3783	423	ns	ns
19-Jul	0	0	ns	ns	3783	423	ns	ns
20-Jul	0	0	ns	ns	3783	423	ns	ns
21-Jul	0	0	ns	ns	3783	423	ns	ns
22-Jul	0	0	ns	ns	3783	423	ns	ns
23-Jul	0	0	ns	ns	3783	423	ns	ns
24-Jul	0	0	ns	ns	3783	423	ns	ns
25-Jul	0	0	ns	ns	3783	423	ns	ns
26-Jul	0	0	ns	ns	3783	423	ns	ns
27-Jul	0	0	ns	ns	3783	423	ns	ns
28-Jul	0	0	ns	ns	3783	423	ns	ns
29-Jul	0	0	ns	ns	3783	423	ns	ns
30-Jul	0	0	ns	ns	3783	423	ns	ns
31-Jul	0	0	ns	ns	3783	423	ns	ns
July Total	11	7	ns	ns	3783	423	ns	ns

UCKA: Uild chinook adult
UCKJ: Wild chinook jock
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table A.15. Prosser diversion dam ladder counts for April 1986.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Apr	0	0	0	0	0	0	D	0
02-Apr	0	0	0	0	0	0	0	0
03-Apr	0	0	0	0	0	0	0	0
04-Apr	0	0	0	D	0	0	0	0
OS-Apr	0	0	0	0	0	0	D	0
06-Apr	0	0	0	0	0	0	0	0
07-Apr	0	0	0	0	0	0	0	0
08-Apr	0	0	0	D	0	0	0	0
09-Apr	0	D	0	0	0	0	0	0
10-Apr	0	0	0	D	0	0	0	0
11-Apr	0	0	0	0	0	0	0	0
12-Apr	0	0	0	0	0	0	D	0
13-Apr	0	0	0	0	0	0	0	0
14-Apr	0	0	0	0	0	0	0	0
15-Apr	0	0	0	0	0	0	0	0
16-Apr	0	0	0	0	0	0	0	0
17-Apr	0	0	0	0	0	0	0	0
18-Apr	0	0	0	0	0	0	0	D
19-Apr	2	0	0	0	2	0	0	0
20-Apr	1	0	0	0	3	0	0	0
21-Apr	6	D	0	0	9	0	0	0
22-Apr	25	0	0	0	34	0	0	0
23-Apr	49	0	0	0	83	0	0	0
24-Apr	28	0	0	0	111	0	0	0
25-Apr	29	0	0	0	140	0	0	0
26-Apr	27	0	D	0	167	0	0	0
27-Apr	23	0	0	0	190	0	0	0
28-Apr	95	0	0	0	285	0	0	0
29-Apr	67	0	0	0	352	0	0	0
30-Apr	68	0	0	0	420	0	0	0
April Total	420	0	0	0	420	0	0	0

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.16. Prosser diversion dam ladder counts for May 1986.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Hay	69	0	0	0	489	0	0	0
02-May	16	0	0	0	505	0	0	0
03-May	11	0	0	0	516	0	0	0
04-May	175	0	0	0	691	0	0	0
05-May	177	0	0	0	868	0	0	0
06-May	468	0	0	0	1336	0	0	0
07-May	78	0	0	0	1414	0	0	D
08-May	124	0	0	0	1538	0	0	D
09-May	34	0	0	0	1572	0	0	0
10-May	11	0	0	0	1583	0	0	0
11-May	192	0	0	0	1775	0	0	0
12-May	453	0	0	0	2228	0	D	0
13-May	207	0	0	0	2435	0	0	0
14-May	193	3	0	0	2628	3	0	0
15-May	575	19	0	0	3203	22	0	0
16-May	42	2	0	0	3245	24	0	D
17-May	92	8	0	0	3337	32	0	0
18-May	675	45	0	0	4012	77	0	0
19-May	558	38	0	0	4570	115	0	0
20-May	609	20	0	0	5179	135	0	D
21-May	377	13	0	0	5556	148	0	0
22-May	198	6	0	0	5754	154	0	0
23-May	106	4	0	0	5860	158	0	0
24-May	44	6	0	0	5904	164	0	0
25-May	227	9	0	0	6131	173	0	0
26-May	210	16	0	0	6341	189	0	0
27-May	298	18	0	0	6639	207	0	0
28-May	158	13	0	0	6797	220	0	0
29-May	103	8	0	0	6900	228	0	0
30-May	29	3	0	0	6929	231	0	D
31-May	29	5	0	0	6958	236	0	0
May Total	6538	236	0	0	6958	236	0	0

UCKA : Wild chinook adult
UCKJ : Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.17. Prosser diversion dam ladder counts for June 1986.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jun	16	1	0	0	6974	237	0	0
02-Jun	14	1	0	0	6988	238	0	0
03-Jun	10	1	0	0	6998	239	0	0
04-Jun	9	5	0	0	7007	244	0	0
OS-Jun	17	0	0	0	7024	244	0	0
06-Jun	28	5	0	0	7052	249	0	0
07-Jun	76	10	0	0	7128	259	0	0
08-Jun	191	14	0	0	7319	273	0	0
09-Jun	144	10	0	0	7463	283	0	0
10-Jun	223	9	0	0	7686	292	0	0
11-Jun	128	11	0	0	7814	303	0	0
12-Jun	61	6	0	0	7875	309	0	0
13-Jun	20	1	0	0	7895	310	0	0
14-Jun	20	1	0	0	7915	311	0	0
15-Jun	13	0	0	0	7928	311	0	0
16-Jun	32	0	0	0	7960	311	0	D
17-Jun	44	1	0	0	8004	312	0	0
18-Jun	35	2	0	0	8039	314	0	0
19-Jun	28	0	0	0	8067	314	0	0
20-Jun	17	2	0	0	8084	316	0	0
21-Jun	79	6	0	0	8163	322	0	0
22-Jun	75	1	0	0	8238	323	0	0
23-Jun	50	5	0	0	8288	328	0	0
24-Jun	21	2	0	0	8309	330	0	0
25-Jun	11	0	0	0	8320	330	D	0
26-Jun	11	2	0	0	8331	332	0	0
27-Jun	24	5	0	0	8355	337	0	0
28-Jun	9	0	0	0	8364	337	0	0
29-Jun	16	2	0	0	8380	339	0	0
30-Jun	6	2	0	0	8386	341	0	0
June Total	1428	105	0	0	8386	341	D	0

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.18. Prosser diversion dam ladder counts for July 1986.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jul	7	0	0	0	8393	341	0	0
02-Jul	2	0	0	0	8395	341	0	0
03-Jul	6	0	0	0	8401	341	0	0
04-Jul	4	0	0	0	8405	341	0	0
05-Jul	2	0	0	0	8407	341	0	0
06-Jul	12	0	0	0	8419	341	0	0
07-Jul	20	0	D	0	8439	341	0	0
08-Jul	13	1	0	0	8452	342	0	0
09-Jul	19	1	0	0	8471	343	0	0
10-Jul	19	1	0	0	8490	344	0	0
11-Jul	15	1	0	0	8505	345	0	0
12-Jul	7	1	0	0	8512	346	0	0
13-Jul	9	0	0	0	8521	346	0	0
14-Jul	12	0	0	0	8533	346	0	0
15-Jul	10	0	0	0	8543	346	0	0
16-Jul	4	1	0	0	8547	347	0	0
17-Jul	2	0	0	0	8549	347	0	0
18-Jul	4	1	0	D	8553	348	0	0
19-Jul	1	0	0	0	8554	348	0	0
20-Jul	5	0	0	0	8559	348	0	0
21-Jul	2	0	0	0	8561	348	0	0
22-Jul	0	0	0	0	8561	348	0	0
23-Jul	0	0	D	0	8561	348	0	0
24-Jul	1	0	0	0	8562	348	0	0
25-Jul	1	0	0	0	8563	348	0	0
26-Jul	D	0	0	0	8563	348	0	0
27-Jul	0	0	0	0	8563	348	0	0
28-Jul	0	0	0	0	8563	348	0	0
29-Jul	0	1	D	0	8563	349	0	0
30-Jul	0	0	0	0	8563	349	0	0
31-Jul	0	0	0	0	8563	349	0	0
July Total	177	8	0	0	8563	349	0	0

UCKA: Wild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A-19. Prosser diversion dam ladder counts for April 1987.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
DI-Apr	2	0	0	0	2	0	0	0
02-Apr	0	0	0	0	2	0	0	0
03-Apr	0	0	0	0	2	0	0	0
04-Apr	0	0	0	D	2	0	0	0
OS-Apr	0	0	0	0	2	0	0	0
06-Apr	0	0	0	0	2	0	0	0
07-Apr	0	0	0	0	2	0	0	0
08-Apr	0	0	0	0	2	0	0	0
09-Apr	0	0	0	0	2	0	0	0
IO-Apr	0	0	0	0	2	0	0	0
11-Apr	3	0	0	0	5	0	0	0
12-Apr	0	0	0	0	5	0	0	0
13-Apr	0	0	0	0	5	0	0	0
14-Apr	4	0	0	0	9	0	0	0
15-Apr	4	0	0	0	13	0	0	0
16-Apr	14	0	0	0	27	0	0	0
17-Apr	6	0	0	0	33	0	0	0
IS-Apr	6	0	D	D	39	0	0	D
19-Apr	13	0	0	0	52	0	0	0
20-Apr	6	0	0	0	58	0	0	0
21-Apr	21	0	0	0	79	0	0	0
22-Apr	24	0	0	0	103	0	0	0
23-Apr	18	0	0	0	121	0	0	0
24-Apr	3	0	0	D	124	0	0	0
25-Apr	25	0	0	0	149	0	0	0
26-Apr	38	0	0	0	187	0	0	0
27-Apr	67	0	0	0	254	0	0	0
28-Apr	101	0	0	0	355	0	0	0
29-Apr	104	6	D	0	459	6	0	0
30-Apr	122	IO	0	0	581	16	0	0
April Total	581	16	0	0	581	16	0	0

WCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.20. Prosser diversion dam Ladder counts for May 1987.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-May	47	1	0	0	628	17	0	0
02-May	18	0	0	0	646	17	0	D
03-May	38	2	0	0	684	19	0	0
04-May	91	6	0	0	775	25	0	0
OS-May	123	10	0	0	898	35	0	0
06-May	163	70	0	0	1061	105	0	0
07-May	169	21	0	0	1230	126	0	0
08-May	64	8	0	0	1294	134	0	0
09-May	136	1	D	0	1430	135	0	0
10-May	132	3	0	0	1562	138	0	0
11-May	172	2	0	0	1734	140	0	0
12-May	198	6	0	0	1932	146	0	0
13-May	266	7	0	0	2198	153	0	0
14-May	222	8	0	0	2420	161	0	0
15-May	41	2	0	0	2461	163	0	0
16-May	41	4	0	0	2502	167	0	0
17-May	88	13	0	0	2590	180	0	0
18-May	130	18	0	0	2720	198	0	0
19-May	102	16	0	0	2822	214	0	0
20-May	119	20	0	0	2941	234	D	0
21-May	81	6	0	0	3022	240	0	0
22-May	43	4	0	0	3065	244	0	0
23-May	25	9	0	0	3090	253	0	0
24-May	73	12	0	0	3163	265	0	0
25-May	51	16	0	0	3214	281	0	D
26-May	70	10	0	0	3284	291	0	0
27-May	21	4	0	0	3305	295	0	0
28-May	16	2	0	0	3321	297	0	0
29-May	2	3	0	0	3323	300	0	0
30-May	31	2	0	0	3354	302	0	0
31-May	37	4	0	0	3391	306	0	0
May Total	2810	290	0	0	3391	306	0	0

WCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.21. Prosser diversion dam Ladder counts for June 1987.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jun	21	4	0	0	3412	310	0	0
02-Jun	17	5	0	0	3429	315	0	0
03-Jun	31	5	0	0	3460	320	0	0
04-Jun	12	2	0	0	3472	322	0	0
OS-Jun	15	2	0	0	3487	324	0	0
06-Jun	8	0	0	0	3495	324	D	0
07-Jun	29	3	0	0	3524	327	0	0
08-Jun	25	3	0	0	3549	330	0	0
09-Jun	6	0	0	0	3555	330	0	0
IO-Jun	11	1	0	0	3566	331	0	0
11-Jun	7	1	0	0	3573	332	0	0
12-Jun	0	0	0	0	3573	332	0	0
13-Jun	3	0	0	D	3576	332	0	0
14-Jun	3	2	0	0	3579	334	0	0
IS-Jun	5	0	0	0	3584	334	0	0
16-Jun	1	0	0	0	3585	334	0	0
17-Jun	2	0	0	0	3587	334	0	0
18-Jun	2	D	0	0	3589	334	0	0
19-Jun	2	0	0	0	3591	334	0	0
20-Jun	5	0	D	0	3596	334	0	0
21-Jun	10	3	0	0	3606	337	0	0
22-Jun	5	0	0	0	3611	337	0	D
23-Jun	8	0	0	0	3619	337	0	0
24-Jun	4	1	0	0	3623	338	0	0
25-Jun	1	0	0	0	3624	338	0	0
26-Jun	1	1	0	0	3625	339	0	0
27-Jun	2	0	0	0	3627	339	0	0
28-Jun	3	0	0	0	3630	339	0	0
29-Jun	1	0	0	0	3631	339	0	0
30-Jun	0	0	0	0	3631	339	0	0
June Total	240	33	0	0	3631	339	0	0

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ : Hatchery chinook jack

Appendix Table A.22. Prosser diversion dam ladder counts for July 1987.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jut	0	1	0	0	3631	340	0	0
02-Jul	0	0	0	0	3631	340	0	0
03-Jul	1	0	0	0	3632	340	0	0
04-Jul	D	0	0	0	3632	340	0	0
05-Jul	0	0	0	0	3632	340	0	0
06-Jul	0	0	0	0	3632	340	0	0
07-Jul	0	0	0	0	3632	340	0	0
08-Jul	7	1	0	0	3639	341	0	0
09-Jul	0	0	0	0	3639	341	0	0
IO-Jut	2	2	0	0	3641	343	0	0
II-Jut	0	0	0	0	3641	343	0	0
12-Jul	2	1	0	0	3643	344	0	0
13-Jul	1	0	0	0	3644	344	D	0
14-Jul	0	0	0	0	3644	344	0	0
IS-Jul	0	1	0	0	3644	345	0	0
16-Jul	0	D	0	0	3644	345	0	0
17-Jul	0	D	0	0	3644	345	0	0
18-Jul	0	1	0	0	3644	346	0	0
19-Jul	0	0	0	0	3644	346	0	0
20-Jul	0	0	0	0	3644	346	0	0
21-Jul	0	0	0	0	3644	346	0	0
22-Jul	0	0	0	0	3644	346	0	0
23-Jul	1	0	0	0	3645	346	0	0
24-Jul	1	0	0	0	3646	346	0	0
25-Jul	0	0	0	0	3646	346	0	0
26-Jul	D	0	0	0	3646	346	0	0
27-Jul	0	0	0	0	3646	346	0	0
28-Jul	0	0	0	0	3646	346	0	D
29-Jul	0	0	0	0	3646	346	0	0
30-Jul	0	0	0	0	3646	346	0	0
31-Jul	0	0	0	0	3646	346	0	0
July Total	15	7	0	0	3646	346	0	0

WCKA: Uild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.23. Prosser diversion dam ladder counts for April 1988.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
OI-Apr	0	0	0	0	0	0	0	0
02-Apr	0	0	0	0	0	0	0	0
03-Apr	0	0	0	0	0	0	0	0
04-Apr	0	0	0	0	0	0	0	0
OS-Apr	0	0	0	0	0	0	0	0
06-Apr	0	0	0	0	0	0	0	0
07-Apr	1	0	0	0	1	0	0	0
08-Apr	1	0	0	0	2	0	0	0
09-Apr	0	0	0	0	2	0	0	0
IO-Apr	1	0	0	0	3	0	0	0
11-Apr	0	0	0	0	3	0	0	0
12-Apr	4	0	0	0	7	0	0	0
13-Apr	4	0	0	0	11	0	0	0
14-Apr	3	0	0	0	14	0	0	0
IS-Apr	7	0	0	D	21	0	0	D
16-Apr	11	0	0	0	32	0	0	0
17-Apr	13	0	3	0	45	0	3	0
IS-Apr	16	0	3	0	61	0	6	0
19-Apr	21	1	5	0	82	1	11	0
20-Apr	29	0	6	0	111	1	17	0
21-Apr	25	0	7	0	136	1	24	0
22-Apr	31	0	3	0	167	1	27	0
23-Apr	23	0	4	0	190	1	31	0
24-Apr	17	0	4	0	207	1	35	0
25-Apr	39	0	6	0	246	1	41	0
26-Apr	49	0	11	0	295	1	52	0
27-Apr	77	1	8	0	372	2	60	0
28-Apr	54	0	21	0	426	2	81	0
29-Apr	78	0	10	0	504	2	91	0
30-Apr	69	0	10	0	573	2	101	0
April Total	573	2	101	0	573	2	101	0

UCKA: Uild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.24. Prosser diversion dam Ladder counts for May 1988.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-May	148	0	18	0	721	2	119	0
02-May	213	0	33	0	934	2	152	0
03-May	215	0	19	0	1149	2	171	0
04-May	151	1	14	0	1300	3	185	0
05-May	60	0	9	0	1360	3	194	0
06-May	38	1	1	0	1398	4	195	0
07-May	29	3	2	0	1427	7	197	0
08-May	69	0	9	0	1496	7	206	0
09-May	112	3	18	0	1608	10	224	0
10-May	81	3	13	0	1689	13	237	0
II-May	95	1	10	0	1784	14	247	0
12-May	105	2	10	0	1889	16	257	0
13-May	178	13	14	0	2067	29	271	0
14-May	168	10	18	2	2235	39	289	2
15-May	58	2	7	0	2293	41	296	2
16-May	114	2	7	0	2407	43	303	2
17-May	122	12	8	0	2529	55	311	2
18-May	100	29	8	2	2629	84	319	4
19-May	65	12	5	0	2694	96	324	4
20-May	23	7	2	0	2717	103	326	4
21-May	51	5	1	0	2768	108	327	4
22-May	53	13	1	1	2821	121	328	5
23-May	42	13	2	1	2863	134	330	6
24-May	50	20	3	2	2913	154	333	8
25-May	30	33	9	2	2943	187	342	10
26-May	29	4	0	0	2972	191	342	10
27-May	41	12	2	0	3013	203	344	10
28-May	25	9	3	1	3038	212	347	11
29-May	32	4	0	1	3070	216	347	12
30-May	20	9	2	1	3090	225	349	13
31-May	34	20	4	2	3124	245	353	15
May Total	2551	243	252	15	3124	245	353	15

WCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.25. Prosser diversion dam ladder counts for June 1988.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01-Jun	15	6	1	1	3139	251	354	16
02-Jun	19	12	0	0	3158	263	354	16
03-Jun	14	5	2	0	3172	268	356	16
04-Jun	14	5	0	0	3186	273	356	16
05-Jun	22	12	0	1	3208	285	356	17
06-Jun	9	4	1	1	3217	289	357	18
07-Jun	1	0	1	0	3218	289	358	18
08-Jun	12	0	0	0	3230	289	358	18
09-Jun	9	4	0	0	3239	293	358	18
IO-Jun	11	4	0	0	3250	297	358	18
II-Jun	9	1	2	1	3259	298	360	19
12-Jun	4	1	1	0	3263	299	361	19
13-Jun	4	1	0	0	3267	300	361	19
14-Jun	5	0	0	0	3272	300	361	19
15-Jun	11	0	0	0	3283	300	361	19
16-Jun	7	4	1	0	3290	304	362	19
17-Jun	1	2	0	1	3291	306	362	20
18-Jun	0	0	0	0	3291	306	362	20
19-Jun	1	0	0	0	3292	306	362	20
20-Jun	0	0	0	0	3292	306	362	20
21-Jun	1	0	0	0	3293	306	362	20
22-Jun	1	0	0	0	3294	306	362	20
23-Jun	0	1	0	0	3294	307	362	20
24-Jun	0	0	0	0	3294	307	362	20
25-Jun	0	0	0	0	3294	307	362	20
26-Jun	0	0	0	0	3294	307	362	20
27-Jun	0	0	0	0	3294	307	362	20
28-Jun	3	0	D	0	3297	307	362	20
29-Jun	2	0	0	0	3299	307	362	20
30-Jun	1	0	0	0	3300	307	362	20
June Total	176	62	9	5	3300	307	362	20

WCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.26. Prosser diversion dam ladder counts for July 1988.

	DAILY				CLJMLJLATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jut	13	0	0	0	3313	307	362	20
02-Jul	4	0	0	0	3317	307	362	20
03-Jul	5	0	0	0	3322	307	362	20
04-Jul	1	0	0	0	3323	307	362	20
05-Jul	0	0	0	0	3323	307	362	20
06-Jul	0	0	0	D	3323	307	362	20
07-Jul	2	0	0	0	3325	307	362	20
08-Jul	2	0	0	0	3327	307	362	20
09-Jul	1	0	0	0	3328	307	362	20
10-Jul	1	1	0	0	3329	308	362	20
11-Jul	1	0	0	0	3330	308	362	20
12-Jul	0	0	0	0	3330	308	362	20
13-Jul	1	0	0	0	3331	308	362	20
14-Jul	0	0	0	0	3331	308	362	20
15-Jul	2	0	0	0	3333	308	362	20
16-Jul	0	0	0	0	3333	308	362	20
17-Jul	0	0	0	0	3333	308	362	20
18-Jul	0	0	0	0	3333	308	362	20
19-Jul	0	0	0	0	3333	308	362	20
20-Jul	0	0	0	0	3333	308	362	20
21-Jul	0	0	0	0	3333	308	362	20
22-Jul	0	0	0	0	3333	308	362	20
23-Jul	0	0	0	0	3333	308	362	20
24-Jul	0	0	0	D	3333	308	362	20
25-Jul	0	0	0	0	3333	308	362	20
26-Jul	0	0	0	0	3333	308	362	20
27-Jul	0	0	0	0	3333	308	362	20
28-Jul	0	0	0	0	3333	308	362	20
29-Jul	0	0	0	0	3333	308	362	20
30-Jul	0	0	0	0	3333	308	362	20
31-Jul	0	0	0	0	3333	308	362	20
July Total	33	1	0	0	3333	308	362	20

WCKA: Uild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.27. Prosser diversion dam ladder counts for April 1989. Interpolation on 4/22 thru 4/25.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Apr	0	0	0	0	0	0	0	0
02-Apr	0	0	0	0	0	0	0	0
03-Apr	0	0	0	0	0	0	0	0
04-Apr	0	0	0	0	0	0	0	0
05-Apr	0	0	0	0	0	0	0	0
06-Apr	0	0	0	0	0	0	0	0
07-Apr	0	0	0	0	0	0	0	0
08-Apr	0	0	0	0	0	0	0	0
09-Apr	0	0	0	0	0	0	0	0
IO-Apr	0	0	0	0	0	0	0	0
11-Apr	0	0	0	0	0	0	0	0
12-Apr	0	0	0	0	0	0	0	0
13-Apr	0	0	0	0	0	0	0	0
14-Apr	0	0	0	0	0	0	0	0
15-Apr	0	0	0	0	0	0	0	0
16-Apr	1	0	0	0	1	0	0	0
17-Apr	0	0	0	0	1	0	0	0
18-Apr	0	0	0	0	1	0	0	0
19-Apr	0	0	0	0	1	0	0	0
20-Apr	0	0	0	0	1	0	0	0
21-Apr	1	0	0	0	2	0	0	0
22-Apr	1	0	0	0	3	0	0	0
23-Apr	2	0	0	0	5	0	0	0
24-Apr	5	0	0	0	10	0	0	0
25-Apr	10	0	1	0	20	0	1	0
26-Apr	13	0	2	0	33	0	3	0
27-Apr	46	0	0	0	79	0	3	0
28-Apr	38	1	1	0	117	1	4	0
29-Apr	31	2	4	0	148	3	8	0
30-Apr	32	1	2	0	180	4	10	0
April Total	180	4	10	0	180	4	10	0

WCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.28. Prosser diversion dam ladder counts for May 1989.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
Ol-May	48	1	2	0	228	5	12	0
02-May	69	2	1	0	297	7	13	0
03-May	93	3	1	0	390	10	14	0
04-May	106	2	10	D	496	12	24	0
OS-May	89	0	9	0	585	12	33	0
06-May	106	0	2	0	691	12	35	0
07-May	63	3	1	0	754	15	36	0
08-May	96	0	7	0	850	15	43	0
09-May	74	11	7	0	924	26	50	0
10-May	95	1	9	0	1019	27	59	0
II-May	173	3	8	D	1192	30	67	0
12-May	189	3	7	0	1381	33	74	0
13-May	159	0	13	0	1540	33	87	0
14-May	250	4	6	0	1790	37	93	0
15-May	220	5	11	0	2010	42	104	0
16-May	171	8	3	0	2181	50	107	0
17-May	203	8	7	0	2384	58	114	0
18-May	174	9	12	0	2558	67	126	0
19-May	144	4	8	0	2702	71	134	0
20-May	72	6	2	0	2774	77	136	0
21-May	123	11	4	0	2897	88	140	0
22-May	127	13	8	0	3024	101	148	0
23-May	132	18	5	0	3156	119	153	0
24-May	94	18	8	0	3250	137	161	0
25-May	61	10	0	0	3311	147	161	0
26-May	78	10	3	0	3389	157	164	0
27-May	47	7	3	0	3436	164	167	0
28-May	62	9	2	0	3498	173	169	0
29-May	57	7	2	D	3555	180	171	0
30-May	55	5	1	0	3610	185	172	0
31-May	25	6	3	0	3635	191	175	0
May Total	3455	187	165	0	3635	191	175	0

WCKA: Uild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.29. Prosser diversion dam ladder counts for June 1989. Interpolation on 6/15 thru 6/17.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jun	32	0	0	0	3667	191	175	0
02-Jun	37	5	1	0	3704	196	176	0
03-Jun	33	12	0	0	3737	208	176	0
04-Jun	15	5	0	0	3752	213	176	0
05-Jun	7	6	1	0	3759	219	177	0
06-Jun	10	0	1	0	3769	219	178	0
07-Jun	8	0	0	0	3777	219	178	0
08-Jun	7	0	0	0	3784	219	178	0
09-Jun	5	0	1	0	3789	219	179	0
IO-Jun	3	0	0	0	3792	219	179	0
11-Jun	3	0	0	0	3795	219	179	0
12-Jun	10	1	0	0	3805	220	179	0
13-Jun	9	3	1	0	3814	223	180	0
14-Jun	1	0	1	0	3815	223	181	0
15-Jun	3	0	1	0	3818	223	182	0
16-Jun	17	3	3	0	3835	226	185	0
17-Jun	19	3	3	0	3854	229	188	0
18-Jun	14	1	0	0	3868	230	188	0
19-Jun	4	0	0	0	3872	230	188	0
20-Jun	12	1	0	0	3884	231	188	0
21-Jun	5	1	1	0	3889	232	189	0
22-Jun	7	0	0	0	3896	232	189	0
23-Jun	1	1	0	0	3897	233	189	0
24-Jun	0	1	0	0	3897	234	189	0
25-Jun	1	0	0	0	3898	234	189	0
26-Jun	2	0	0	0	3900	234	189	0
27-Jun	0	1	0	0	3900	235	189	0
28-Jun	0	0	0	0	3900	235	189	0
29-Jun	0	0	0	0	3900	235	189	0
30-Jun	2	0	1	0	3902	235	190	0
June Total	ERR	ERR	ERR	ERR	3902	235	190	0

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.30. Prosser diversion dam Ladder counts for July 1989.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Jut	0	1	2	0	3902	236	192	0
02-Jul	0	0	0	0	3902	236	192	0
03-Jul	5	0	0	0	3907	236	192	0
04-Jul	2	2	0	0	3909	238	192	0
05-Jul	1	0	1	0	3910	238	193	0
06-Jul	2	0	1	0	3912	238	194	0
07-Jul	0	2	0	0	3912	240	194	0
08-Jul	3	0	0	0	3915	240	194	0
09-Jul	1	1	0	0	3916	241	194	0
10-Jul	0	0	0	0	3916	241	194	0
11-Jul	0	1	0	0	3916	242	194	0
12-Jul	1	0	0	0	3917	242	194	0
13-Jul	0	0	0	0	3917	242	194	0
14-Jul	0	0	0	0	3917	242	194	0
15-Jul	0	0	0	0	3917	242	194	0
16-Jul	0	0	0	0	3917	242	194	0
17-Jul	1	0	0	0	3918	242	194	0
18-Jul	0	0	0	0	3918	242	194	0
19-Jul	1	0	0	0	3919	242	194	0
20-Jul	0	0	0	0	3919	242	194	0
21-Jul	0	0	0	0	3919	242	194	0
22-Jul	0	0	0	0	3919	242	194	0
23-Jul	0	0	0	0	3919	242	194	0
24-Jul	0	0	0	0	3919	242	194	0
25-Jul	0	0	0	0	3919	242	194	0
26-Jul	0	0	0	0	3919	242	194	0
27-Jul	0	0	0	0	3919	242	194	0
28-Jul	0	0	0	0	3919	242	194	0
29-Jul	0	0	0	0	3919	242	194	0
30-Jut	0	0	0	0	3919	242	194	0
31-Jul	0	0	0	0	3919	242	194	0
July Total	17	7	4	0	3919	242	194	0

WCKA: Wild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.31. Prosser diversion dam ladder counts for April 1990. Interpolations on 4/25 - 4/27 and 4/30 for short periods.

	DAILY												CUMULATIVE			
	RIGHT				CENTER				LEFT							
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Apr	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
11-Apr	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
12-Apr	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
13-Apr	0	0	0	0	4	0	0	0	1	0	0	0	6	0	0	0
14-Apr	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
15-Apr	1	0	0	0	5	0	0	0	0	0	0	0	12	0	0	0
16-Apr	0	0	0	0	4	0	0	0	3			0	19	0	0	0
17-Apr	0	0	0	0	3	0	0	0	0			0	22	0	0	0
18-Apr	0	0	0	0	1	0	0	0	0	I	I	0	23	0	0	0
19-Apr	0	0	0	0	1	0	0	0		Deuatered Trap			24	0	0	0
20-Apr	0	0	0	0	4	0	0	0		Deuatered Trap			28	0	0	0
21-Apr	1	0	0	0	18	0	0	0		Deuatered Trap			47	0	0	0
22-Apr	2	0	1	0	29	0	2	0		Deuatered Trap			78	0	3	0
23-Apr	1	0	0	0	23	0	1	0	5	1	0	0	107	1	4	0
24-Apr	0	0	0	0	14	0	0	0	20	0	0	0	141	1	4	0
25-Apr	0	0	0	0	11	0	1	0	6	0	0	0	158	1	5	0
26-Apr	2	0	0	0	26	1	0	0	8	0	0	0	194	2	5	0
27-Apr	2	0	0	0	22	1	1	0	7	0	0	0	225	3	6	0
28-Apr	1	0	0	0	10	0	0	0	9	0	1	0	245	3	7	0
29-Apr	0	0	0	0	30	0	0	0	11	0	0	0	286	3	7	0
30-Apr	0	0	0	0	35	0	0	0	11	0	0	0	332	3	7	0
April Total	10	0	1	0	241	2	5	0	81	1	1	0	332	3	7	0

WCHA: Wilddchinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

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Appendix Table A.32. Prosser diversion dam ladder counts for Hay 1990.
Interpolation on 5/19.

	DAILY												CUMULATIVE			
	RIGHT				CENTER				LEFT							
DATE	WCKA	WCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ	UCKA	WCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-May	0	0	0	0	26	0	1	0	13	0	2	0	371	3	10	0
02-May	0	0	0	0	48	0	0	0	6	0	0	0	425	3	10	0
03-May	2	0	0	0	78	0	0	0	9	0	2	0	514	3	12	0
04-May	0	0	1	0	63	0	0	0	13	0	0	0	590	3	13	0
05-May	1	0	0	0	44	1	1	0	15	0	0	0	650	4	14	0
06-May	8	0	0	0	45	0	0	0	12	0	0	0	715	4	14	0
07-May	1	0	0	0	28	0	0	0	22	0	0	0	766	4	14	0
08-May	2	0	0	0	28	0	0	0	17	0	0	0	813	4	14	0
09-May	1	0	0	0	43	3	0	0	16	1	1	0	873	8	15	0
10-May	0	0	0	0	44	1	0	0	22	1	0	0	939	10	15	0
11-May	0	0	0	0	38	1	0	0	17	1	0	0	994	12	15	0
12-May	3	0	0	0	70	0	0	0	44	0	0	0	1111	12	15	0
13-May	11	0	0	0	31	0	0	0	32	1	0	0	1185	13	15	0
14-May	0	0	0	0	64	3	0	0	43	2	0	0	1292	18	15	0
15-May	0	0	0	0	75	1	0	0	29	2	0	0	1396	21	15	0
16-May	0	0	0	0	32	0	0	0	17	2	1	0	1445	23	16	0
17-May	1	0	0	0	26	0	0	0	26	0	1	0	1498	23	17	0
18-May	0	0	0	0	20	1	0	0	13	1	0	0	1531	25	17	0
19-May	3	0	0	0	10	0	0	0	18	0	1	0	1562	25	18	0
20-May	6	0	2	0	8	1	0	0	23	0	1	0	1599	26	21	0
21-May	7	0	0	0	17	1	1	0	17	1	0	0	1640	28	22	0
22-May	6	0	1	0	27	0	0	0	18	2	1	0	1691	30	24	0
23-May	9	0	1	1	14	0	0	0	17	0	3	0	1731	30	28	1
24-May	12	1	0	0	13	0	1	0	11	2	0	0	1767	33	29	1
25-May	16	1	0	0	31	0	0	0	7	0	1	0	1821	34	30	1
26-May	7	1	2	1	25	1	0	0	10	0	0	0	1863	36	32	2
27-May	14	0	4	1	25	2	0	0	0	0	0	0	1902	38	36	3
28-May	8	1	2	0	5	1	0	0	8	0	0	0	1923	40	38	3
29-May	10	1	1	2	8	0	0	0	0	0	1	0	1941	41	40	5
30-May	8	2	4	0	7	0	0	0	3	1	0	0	1959	44	44	5
31-May	10	0	0	0	15	0	1	0	2	1	0	0	1986	45	45	5
May Total	146	7	18	5	982	17	4	0	487	18	13	0	1986	45	45	5

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.33. Prosser diversion dam ladder counts for June 1990. Interpolation on 6/3 and 6/4.

	DAILY												CUMULATIVE			
	RIGHT				CENTER				LEFT							
DATE	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01-Jun	5	0	0	0	5	0	0	0	3	0	1	0	1999	45	46	5
02-Jun	1	2	0	0	9	0	0	0	1	0	0	0	2010	47	46	5
03-Jun	3	0	0	0	5	0	0	0	1	0	0	0	2019	47	46	5
04-Jun	2	0	0	0	3	0	0	0	2	0	0	0	2026	47	46	5
05-Jun	3	0	0	0	3	0	0	0	2	0	0	0	2034	47	46	5
06-Jun	3	0	0	0	3	0	0	0	1	0	0	0	2041	47	46	5
07-Jun	2	0	0	0	3	0	0	0	1	0	0	0	2047	47	46	5
08-Jun	1	0	0	0	2	0	0	0	2	0	0	0	2052	47	46	5
09-Jun	0	0	1	0	2	0	0	0	0	0	0	0	2054	47	47	5
10-Jun	1	0	0	0	1	0	0	0	1	0	0	0	2057	47	47	5
11-Jun	1	0	0	0	0	0	0	0	1	0	0	0	2059	47	47	5
12-Jun	0	0	0	0	0	0	0	0	1	0	0	0	2060	47	47	5
13-Jun	1	0	0	0	1	0	0	0	0	0	0	0	2062	47	47	5
14-Jun	0	0	0	0	2	0	0	0	0	0	0	0	2064	47	47	5
15-Jun	1	0	0	0	1	0	0	0	0	0	0	0	2066	47	47	5
16-Jun	0	0	0	0	2	0	0	0	2	0	0	0	2070	47	47	5
17-Jun	2	0	0	0	1	0	0	0	0	0	0	0	2073	47	47	5
18-Jun	1	0	0	0	3	1	0	0	6	0	0	0	2083	48	47	5
19-Jun	1	0	0	0	2	0	0	0	3	0	0	0	2089	48	47	5
20-Jun	0	0	0	0	5	0	0	0	0	0	0	0	2094	48	47	5
21-Jun	1	0	0	0	4	0	0	0	1	0	0	0	2100	48	47	5
22-Jun	1	0	0	0	1	0	0	0	0	0	0	0	2102	48	47	5
23-Jun	0	0	0	0	4	0	0	0	1	0	0	0	2107	48	47	5
24-Jun	0	0	0	0	4	0	0	0	0	0	0	0	2111	48	47	5
25-Jun	0	0	0	0	1	0	0	0	1	0	0	0	2113	48	47	5
26-Jun	0	0	0	0	0	0	0	0	1	0	0	0	2114	48	47	5
27-Jun	0	0	0	0	0	0	0	0	0	0	0	0	2114	48	47	5
28-Jun	1	0	0	0	6	0	0	0	1	0	0	0	2122	48	47	5
29-Jun	0	0	0	0	2	0	0	0	1	0	0	0	2125	48	47	5
30-Jun	0	0	0	0	0	0	0	0	1	0	0	0	2126	48	47	5
June Total	31	2	1	0	75	1	0	0	34	0	1	0	2126	48	47	5

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table A.34. Prosser diversion dam ladder counts for July 1990.

	DAILY												CUMULATIVE			
	RIGHT				CENTER				LEFT							
DATE	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2126	48	47	5
02-Jul	0	0	0	0	0	0	0	0	1	0	0	0	2127	48	47	5
03-Jul	1	0	0	0	2	0	0	0	1	0	0	0	2131	48	47	5
04-Jul	0	0	0	0	0	0	0	0	1	0	0	0	2132	48	47	
05-Jul	1	0	0	0	1	0	0	0	1	0	0	0	2135	48	47	5
06-Jul	0	0	0	0	0	0	0	0	1	0	0	0	2136	48	47	5
07-Jul	0	0	0	0	2	0	0	0	2	0	0	0	2140	48	47	5
08-Jul	1	0	0	0	1	0	0	0	0	0	0	0	2142	48	47	5
09-Jul	3	0	0	0	0	0	0	0	1	0	0	0	2146	48	47	5
10-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2146	48	47	5
11-Jul	1	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
12-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
13-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
14-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
15-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
16-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
17-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
18-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
19-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
20-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
21-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
22-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
23-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
24-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
25-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2147	48	47	5
26-Jul	1	0	0	0	1	0	0	0	0	0	0	0	2149	48	47	5
27-Jul	0	0	0	0	1	0	0	0	2	0	0	0	2152	48	47	5
28-Jul	1	0	0	0	1	0	0	0	1	0	0	0	2155	48	47	5
29-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2155	48	47	5
30-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2155	48	47	5
31-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2155	48	47	5
July Total	9	0	0	0	9	0	0	0	11	0	0	0	2155	48	47	5

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

APPENDIX B
ROZA SPRING CHINOOK ADULT COUNTS, 1984-1990

Appendix Table B.l. Roza Dam adult spring chinook counts for May 1984.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01-May	ns	ns	ns	ns	0	0	0	0
02-May	ns	ns	ns	ns	0	0	0	0
03-May	ns	ns	ns	ns	0	0	0	0
04-May	ns	ns	ns	ns	0	0	0	0
05-May	ns	ns	ns	ns	0	0	0	0
06-May	ns	ns	ns	ns	0	0	0	0
07-May	ns	ns	ns	ns	0	0	0	0
08-May	ns	ns	ns	ns	0	0	0	0
09-May	0	0	0	0	0	0	0	0
IO-May	0	0	0	0	0	0	0	0
11-Hay	0	0	0	0	0	0	0	0
12-May	0	0	0	0	0	0	0	0
13-May	0	0	0	0	0	0	0	0
14-May	1	0	1	0	1	0	1	0
IS-May	0	0	0	0	1	0	1	0
16-May	0	0	0	0	1	0	1	0
17-May	1	0	0	0	2	0	1	0
18-May	1	0	2	0	3	0	3	0
19-May	1	0	0	0	4	0	3	0
20-May	1	0	0	0	5	0	3	0
21-May	0	0	0	0	5	0	3	0
22-May	1	0	0	0	6	0	3	0
23-May	1	0	0	0	7	0	3	0
24-May	7	0	0	0	14	0	3	0
25-May	S	0	2	0	19	0	5	0
26-May	11	0	1	0	30	0	6	0
27-May	10	1	1	0	40	1	7	0
28-May	16	2	3	0	56	3	10	0
29-May	46	0	4	0	102	3	14	0
30-May	67	0	1	0	169	3	15	0
31-May	12	0	1	0	181	3	16	0
May Total	181	3	16	0	181	3	16	0

WCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table 8.2. Roza Dam adult spring chinook counts for June 1984.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jun	40	1	1	0	221	4	17	0
02-Jun	70	5	0	0	291	9	17	0
03-Jun	30	2	1	0	321	11	18	0
04-Jun	51	3	1	0	372	14	19	0
05-Jun	16	1	0	0	388	IS	19	0
06-Jun	16	7	D	0	404	22	19	0
07-Jun	11	6	0	0	415	28	19	0
08-Jun	24	3	0	0	439	31	19	0
09-Jun	18	4	0	0	457	35	19	0
10-Jun	10	1	0	0	467	36	19	0
II-Jun	70	26	1	D	537	62	20	0
12-Jun	92	14	3	0	629	76	23	0
13-Jun	84	9	1	0	713	85	24	0
14-Jun	13	5	0	0	726	90	24	0
IS-Jun	54	12	0	0	780	102	24	0
16-Jun	19	0	0	0	799	102	24	0
17-Jun	7	0	0	D	806	102	24	0
18-Jun	10	6	0	D	816	108	24	0
19-Jun	31	2	0	0	847	110	24	0
20-Jun	18	3	0	0	865	113	24	0
21-Jun	16	4	0	0	881	117	24	0
22-Jun	2	1	0	0	883	118	24	0
23-Jun	8	4	1	0	891	122	25	0
24-Jun	19	6	0	0	910	128	25	0
25-Jun	8	4	0	0	918	132	2s	0
26-Jun	15	1	0	0	933	133	25	0
27-Jun	7	4	0	0	940	137	25	0
28-Jun	3	0	0	D	943	137	25	0
29-Jun	49	15	0	0	992	152	2s	0
30-Jun	5	3	0	0	997	155	2s	0
June Total	816	152	9	0	997	155	25	0

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.3. Roza Dam adult spring chinook counts for July 1984.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Jut	9	7	0	0	1006	162	25	0
02-Jul	38	11	0	0	1044	173	25	0
03-Jul	110	34	1	0	1154	207	26	0
04-Jul	20	3	0	0	1174	210	26	0
OS-Jul	26	2	0	0	1200	212	26	0
06-Jul	32	4	0	0	1232	216	26	0
07-Jul	4	1	0	0	1236	217	26	0
08-Jul	3	2	0	0	1239	219	26	0
09-Jul	0	0	0	0	1239	219	26	0
10-Jul	4	1	0	0	1243	220	26	0
11-Jul	7	3	0	0	1250	223	26	0
12-Jul	1	0	0	0	1251	223	26	0
13-Jul	2	0	0	0	1253	223	26	0
14-Jul	2	1	0	0	1255	224	26	0
15-Jul	1	0	0	0	1256	224	26	0
16-Jul	1	1	1	0	1257	225	27	0
17-Jul	1	1	0	0	1258	226	27	0
18-Jul	2	1	0	0	1260	227	27	0
19-Jul	0	0	0	0	1260	227	27	0
20-Jul	0	1	0	0	1260	228	27	0
21-Jul	0	1	0	0	1260	229	27	0
22-Jul	0	0	0	0	1260	229	27	0
23-Jul	1	0	0	0	1261	229	27	0
24-Jul	1	0	0	0	1262	229	27	0
25-Jul	2	2	0	0	1264	231	27	0
26-Jul	2	0	0	0	1266	231	27	0
27-Jul	1	0	0	0	1267	231	27	0
28-Jul	0	0	0	0	1267	231	27	0
29-Jul	0	1	0	0	1267	232	27	0
30-Jul	1	0	0	0	1268	232	27	0
31-Jul	5	0	0	0	1273	232	27	0
July Total	276	77	2	0	1273	232	27	0

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.4. Roza Dam adult spring chinook counts for August 1984.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Aug	1	0	0	0	1274	232	27	0
02-Aug	0	1	0	0	1274	233	27	0
03-Aug	1	1	0	0	1275	234	27	0
04-Aug	1	0	0	0	1276	234	27	0
OS-Aug	0	0	0	0	1276	234	27	0
06-Aug	0	0	0	0	1276	234	27	0
07-Aug	1	1	0	0	1277	235	27	0
08-Aug	2	0	0	0	1279	235	27	0
09-Aug	3	0	0	0	1282	235	27	0
10-Aug	1	1	0	1	1283	236	27	1
II-Aug	2	0	0	0	1285	236	27	1
12-Aug	2	0	0	0	1287	236	27	1
13-Aug	1	0	0	0	1288	236	27	1
14-Aug	0	0	0	0	1288	236	27	1
15-Aug	0	0	0	0	1288	236	27	1
16-Aug	0	0	0	0	1288	236	27	1
17-Aug	0	D	0	0	1288	236	27	1
18-Aug	1	1	0	0	1289	237	27	1
19-Aug	0	0	0	0	1289	237	27	1
20-Aug	0	0	0	0	1289	237	27	1
21-Aug	0	0	0	0	1289	237	27	1
22-Aug	1	0	0	0	1290	237	27	1
23-Aug	0	0	0	0	1290	237	27	1
24-Aug	0	0	0	0	1290	237	27	1
25-Aug	0	0	0	0	1290	237	27	1
26-Aug	2	1	0	0	1292	238	27	1
27-Aug	7	5	1	0	1299	243	28	1
28-Aug	1	0	0	0	1300	243	28	1
29-Aug	0	0	0	0	1300	243	28	1
30-Aug	0	0	0	0	1300	243	28	1
31-Aug	1	1	0	0	1301	244	28	1
Aug Total	28	12	1	1	1301	244	28	1

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table B.S. Roza Dam adult spring chinook counts for September, 1984.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01-Sep	0	0	0	0	1301	244	28	1
02-Sep	0	0	0	0	1301	244	28	1
03-Sep	3	0	0	0	1304	244	28	1
04-Sep	0	0	0	0	1304	244	28	1
OS-Sep	2	1	0	0	1306	245	28	1
06-Sep	0	0	0	0	1306	245	28	1
07-Sep	3	1	0	0	1309	246	28	1
08-Sep	0	0	0	0	1309	246	28	1
09-Sep	0	0	0	0	1309	246	28	1
IO-Sep	0	0	0	0	1309	246	28	1
II-Sep	0	0	0	0	1309	246	28	1
12-Sep	*	0	0	0	*	246	28	1
13-Sep	*	0	0	0	*	246	28	1
14-Sep	*	0	0	0	*	246	28	1
IS-Sep	*	0	0	0	*	246	28	1
16-Sep	*	0	0	0	*	246	28	1
	4				1313			
17-Sep	*	0	0	0	*	246	28	1
18-Sep	*	0	0	0	*	246	28	1
19-Sep	*	0	0	0	*	246	28	1
20-Sep	*	0	0	0	*	246	28	1
21-Sep	*	0	0	0	*	246	28	1
22-Sep	*	0	0	0	*	246	28	1
23-Sep	*	0	0	0	*	246	28	1
	0				1313			
24-Sep	*	0	0	0	*	246	28	1
25-Sep	*	0	0	0	*	246	28	1
26-Sep	*	0	0	0	*	246	28	1
27-Sep	*	0	0	0	*	246	28	1
28-Sep	*	0	0	0	*	246	28	1
29-Sep	*	0	0	0	*	246	28	1
30-Sep	*	0	0	0	*	246	28	1
Sept Total	13	2	0	0	1313	246	28	1

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
* Total for week

Appendix Table 8.6. Roza Dam adult spring chinook counts for May 1985.

	DAILY				CLJMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01 -Hay	ns	ns	ns	ns	0	0	0	0
02-May	ns	ns	ns	ns	0	0	0	0
03-May	ns	ns	ns	ns	0	0	0	0
04-May	ns	ns	ns	ns	0	0	0	0
OS-May	ns	ns	ns	ns	0	0	0	0
06-May	ns	ns	ns	ns	0	0	0	0
07-May	ns	ns	ns	ns	0	0	0	0
08-May	ns	ns	ns	ns	0	0	0	0
09-May	ns	ns	ns	ns	0	0	0	0
10-May	ns	ns	ns	ns	0	0	0	0
11-May	ns	ns	ns	ns	0	0	0	0
1 Z-May	ns	ns	ns	ns	0	0	0	0
13-May	ns	ns	ns	ns	0	0	0	0
14-May	0	0	0	0	0	0	0	0
15-May	0	0	0	0	0	0	0	0
16-May	D	0	0	0	0	0	0	0
17-May	1	1	0	0	1	1	0	0
18-May	28	0	1	0	29	1	1	0
19-May	47	1	0	0	76	2	1	D
20-May	39	1	0	0	115	3	1	0
21 -May	120	0	0	D	235	3	1	0
22-May	ns	ns	ns	ns	235	3	1	0
23-May	64	0	6	0	299	3	7	0
24-May	16	0	1	0	315	3	8	0
25-May	63	1	4	0	378	4	12	0
26-May	10	0	0	0	388	4	12	0
27-May	31	2	0	0	419	6	12	0
28-May	24	0	3	0	443	6	15	0
29-May	56	0	2	0	499	6	17	0
30-May	56	1	1	0	555	7	18	0
31 -May	66	0	2	0	621	7	20	0
May Total	621	7	20	0	621	7	20	0

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table 8.7. Roza Dam adult spring chinook counts for June 1985.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Jun	78	2	1	0	699	9	21	0
02-Jun	10	0	0	0	709	9	21	0
03-Jun	37	1	0	0	746	10	21	0
04-Jun	67	1	0	0	813	11	21	0
OS-Jun	60	3	0	0	873	14	21	0
06-Jun	56	3	3	0	929	17	24	0
07-Jun	47	8	5	0	976	25	29	0
08-Jun	62	7	2	0	1038	32	31	0
09-Jun	29	1	0	0	1067	33	31	0
10-Jun	50	1	1	0	1117	34	32	0
11-Jun	60	5	1	0	1177	39	33	0
12-Jun	52	2	2	0	1229	41	35	0
13-Jun	40	7	1	0	1269	48	36	0
14-Jun	52	6	2	0	1321	54	38	0
15-Jun	62	10	3	0	1383	64	41	0
16-Jun	27	2	2	0	1410	66	43	0
17-Jun	21	6	0	0	1431	72	43	0
18-Jun	17	8	0	0	1448	80	43	0
19-Jun	104	27	3	0	1552	107	46	0
20-Jun	51	10	1	0	1603	117	47	0
21-Jun	44	11	0	0	1647	128	47	0
22-Jun	41	5	2	0	1688	133	49	0
23-Jun	18	6	0	0	1706	139	49	0
24-Jun	8	3	1	0	1714	142	50	0
25-Jun	4	0	0	0	1718	142	50	0
26-Jun	13	1	1	0	1731	143	51	0
27-Jun	17	7	1	0	1748	150	52	0
28-Jun	12	5	0	0	1760	155	52	0
29-Jun	6	8	0	0	1766	163	52	0
30-Jun	ns	ns	ns	ns	1766	163	52	0
June Total	1145	156	32	0	1766	163	52	0

UCKA: Uild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table B.8. Roza Dam adult spring chinook counts for July 1985.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jut	7	2	0	0	1773	165	52	0
02-Jul	5	2	1	0	1778	167	53	0
03-Jul	8	7	0	0	1786	174	53	0
04-Jul	7	4	0	0	1793	178	53	0
05-Jul	11	5	0	0	1804	183	53	0
06-Jul	8	7	0	0	1812	190	53	0
07-Jul	1	1	0	0	1813	191	53	0
08-Jul	9	1	0	0	1822	192	53	0
09-Jul	26	4	2	0	1848	196	55	0
10- Jul	2	0	0	0	1850	196	55	0
11-Jul	15	6	1	0	1865	202	56	0
12-Jul	15	5	0	0	1880	207	56	0
13-Jul	9	3	0	0	1889	210	56	0
14-Jul	1	0	0	0	1890	210	56	0
15-Jul	7	2	0	0	1897	212	56	0
16-Jul	5	0	0	0	1902	212	56	0
17-Jul	4	2	0	0	1906	214	56	0
18- Jul	ns	ns	ns	ns	1906	214	56	0
19-Jul	3	0	0	0	1909	214	56	0
20-Jul	4	0	0	0	1913	214	56	0
21-Jul	ns	ns	ns	ns	1913	214	56	0
22-Jul	6	1	0	0	1919	215	56	0
23-Jul	8	2	2	0	1927	217	58	0
24-Jul	9	2	0	0	1936	219	58	0
25-Jul	14	1	0	0	1950	220	58	0
26-Jul	9	5	0	0	1959	225	58	0
27-Jul	9	2	1	0	1968	227	59	0
28-Jul	2	0	0	0	1970	227	59	0
29-Jul	5	0	2	0	1975	227	61	0
30-Jul	11	2	0	0	1986	229	61	0
31-Jul	7	2	0	0	1993	231	61	0
July Total	227	68	9	0	1993	231	61	0

UCKA : Uild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hntchcry chinook jack
HCKJ : Hatchery chinook jack
ns: not sampled

Appendix Table B.9. Roza Dam adult spring chinook counts for August 1985.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Aug	8	2	1	0	2001	233	62	0
02-Aug	5	1	0	0	2006	234	62	0
03-Aug	6	2	D	0	2012	236	62	0
04-Aug	1	0	0	0	2013	236	62	0
OS-Aug	0	0	0	0	2013	236	62	0
06-Aug	0	0	0	0	2013	236	62	0
07-Aug	4	0	0	0	2017	236	62	0
08-Aug	5	0	0	0	2022	236	62	0
09-Aug	3	0	0	0	2025	236	62	0
10-Aug	6	0	1	0	2031	236	63	0
11-Aug	2	0	0	0	2033	236	63	0
12-Aug	1	0	0	0	2034	236	63	0
13-Aug	1	0	0	0	2035	236	63	0
14-Aug	0	0	0	0	2035	236	63	0
15-Aug	0	0	0	0	2035	236	63	0
16-Aug	2	0	0	0	2037	236	63	0
17-Aug	2	0	0	0	2039	236	63	0
18-Aug	2	0	0	0	2041	236	63	0
19-Aug	0	0	0	0	2041	236	63	0
20-Aug	0	0	0	0	2041	236	63	0
21-Aug	0	0	0	0	2041	236	63	0
22-Aug	1	0	0	0	2042	236	63	0
23-Aug	2	0	0	0	2044	236	63	D
24-Aug	2	0	1	0	2046	236	64	0
25-Aug	0	0	0	0	2046	236	64	0
26-Aug	0	0	0	0	2046	236	64	0
27-Aug	0	0	0	0	2046	236	64	0
28-Aug	0	0	0	0	2046	236	64	0
29-Aug	0	0	0	0	2046	236	64	0
30-Aug	0	0	0	0	2046	236	64	0
31-Aug	1	2	0	0	2047	238	64	0
Aug Total	54	7	3	0	2047	238	64	0

UCKA: Wild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 6.10. Roza Dam adult spring chinook counts for September 1985.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01 -Sep	0	0	0	0	2047	238	64	0
02-Sep	ns	ns	ns	ns	2047	238	64	0
03-Sep	0	0	0	0	2047	238	64	0
04-Sep	1	0	0	0	2048	238	64	0
OS-Sep	0	0	0	0	2048	238	64	0
06-Sep	1	0	0	0	2049	238	64	0
07- Sep	2	0	0	0	2051	238	64	0
08- Sep	0	0	0	0	2051	238	64	0
09-Sep	1	0	0	0	2052	238	64	0
ID-Sep	0	0	0	0	2052	238	64	0
11-Sep	2	0	0	0	2054	238	64	0
12-Sep	0	0	0	0	2054	238	64	0
13-Sep	0	0	0	0	2054	238	64	0
14-Sep	0	0	0	0	2054	238	64	0
15-Sep	0	0	0	0	2054	238	64	0
16-Sep	0	0	0	0	2054	238	64	0
17-Sep	0	0	0	0	2054	238	64	D
18-Sep	0	0	0	0	2054	238	64	0
19-Sep	0	0	0	0	2054	238	64	0
20-Sep	4	0	0	0	2058	238	64	0
21-Sep	0	0	0	0	2058	238	64	0
22-Sep	0	0	0	0	2058	238	64	0
23-Sep	0	0	0	0	2058	238	64	0
24-Sep	3	1	0	0	2061	239	64	0
25-Sep	0	0	0	0	2061	239	64	0
26-Sep	ns	ns	ns	ns	2061	239	64	0
27-Sep	0	0	0	0	2061	239	64	0
28-Sep	0	0	0	0	2061	239	64	0
29- Sep	0	0	0	0	2061	239	64	0
30-Sep	D	0	0	D	2061	239	64	0
Sept Total	14	1	0	0	2061	239	64	0

UCKA : Uild chinook adult
UCKJ : Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ : Hatchery chinook jack
ns: not sampled

Appendix Table B.11. Roza Dam adult spring chinook counts for May 1986. The hatchery fish are included in the wild counts.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-May	ns	ns	ns	ns	0	0	0	0
02-May	ns	ns	ns	ns	0	0	0	0
03-May	ns	ns	ns	ns	0	0	0	0
04-May	ns	ns	ns	ns	0	0	0	0
OS-May	ns	ns	ns	ns	0	0	0	0
06-May	ns	ns	ns	ns	0	0	0	0
07-May	ns	ns	ns	ns	0	0	0	0
08-May	ns	ns	ns	ns	0	0	0	0
09-May	ns	ns	ns	ns	0	0	0	0
10-May	ns	ns	ns	ns	0	0	0	0
11-May	ns	ns	ns	ns	0	0	0	0
12-May	ns	ns	ns	ns	0	0	0	0
13-May	6	1	0	0	6	1	0	0
14-May	2	0	0	0	8	1	0	0
15-May	10	1	0	0	18	2	0	0
16-May	10	0	0	0	28	2	0	0
17-May	29	7	0	D	57	9	0	D
18-May	I 6	3	0	0	73	12	0	0
19-May	61	7	0	0	134	19	0	0
20-May	64	7	0	0	198	26	0	0
21-May	21	1	0	0	219	27	0	0
22-May	20	1	0	0	239	28	0	0
23-May	42	0	0	0	281	28	0	0
24-May	33	1	0	0	314	29	0	0
25-May	86	26	0	0	400	55	0	0
26-May	90	21	0	0	490	76	0	0
27-May	181	33	0	0	671	109	0	0
28-May	124	13	0	0	795	122	0	0
29-May	133	2	0	0	928	124	0	0
30-May	78	4	0	0	1006	128	0	0
31-May	100	1	0	0	1106	129	0	0
May Total	1106	129	0	0	1106	129	0	0

JCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack
ns: not sampled

Appendix Table B.12. Roza Dam adult spring chinook counts for June 1986. The hatchery fish are included in the uild counts.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jun	32	0	0	0	1138	129	0	0
02-Jun	23	0	0	0	1161	129	0	0
03-Jun	34	0	0	0	1195	129	0	0
04-Jun	39	2	0	0	1234	131	D	D
05-Jun	139	12	0	0	1373	143	0	0
06-Jun	125	3	0	0	1498	146	0	0
07-Jun	17	0	0	0	1515	146	0	0
08-Jun	7	0	0	0	1522	146	0	0
09-Jun	19	0	0	0	1541	146	0	0
10-Jun	35	1	D	0	1576	147	0	0
II-Jun	41	0	0	0	1617	147	0	0
12-Jun	28	1	0	0	1645	148	0	0
13-Jun	25	0	0	0	1670	148	0	0
14-Jun	42	7	0	0	1712	155	0	0
15-Jun	34	0	0	0	1746	155	0	0
16-Jun	40	1	0	0	1786	156	0	0
17-Jun	44	2	0	0	1830	158	D	0
18-Jun	28	4	0	0	1858	162	0	0
19-Jun	16	2	0	0	1874	164	0	0
20-Jun	35	3	0	0	1909	167	0	0
21-Jun	31	2	D	0	1940	169	0	0
22-Jun	24	4	0	0	1964	173	0	0
23-Jun	70	5	0	D	2034	178	0	0
24-Jun	61	5	0	0	2095	183	0	0
25-Jun	65	3	0	0	2160	186	0	0
26-Jun	30	3	0	0	2190	189	0	0
27-Jun	26	3	0	0	2216	192	0	0
28-Jun	24	2	0	0	2240	194	0	0
29-Jun	17	0	0	0	2257	194	0	0
30-Jun	22	2	0	0	2279	196	0	0
June Total	1173	67	0	0	2279	196	0	0

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 6.13. Roza Dam adult spring chinook counts for July 1986. The hatchery fish are included in the wild counts.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01-Jul	30	6	0	0	2309	202	0	0
02-Jul	15	1	0	0	2324	203	0	0
03-Jul	11	1	0	0	2335	204	0	0
04-Jul	8	2	0	0	2343	206	0	0
05-Jul	14	1	0	0	2357	207	0	0
06-Jul	8	1	0	0	2365	208	0	0
07-Jul	26	5	0	0	2391	213	0	0
08-Jul	35	4	0	0	2426	217	0	0
09-Jul	26	3	0	0	2452	220	0	0
IO-Jut	I2	1	0	0	2464	221	0	0
11-Jul	6	2	0	0	2470	223	0	0
12-Jul	9	1	0	0	2479	224	0	0
13-Jul	5	2	0	0	2484	226	0	0
14-Jul	22	6	0	0	2506	232	0	0
15-Jul	10	3	0	0	2516	235	0	0
16-Jul	7	1	0	0	2523	236	0	0
17-Jul	8	1	0	0	2531	237	0	0
18-Jul	9	0	0	0	2540	237	0	0
19-Jul	10	1	0	0	2550	238	0	0
20-Jul	14	1	0	0	2564	239	0	0
21-Jul	19	9	0	0	2583	248	0	0
22-Jul	23	1	0	0	2606	249	0	0
23-Jul	39	9	0	0	2645	258	0	0
24-Jul	20	1	0	0	2665	259	0	0
25-Jul	25	2	0	0	2690	261	0	0
26-Jul	15	2	0	0	2705	263	0	0
27-Jul	3	0	0	0	2708	263	0	0
28-Jul	7	1	0	0	2715	264	0	0
29-Jul	4	3	0	0	2719	267	0	0
30-Jul	6	1	0	0	2725	268	0	0
31-Jul	22	0	0	0	2747	268	0	0
July Total	468	72	D	0	2747	268	0	0

UCKA: Wild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.14. Roza Dam adult spring chinook counts for August 1986. The hatchery fish are included in the wild counts.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	YCKA	WCKJ	HCKA	HCKJ
01-Aug	9	1	0	0	2756	269	0	0
02-Aug	10	2	0	0	2766	271	0	0
03-Aug	5	0	0	0	2771	271	0	0
04-Aug	29	8	0	0	2800	279	0	0
OS-Aug	6	1	0	0	2806	280	0	0
06-Aug	6	1	0	0	2812	281	0	0
07-Aug	6	0	0	0	2818	281	0	0
08-Aug	1	0	0	0	2819	281	0	0
09-Aug	2	0	0	0	2821	281	0	0
10-Aug	2	0	0	0	2823	281	0	0
11-Aug	3	0	0	0	2826	281	0	0
12-Aug	3	0	0	0	2829	281	0	0
13-Aug	0	0	0	0	2829	281	0	0
14-Aug	7	0	0	0	2836	281	0	0
15-Aug	2	0	0	0	2838	281	0	0
16-Aug	3	0	0	0	2841	281	0	0
17-Aug	0	0	0	0	2841	281	0	0
18-Aug	1	0	0	0	2842	281	0	0
19-Aug	1	0	0	0	2843	281	0	0
20-Aug	1	0	0	0	2844	281	0	0
21-Aug	2	0	0	0	2846	281	0	0
22-Aug	6	0	0	0	2852	281	0	0
23-Aug	1	0	0	0	2853	281	0	0
24-Aug	2	0	0	0	2855	281	0	0
25-Aug	4	0	0	0	2859	281	0	0
26-Aug	7	0	0	0	2866	281	0	0
27-Aug	8	0	0	0	2874	281	0	0
28-Aug	10	0	0	0	2884	281	0	0
29-Aug	16	1	0	0	2900	282	0	0
30-Aug	14	0	0	0	2914	282	0	0
31-Aug	9	0	0	0	2923	282	0	0
Aug Total	176	14	0	0	2923	282	0	0

UCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.15. Roza Dam adult spring chinook counts for September 1986. The hatchery fish are included in the wild counts.

	DAILY				CUMULATIVE			
DATE	UCKA	WCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01 -Sep	4	0	0	0	2927	282	0	0
02-Sep	3	0	0	0	2930	282	0	0
03-Sep	2	0	0	0	2932	282	0	0
04-Sep	1	0	0	0	2933	282	0	0
OS-Sep	2	0	0	0	2935	282	0	0
06-Sep	8	0	0	0	2943	282	0	0
07-Sep	0	0	0	0	2943	282	0	0
08-Sep	1	0	0	0	2944	282	0	0
09-Sep	1	0	0	0	2945	282	0	0
10-Sep	0	0	0	0	2945	282	0	0
11-Sep	1	0	0	0	2946	282	0	0
12-Sep	2	0	0	0	2948	282	0	0
13-Sep	0	0	0	0	2948	282	0	0
14-Sep	0	0	0	0	2948	282	0	0
15-Sep	1	0	0	0	2949	282	0	0
16-Sep	0	0	0	0	2949	282	0	0
17-Sep	0	0	0	0	2949	282	0	0
18-Sep	8	0	0	0	2957	282	0	0
19-Sep	0	1	0	0	2957	283	0	0
20-Sep	0	0	0	0	2957	283	0	0
21 -Sep	1	0	0	0	2958	283	0	0
22-Sep	2	0	0	0	2960	283	0	0
23-Sep	0	0	0	0	2960	283	0	0
24-Sep	2	0	0	0	2962	283	0	0
25-Sep	0	1	0	0	2962	284	0	0
26-Sep	1	0	0	0	2963	284	0	0
27-Sep	0	0	0	0	2963	284	0	0
28- Sep	0	0	0	0	2963	284	0	0
29-Sep	4	0	0	0	2967	284	0	0
30-Sep	0	0	0	0	2967	284	0	0
Sept Total	44	2	0	0	2967	284	0	0

UCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.16. Roza Dam adult spring chinook counts for May 1987.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-May	0	0	0	0	0	0	0	0
02-May	0	0	0	0	0	0	0	0
03-May	0	0	0	0	0	0	0	0
04-May	0	0	0	0	0	0	0	cl
OS-May	1	0	0	0	1	0	0	0
06-May	1	0	0	0	2	0	0	0
07-May	0	0	0	0	2	0	0	0
08-May	4	0	1	0	6	0	1	0
09-May	4	0	1	0	10	0	2	0
10-May	14	0	1	0	24	0	3	0
II-May	10	0	0	0	34	0	3	0
12-May	14	0	2	0	48	0	5	0
13-May	6	0	1	0	54	0	6	0
14-May	11	0	4	0	65	0	10	0
15-May	9	0	2	0	74	0	12	0
16-May	19	0	3	0	93	0	15	0
17-May	10	1	1	0	103	1	16	0
18-May	64	0	8	0	167	1	24	0
19-May	38	1	10	0	205	2	34	0
20-May	57	3	3	0	262	5	37	0
21-May	70	7	8	0	332	12	45	0
22-May	84	2	5	0	416	14	50	0
23-May	49	5	2	0	465	19	52	0
24-May	55	5	3	0	520	24	55	0
25-May	195	8	18	1	715	32	73	1
26-May	40	2	9	1	755	34	82	2
27-May	24	1	5	0	779	35	87	2
28-May	14	1	3	0	793	36	90	2
29-May	22	0	3	0	815	36	93	2
30-May	63	4	7	0	878	40	100	2
31-May	28	3	3	0	906	43	103	2
May Total	906	43	103	2	906	43	103	2

UCKA : Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.17. Roza Dam adult spring chinook counts for June 1987.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jun	30	0	8	0	936	43	111	2
02-Jun	23	1	7	0	959	44	118	2
03-Jun	50	4	6	0	1009	48	124	2
04-Jun	47	1	1	0	1056	49	125	2
05-Jun	33	4	5	0	1089	53	130	2
06-Jun	13	0	4	0	1102	53	134	2
07-Jun	20	0	1	0	1122	53	135	2
08-Jun	15	0	1	0	1137	53	136	2
09-Jun	20	0	4	0	1157	53	140	2
10-Jun	16	1	2	0	1173	54	142	2
11-Jun	25	1	4	0	1198	55	146	2
12-dun	34	2	3	0	1232	57	149	2
13-Jun	2	1	1	0	1234	58	150	2
14-Jun	7	0	1	0	1241	58	151	2
15-Jun	16	1	2	0	1257	59	153	2
16-Jun	8	0	1	0	1265	59	154	2
17-Jun	5	1	0	0	1270	60	154	2
18-Jun	12	1	2	0	1282	61	156	2
19-Jun	21	0	7	0	1303	61	163	2
20-Jun	11	0	11	0	1314	61	174	2
21-Jun	5	0	1	0	1319	61	175	2
22-Jun	1	0	3	0	1320	61	178	2
23-Jun	5	0	2	0	1325	61	180	2
24-Jun	6	0	0	0	1331	61	180	2
25-Jun	13	0	5	1	1344	61	185	3
26-Jun	11	0	11	0	1355	61	196	3
27-Jun	8	0	1	0	1363	61	197	3
28-Jun	20	0	3	0	1383	61	200	3
29-Jun	15	1	1	0	1398	62	201	3
30-Jun	9	0	3	1	1407	62	204	4
June Total	501	19	101	2	1407	62	204	4

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 6.18. Roza Dam adult spring chinook counts for July 1987.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Jul	5	0	1	0	1412	62	205	4
02-Jul	9	0	0	0	1421	62	205	4
03-Jul	7	0	0	0	1428	62	205	4
04-Jul	6	0	1	1	1434	62	206	5
OS-Jul	7	0	0	0	1441	62	206	5
06-Jul	2	0	0	0	1443	62	206	5
07-Jul	2	0	2	0	1445	62	208	5
08-Jul	2	0	2	0	1447	62	210	5
09-Jul	2	0	0	0	1449	62	210	5
10-Jul	1	0	1	0	1450	62	211	5
11-Jul	3	0	1	0	1453	62	212	5
12-Jul	2	0	0	0	1455	62	212	5
13-Jul	4	1	2	0	1459	63	214	5
14-Jul	6	0	0	0	1465	63	214	5
15-Jul	2	0	3	0	1467	63	217	5
16-Jul	11	0	2	1	1478	63	219	6
17-Jul	6	0	0	0	1484	63	219	6
18-Jul	6	0	1	0	1490	63	220	6
19-Jul	3	0	0	1	1493	63	220	7
20-Jul	1	0	0	0	1494	63	220	7
21-Jul	9	0	3	0	1503	63	223	7
22-Jul	1	0	0	1	1504	63	223	8
23-Jul	2	0	0	0	1506	63	223	8
24-Jul	7	0	1	0	1513	63	224	8
25-Jul	5	0	2	0	1518	63	226	8
26-Jul	0	0	0	0	1518	63	226	8
27-Jul	2	1	0	0	1520	64	226	8
28-Jul	3	0	1	0	1523	64	227	8
29-Jul	0	0	0	0	1523	64	227	8
30-Jul	2	0	0	0	1525	64	227	8
31-Jul	0	0	0	0	1525	64	227	8
July Total	118	2	23	4	1525	64	227	8

UCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.19. Roza Dam adult spring chinook counts for August 1987.

	DAILY				CUMULATIVE			
DATE	UCKA	WCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Aug	2	0	1	0	1527	64	228	8
02-Aug	0	0	0	0	1527	64	228	8
03-Aug	1	0	1	0	1528	64	229	8
04-Aug	4	0	1	0	1532	64	230	8
OS-Aug	4	0	1	0	1536	64	231	8
06-Aug	0	0	0	0	1536	64	231	8
07-Aug	2	0	3	0	1538	64	234	8
08-Aug	2	1	2	0	1540	65	236	8
09-Aug	1	0	0	0	1541	65	236	8
10-Aug	3	0	0	0	1544	65	236	8
11-Aug	6	0	0	0	1550	65	236	8
12-Aug	0	0	0	0	1550	65	236	8
13-Aug	4	0	1	0	1554	65	237	8
14-Aug	1	0	1	0	1555	65	238	8
15-Aug	4	0	0	0	1559	65	238	8
16-Aug	1	0	1	0	1560	65	239	8
17-Aug	1	0	0	0	1561	65	239	8
18-Aug	4	0	0	0	1565	65	239	8
19-Aug	2	0	1	0	1567	65	240	8
20-Aug	4	0	0	0	1571	65	240	8
21-Aug	2	0	0	0	1573	65	240	8
22-Aug	0	0	0	0	1573	65	240	8
23-Aug	1	0	0	0	1574	65	240	8
24-Aug	0	0	0	0	1574	65	240	8
25-Aug	3	2	0	0	1577	67	240	8
26-Aug	0	0	0	0	1577	67	240	8
27-Aug	2	0	2	0	1579	67	242	8
28-Aug	2	0	0	0	1581	67	242	8
29-Aug	3	0	0	0	1584	67	242	8
30-Aug	1	0	0	0	1585	67	242	8
31-Aug	1	0	1	0	1586	67	243	8
Aug Total	61	3	16	0	1586	67	243	8

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.20. Roza Dam adult spring chinook counts for September 1987.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Sep	0	0	0	0	1586	67	243	8
02-Sep	5	0	0	0	1591	67	243	8
03-Sep	7	0	1	0	1598	67	244	8
04-Sep	0	0	0	0	1598	67	244	8
OS-Sep	1	0	0	0	1599	67	244	8
06-Sep	0	0	0	0	1599	67	244	8
07-Sep	1	0	0	0	1600	67	244	8
08-Sep	1	0	0	0	1601	67	244	8
09-Sep	3	0	1	0	1604	67	245	8
10-Sep	3	0	0	0	1607	67	245	8
11-Sep	0	0	0	0	1607	67	245	8
12-Sep	1	0	0	0	1608	67	245	8
13-Sep	1	0	0	0	1609	67	245	8
Ib-Sep	0	0	0	1	1609	67	245	9
15-Sep	0	0	0	0	1609	67	245	9
16-Sep	0	0	0	0	1609	67	245	9
17-Sep	0	0	0	0	1609	67	245	9
18-Sep	0	0	0	0	1609	67	245	9
19-Sep	0	0	0	0	1609	67	245	9
20-Sep	0	0	0	0	1609	67	245	9
21-Sep	0	0	0	0	1609	67	245	9
22-Sep	0	0	0	0	1609	67	245	9
23-Sep	0	0	0	0	1609	67	245	9
24-Sep	0	0	0	0	1609	67	245	9
25-Sep	1	0	0	0	1610	67	245	9
26-Sep	0	0	0	0	1610	67	245	9
27-Sep	0	0	0	0	1610	67	245	9
28-Sep	0	0	0	0	1610	67	245	9
29-Sep	0	0	0	0	1610	67	245	9
30-Sep	0	0	D	D	1610	67	245	9
Sept Total	24	0	2	1	1610	67	245	9

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table B.21. Roza Dam adult spring chinook counts for May 1988.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-May	1	0	2	0	1	0	2	0
02-May	0	0	0	0	1	0	2	0
03-May	0	0	0	0	1	0	2	0
04-May	2	0	6	0	3	D	8	U
OS-May	0	0	0	0	3	0	8	0
06-May	0	0	0	0	3	0	8	0
07-May	15	0	6	0	18	0	14	0
08-May	26	0	3	0	44	0	17	0
09-May	20	0	2	0	64	0	19	0
IO-May	10	0	3	0	74	0	22	0
11-May	37	0	6	0	111	0	28	0
12-May	19	0	5	0	130	0	33	0
13-May	33	0	5	0	163	0	38	0
14-May	45	- 0	19	0	208	0	57	0
15-May	66	0	16	D	274	0	73	0
16-May	32	0	3	0	306	D	76	0
17-May	3	0	2	0	309	D	78	0
18-May	20	0	6	0	329	0	84	0
19-May	9	0	5	0	338	0	89	0
20-May	24	0	3	0	362	0	92	0
21-May	86	0	7	0	448	0	99	0
22-May	79	0	10	0	527	0	109	0
23-Mny	44	0	7	0	571	0	116	0
24-May	1	0	10	0	572	0	126	0
25-May	69	2	11	0	641	2	137	0
26-May	83	3	5	0	724	5	142	0
27-May	39	0	1	0	763	5	143	0
28-May	35	0	0	0	798	5	143	0
29-May	7	1	1	0	805	6	144	0
30-May	8	1	3	0	813	7	147	0
31-May	14	3	5	0	827	10	152	0
May Total	827	10	152	0	827	10	152	0

UCKA: Uild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.22. Roza Dam adult spring chinook counts for June 1988.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Jun	10	0	3	0	837	10	155	0
02-Jun	5	2	0	0	842	12	155	0
03-Jun	7	0	0	0	849	12	155	0
04-Jun	16	1	3	0	865	13	158	0
05-Jun	7	1	1	0	872	14	159	0
06-Jun	10	1	3	0	882	15	162	0
07-Jun	29	5	3	0	911	20	165	0
08-Jun	5	0	1	0	916	20	166	0
09-Jun	3	0	1	0	919	20	167	0
10-Jun	7	3	1	0	926	23	168	0
11-Jun	15	5	4	0	941	28	172	0
12-Jun	44	7	4	0	985	35	176	0
13-Jun	21	3	3	0	1006	38	179	0
14-Jun	28	5	1	0	1034	43	180	0
15-Jun	19	4	3	0	1053	47	183	0
16-Jun	19	5	4	1	1072	52	187	1
17-Jun	35	5	4	1	1107	57	191	2
18-Jun	5	0	1	0	1112	57	192	2
19-Jun	5	2	0	0	1117	59	192	2
20-Jun	29	4	0	0	1146	63	192	2
21-Jun	23	5	0	0	1169	68	192	2
22-Jun	8	0	0	0	1177	68	192	2
23-Jun	3	0	0	0	1180	68	192	2
24-Jun	5	2	2	0	1185	70	194	2
25-Jun	36	3	2	1	1221	73	196	3
26-Jun	8	0	0	0	1229	73	196	3
27-Jun	10	1	1	0	1239	74	197	3
28-Jun	5	2	0	0	1244	76	197	3
29-Jun	0	0	0	0	1244	76	197	3
30-Jun	17	2	2	1	1261	78	199	4
June Total	434	68	47	4	1261	78	199	4

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 6.23. Roza Dam adult spring chinook counts for July 1988.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Jut	14	3	2	0	1275	81	201	4
02-Jul	8	1	2	0	1283	82	203	4
03-Jul	2	0	0	0	1285	82	203	4
04-Jul	0	0	0	0	1285	82	203	4
OS-Jul	2	0	0	0	1287	82	203	4
06-Jul	0	0	0	0	1287	82	203	4
07-Jul	2	0	1	0	1289	82	204	4
08-Jul	3	0	0	0	1292	82	204	4
09-Jul	3	2	0	0	1295	84	204	4
10-Jul	3	2	1	0	1298	86	205	4
11-Jul	9	6	1	0	1307	92	206	4
12-Jul	7	1	4	0	1314	93	210	4
13-Jul	2	0	1	0	1316	93	211	4
14-Jul	2	0	0	0	1318	93	211	4
15-Jul	0	0	0	0	1318	93	211	4
16-Jul	0	0	0	0	1318	93	211	4
17-Jul	0	0	0	0	1318	93	211	4
18-Jul	0	0	0	0	1318	93	211	4
19-Jul	0	0	0	0	1318	93	211	4
20-Jul	0	0	0	0	1318	93	211	4
21-Jul	0	0	0	0	1318	93	211	4
22-Jul	0	0	0	0	1318	93	211	4
23-Jul	0	D	0	0	1318	93	211	4
24-Jul	0	0	0	0	1318	93	211	4
25-Jul	0	0	0	0	1318	93	211	4
26-Jul	0	0	0	0	1318	93	211	4
27-Jul	0	0	0	0	1318	93	211	4
28-Jul	0	0	0	0	1318	93	211	4
29-Jul	1	0	0	0	1319	93	211	4
30-Jul	0	0	0	0	1319	93	211	4
31-Jul	D	0	0	0	1319	93	211	4
July Total	58	15	12	0	1319	93	211	4

UCKA : Uild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table B.24. Roza Dam adult spring chinook counts for August 1988.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	UCKA	UCKJ	HCKA	HCKJ
01-Aug	5	1	3	0	1324	94	214	4
02-Aug	0	0	0	0	1324	94	214	4
03-Aug	1	0	0	0	1325	94	214	4
04-Aug	1	0	0	0	1326	94	214	4
OS-Aug	3	0	0	0	1329	94	214	4
06-Aug	0	0	0	0	1329	94	214	4
07-Aug	0	0	0	0	1329	94	214	4
08-Aug	0	0	0	0	1329	94	214	4
09-Aug	1	0	2	0	1330	94	216	4
IO-Aug	3	2	1	0	1333	96	217	4
11-Aug	0	0	0	0	1333	96	217	4
12-Aug	0	0	0	D	1333	96	217	4
13-Aug	2	0	0	0	1335	96	217	4
14-Aug	1	0	0	0	1336	96	217	4
15-Aug	1	0	0	0	1337	96	217	4
16-Aug	2	0	0	0	1339	96	217	4
17-Aug	4	0	0	0	1343	96	217	4
18-Aug	1	2	0	0	1344	98	217	4
19-Aug	2	0	0	0	1346	98	217	4
20-Aug	2	0	1	0	1348	98	218	4
21-Aug	D	0	0	0	1348	98	218	4
22-Aug	0	0	0	0	1348	98	218	4
23-Aug	0	0	0	0	1348	98	218	4
24-Aug	0	0	D	D	1348	98	218	4
25-Aug	2	0	2	0	1350	98	220	4
26-Aug	1	1	0	0	1351	w	220	4
27-Aug	1	0	0	0	1352	W	220	4
28-Aug	0	0	0	0	1352	w	220	4
29-Aug	1	0	1	0	1353	W	221	4
30-Aug	1	0	0	0	1354	w	221	4
31-Aug	2	1	1	0	1356	100	222	4
Aug Total	37	7	11	0	1356	100	222	4

LJCKA: Uild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.25. Roza Dam adult spring chinook counts for September 1988.

	DAILY				CUMULATIVE			
DATE	UCKA	WCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Sep	1	0	0	0	1357	100	222	4
02-Sep	2	0	0	0	1359	100	222	4
03-Sep	2	0	0	0	1361	100	222	4
OS-Sep	0	0	0	0	1361	100	222	4
OS-Sep	0	0	0	0	1361	100	222	4
06-Sep	0	0	0	0	1361	100	222	4
07-Sep	0	1	1	0	1361	101	223	4
08-Sep	2	0	0	0	1363	101	223	4
09-Sep	1	0	0	0	1364	101	223	4
IO-Sep	0	1	D	0	1364	102	223	4
11-Sep	2	0	0	0	1366	102	223	4
12-Sep	0	0	0	0	1366	102	223	4
13-Sep	1	0	0	0	1367	102	223	4
14-Sep	1	0	0	0	1368	102	223	4
IS-Sep	1	0	0	0	1369	102	223	4
16-Sep	0	0	0	0	1369	102	223	4
17-Sep	0	0	0	0	1369	102	223	4
18-Sep	1	0	0	0	1370	102	223	4
19-Sep	1	0	0	0	1371	102	223	4
20-Sep	0	0	0	0	1371	102	223	4
21-Sep	0	0	0	0	1371	102	223	4
22-Sep	0	0	0	0	1371	102	223	4
23-Sep	1	0	0	0	1372	102	223	4
24-Sep	0	0	0	0	1372	102	223	4
25-Sep	1	0	0	0	1373	102	223	4
26-Sep	0	0	0	0	1373	102	223	4
27-Sep	0	0	0	0	1373	102	223	4
28-Sep	0	0	0	0	1373	102	223	4
29-Sep	0	0	0	0	1373	102	223	4
30-Sep	0	0	D	0	1373	102	223	4
Sept Total	17	2	1	0	1373	102	223	4

UCKA: Wild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table B.26. Roza Dam adult spring chinook counts for May 1989.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-May	0	0	0	0	0	0	0	0
02-May	0	0	0	0	0	0	0	0
03-May	6	0	0	0	6	0	0	0
04-May	3	0	1	0	9	0	1	0
OS-May	4	0	0	0	13	0	1	0
06-May	9	0	1	0	22	0	2	0
07-May	16	0	3	0	38	0	5	0
08-May	0	0	0	0	38	0	5	0
09-May	11	0	1	0	49	0	6	0
IO-May	0	0	0	0	49	0	6	0
11-May	2	D	0	0	51	0	6	0
12-May	1	1	0	0	52	1	6	D
13-May	1	0	1	0	53	1	7	0
14-May	23	0	4	0	76	1	11	0
15-May	54	0	5	0	130	1	16	0
16-May	141	0	13	0	271	1	29	0
IT-Hay	59	0	5	0	330	1	34	0
18-May	26	0	3	0	356	1	37	0
19-May	34	0	11	0	390	1	48	0
20-May	45	0	3	0	435	1	51	0
21-May	91	1	3	0	526	2	54	0
22-May	110	0	5	0	636	2	59	0
23-May	142	0	8	0	778	2	67	0
24-May	113	3	9	0	891	5	76	0
25-May	111	0	10	D	1002	5	86	0
26-May	107	1	2	0	1109	6	88	0
27-May	53	1	2	0	1162	7	90	0
28-May	68	0	5	0	1230	7	95	0
29-May	74	0	8	0	1304	7	103	0
30-May	127	1	5	0	1431	8	108	0
31-May	184	3	7	0	1615	11	115	0
May Total	1615	11	115	0	1615	11	115	0

WCKA: Uild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.27. Roza Dam adult spring chinook counts for June 1989.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jun	130	9	5	0	1745	20	120	0
02-Jun	43	1	7	0	1788	21	127	0
03-Jun	151	11	8	0	1939	32	135	0
04-Jun	58	1	5	0	1997	33	140	0
05-Jun	122	3	4	0	2119	36	144	0
06-Jun	57	0	6	0	2176	36	150	0
07-Jun	75	2	4	0	2251	38	154	0
08-Jun	49	0	6	0	2300	38	160	0
09-Jun	47	1	5	0	2347	39	165	0
IO-Jun	41	4	2	0	2388	43	167	0
II-Jun	90	7	8	0	2478	50	175	D
12-Jun	93	1	5	0	2571	51	180	0
13-Jun	77	4	3	0	2648	55	183	0
14-Jun	28	0	0	0	2676	55	183	0
15-Jun	12	1	2	0	2688	56	185	0
16-Jun	5	0	1	0	2693	56	186	0
17-Jun	21	3	9	0	2714	59	195	0
IS-Jun	3	0	3	0	2717	59	198	0
19-Jun	12	0	0	0	2729	59	198	0
20-Jun	26	1	1	0	2755	60	199	0
21-Jun	20	0	6	0	2775	60	205	0
22-Jun	26	2	5	0	2801	62	210	0
23-Jun	11	0	0	0	2812	62	210	0
24-Jun	21	4	1	0	2833	66	211	0
25-Jun	14	2	2	0	2847	68	213	0
26-Jun	36	12	0	0	2883	80	213	0
27-Jun	10	1	0	0	2893	81	213	0
28-Jun	5	0	1	0	2898	81	214	0
29-Jun	23	2	1	0	2921	83	215	0
30-Jun	4	0	1	0	2925	83	216	0
June Total	1310	72	101	0	2925	83	216	0

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
,CKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table B.28. Roza Dam adult spring chinook counts for July 1989.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Jut	8	0	0	0	2933	83	216	0
02-Jul	12	3	0	0	2945	86	216	0
03-Jul	16	3	2	0	2961	89	218	0
04-Jul	6	0	0	0	2967	89	218	0
OS-Jul	3	1	0	0	2970	90	218	0
06-Jul	4	2	0	0	2974	92	218	0
07-Jul	3	2	1	0	2977	94	219	0
08-Jul	1	0	0	0	2978	94	219	0
09-Jul	6	1	0	0	2984	95	219	0
IO-Jut	3	0	0	0	2987	95	219	0
11-Jut	7	2	0	0	2994	97	219	0
12-Jul	16	4	0	0	3010	101	219	0
13-Jul	13	5	0	0	3023	106	219	0
14-Jul	4	0	0	0	3027	106	219	0
15-Jul	5	0	0	0	3032	106	219	0
16-Jul	0	0	0	0	3032	106	219	0
17-Jul	7	3	0	0	3039	109	219	0
18-Jul	9	3	0	0	3048	112	219	0
19-Jul	13	3	0	0	3061	115	219	0
20-Jul	16	3	1	0	3077	118	220	0
21-Jul	7	3	0	0	3084	121	220	0
22-Jul	5	3	0	0	3089	124	220	0
23-Jul	2	1	1	0	3091	125	221	0
24-Jul	11	2	0	0	3102	127	221	0
25-Jul	8	2	0	0	3110	129	221	0
26-Jul	5	0	0	0	3115	129	221	0
27-Jul	12	6	0	0	3127	135	221	0
28-Jul	2	0	0	0	3129	135	221	0
29-Jul	0	0	0	0	3129	135	221	0
30-Jul	4	3	0	0	3133	138	221	0
31-Jul	13	2	2	0	3146	140	223	0
July Total	221	57	7	0	3146	140	223	0

UCKA: Wild chinook adult
UCKJ: Uild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.29. Roza Dam adult spring chinook counts for August 1989.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
01-Aug	7	4	0	0	3153	144	223	0
02-Aug	20	8	0	0	3173	152	223	0
03-Aug	4	0	0	0	3177	152	223	0
04-Aug	2	0	1	D	3179	152	224	0
OS-Aug	2	0	0	0	3181	152	224	0
06-Aug	4	3	0	0	3185	155	224	0
07-Aug	9	4	0	0	3194	159	224	0
08-Aug	14	4	0	0	3208	163	224	0
09-Aug	4	0	0	0	3212	163	224	0
IO-Aug	1	0	0	0	3213	163	224	0
II-Aug	0	0	0	0	3213	163	224	0
12-Aug	2	0	0	0	3215	163	224	0
13-Aug	3	2	0	0	3218	165	224	0
14-Aug	4	5	0	0	3222	170	224	0
15-Aug	4	4	0	0	3226	174	224	0
16-Aug	0	0	0	0	3226	174	224	0
17-Aug	0	0	0	0	3226	174	224	0
18-Aug	0	0	0	0	3226	174	224	0
19-Aug	7	1	0	0	3233	175	224	0
20-Aug	4	2	0	0	3237	177	224	0
21-Aug	7	5	0	0	3244	182	224	0
22-Aug	4	4	0	0	3248	186	224	0
23-Aug	4	2	3	0	3252	188	227	0
24-Aug	1	0	0	0	3253	188	227	0
25 -Aug	4	0	2	0	3257	188	229	0
26-Aug	0	0	0	0	3257	188	229	0
27-Aug	3	3	0	0	3260	191	229	0
28-Aug	6	0	3	0	3266	191	232	0
29-Aug	D	D	0	0	3266	191	232	0
30-Aug	2	3	0	0	3268	194	232	0
31-Aug	2	0	0	0	3270	194	232	0
Aug Total	124	54	9	0	3270	194	232	0

UCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.30. Roza Dam adult spring chinook counts for September 1989.

	DAILY				CUMULATIVE			
DATE	WCKA	UCKJ	HCKA	HCKJ	WCKA	UCKJ	HCKA	HCKJ
OI-Sep	D	0	0	0	3270	194	232	0
02-Sep	0	0	0	0	3270	194	232	0
03-Sep	3	4	0	0	3273	198	232	0
04-Sep	0	0	0	0	3273	198	232	0
OS-Sep	4	5	0	0	3277	203	232	0
06-Sep	5	1	0	0	3282	204	232	0
07-Sep	0	0	0	0	3282	204	232	0
08-Sep	1	0	1	0	3283	204	233	0
09-Sep	0	0	0	0	3283	204	233	0
10-Sep	5	2	0	0	3288	206	233	0
II-Sep	3	1	1	0	3291	207	234	0
12-Sep	3	1	1	0	3294	208	235	0
13-Sep	0	0	0	0	3294	208	235	0
14-Sep	0	0	0	0	3294	208	235	0
IS-Sep	0	0	0	0	3294	208	235	0
16-Sep	0	0	0	0	3294	208	235	0
17-Sep	6	1	0	0	3300	209	235	0
18-Sep	4	0	0	0	3304	209	235	0
19-Sep	0	1	0	0	3304	210	235	0
20-Sep	7	0	1	0	3311	210	236	0
21-Sep	0	0	0	0	3311	210	236	0
22-Sep	0	0	0	0	3311	210	236	0
23-Sep	0	0	0	0	3311	210	236	0
24-Sep	5	1	0	0	3316	211	236	0
25-Sep	5	0	0	0	3321	211	236	0
26-Sep	0	0	0	0	3321	211	236	0
27-Sep	4	0	0	0	3325	211	236	0
28-Sep	0	0	0	0	3325	211	236	0
29-Sep	0	0	0	0	3325	211	236	0
30-Sep	discontinued trapping				3325	211	236	0
Sept Total	55	17	4	0	3325	211	236	0

UCKA: Wild chinook adult
UCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table B.31. Roza Dam adult spring chinook counts for May 1990.

	DAILY				CUMULATIVE			
DATE	UCKA	UCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01-May	0	0	0	0	0	0	0	0
02-May	0	0	0	0	0	0	0	0
03-May	0	0	0	0	0	0	0	0
04-May	1	0	0	0	1	0	0	0
OS-May	2	0	0	0	3	0	0	0
06-May	1	0	0	0	4	0	0	0
07-May	0	0	1	0	4	0	1	0
08-May	0	0	0	0	4	0	1	0
09-May	2	0	0	0	6	0	1	0
IO-May	2	0	0	0	8	0	1	0
II-May	4	0	0	0	12	0	1	0
12-May	2	0	0	0	14	0	1	0
13-May	4	0	0	0	18	0	1	0
14-May	7	0	1	0	25	0	2	0
15-May	5	0	0	0	30	0	2	0
16-May	12	0	2	0	42	0	4	0
17-May	5	0	1	0	47	0	5	0
IS-May	56	1	3	0	103	1	8	0
19-May	99	2	5	0	202	3	13	0
20-May	50	0	8	0	252	3	21	0
21-Nay	56	0	2	0	308	3	23	0
22-May	49	0	4	0	357	3	27	0
23-May	28	1	1	0	385	4	28	0
24-May	38	0	0	0	423	4	28	0
25-May	67	1	1	0	490	5	29	0
26-May	90	2	0	0	580	7	29	0
27-May	35	0	4	0	615	7	33	0
28-May	29	0	1	0	644	7	34	0
29-May	70	0	6	0	714	7	40	0
30-May	25	0	0	0	739	7	40	0
31-May	53	5	2	0	792	12	42	0
May Total	792	12	42	0	792	12	42	0

UCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.32. Roza Dam adult spring chinook counts for June 1990.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01-Jun	26	1	0	0	818	13	42	0
02-Jun	14	7	1	0	832	20	43	0
03-Jun	45	1	0	0	877	21	43	0
04-Jun	27	0	0	0	904	21	43	0
OS-Jun	4	0	0	0	908	21	43	0
06-Jun	25	2	0	0	933	23	43	0
07-Jun	9	2	0	0	942	25	43	0
08-Jun	34	5	2	0	976	30	45	0
09-Jun	21	1	0	0	997	31	45	0
10-Jun	15	0	1	0	1012	31	46	0
II-Jun	3	0	1	0	1015	31	47	0
12-Jun	5	0	0	0	1020	31	47	0
13-Jun	4	0	3	0	1024	31	50	0
14-Jun	17	0	0	0	1041	31	50	0
IS-Jun	58	5	1	0	1099	36	51	0
16-Jun	0	0	0	0	1099	36	51	0
17-Jun	38	0	2	0	1137	36	53	0
18-Jun	51	0	2	0	1188	36	55	0
19-Jun	51	0	0	0	1239	36	55	0
20-Jun	29	1	3	0	1268	37	58	0
21-Jun	12	0	0	0	1280	37	58	0
22-Jun	24	3	1	0	1304	40	59	0
23-Jun	14	0	1	0	1318	40	60	0
24-Jun	28	0	0	0	1346	40	60	0
25-Jun	27	0	0	0	1373	40	60	0
26-Jun	21	0	0	0	1394	40	60	0
27-Jun	36	0	3	0	1430	40	63	0
28-Jun	16	0	2	0	1446	40	65	0
29-Jun	30	0	1	0	1476	40	66	0
30-Jun	144	0	2	0	1620	40	68	0
June Total	856	856	26	26	1620	40	68	0

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.33. Roza Dam adult spring chinook counts for July 1990.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01-Jut	22	0	1	0	1642	40	69	0
02-Jul	11	0	1	0	1653	40	70	0
03-Jul	9	0	1	0	1662	40	71	0
04-Jul	10	0	0	0	1672	40	71	0
05-Jul	28	0	0	0	1700	40	71	0
06-Jul	24	0	2	0	1724	40	73	0
07-Jul	3	0	0	0	1727	40	73	0
08-Jul	15	0	0	0	1742	40	73	0
09-Jul	16	0	1	0	1758	40	74	0
IO-Jut	21	0	0	0	1779	40	74	0
II-Jut	17	0	0	0	1796	40	74	0
12-Jul	25	0	0	0	1821	40	74	0
13-Jul	9	0	0	0	1830	40	74	0
14-Jul	5	0	0	0	1835	40	74	0
15-Jul	4	0	0	0	1839	40	74	0
16-Jul	2	0	0	0	1841	40	74	0
17-Jul	1	0	0	0	1842	40	74	0
18-Jul	3	0	0	0	1845	40	74	0
19-Jul	0	0	0	0	1845	40	74	0
20-Jul	1	0	0	0	1846	40	74	0
21-Jul	1	0	0	0	1847	40	74	0
22-Jul	1	0	0	0	1848	40	74	0
23-Jul	1	0	0	0	1849	40	74	0
24-Jul	2	0	0	0	1851	40	74	0
25-Jul	4	0	0	0	1855	40	74	0
26-Jul	1	0	0	0	1856	40	74	0
27-Jul	0	0	0	0	1856	40	74	0
28-Jul	0	0	0	0	1856	40	74	0
29-Jul	1	0	0	0	1857	40	74	0
30-Jul	1	0	0	0	1858	40	74	0
31-Jul	0	0	0	0	1858	40	74	0
July Total	238	0	6	0	1858	40	74	0

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.34. Roza Dam adult spring chinook counts for August 1990.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01-Aug	1	0	1	0	1859	40	75	0
02-Aug	2	0	0	0	1861	40	75	0
03-Aug	1	0	0	0	1862	40	75	0
04-Aug	0	0	0	0	1862	40	75	0
05-Aug	1	0	0	0	1863	40	75	0
06-Aug	0	0	0	0	1863	40	75	0
07-Aug	0	0	0	0	1863	40	75	0
OS-Aug	2	0	0	0	1865	40	75	0
09-Aug	0	0	0	0	1865	40	75	0
IO-Aug	1	0	0	0	1866	40	75	0
II-Aug	0	0	0	0	1866	40	75	0
12-Aug	0	0	0	0	1866	40	75	0
13-Aug	0	0	0	0	1866	40	75	0
14-Aug	1	0	0	0	1867	40	75	0
15-Aug	0	0	0	0	1867	40	75	0
16-Aug	1	0	0	0	1868	40	75	0
17-Aug	0	0	0	0	1868	40	75	0
18-Aug	0	0	0	0	1868	40	75	0
19-Aug	0	0	0	0	1868	40	75	0
20-Aug	2	0	0	0	1870	40	75	0
21-Aug	17	0	0	0	1887	40	75	0
22-Aug	7	0	1	0	1894	40	76	0
23-Aug	1	0	0	0	1895	40	76	0
24-Aug	0	0	0	0	1895	40	76	0
25-Aug	0	0	0	0	1895	40	76	0
26-Aug	2	0	0	0	1897	40	76	0
27-Aug	1	0	0	0	1898	40	76	0
28-Aug	1	0	0	0	1899	40	76	0
29-Aug	2	0	0	0	1901	40	76	0
30-Aug	0	0	0	0	1901	40	76	0
31-Aug	1	0	0	0	1902	40	76	0
August Total	44	0	2	0	1902	40	76	0

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

Appendix Table 8.35. Roza Dam adult spring chinook counts for September 1990.

	DAILY				CUMULATIVE			
DATE	WCKA	WCKJ	HCKA	HCKJ	WCKA	WCKJ	HCKA	HCKJ
01-Sep	0	0	0	0	1902	40	76	0
02-Sep	0	0	0	0	1902	40	76	0
03-Sep	0	0	0	0	1902	40	76	0
04-Sep	2	0	0	0	1904	40	76	0
05-Sep	0	0	0	0	1904	40	76	0
06-Sep	0	0	0	0	1904	40	76	0
07-Sep	0	0	0	0	1904	40	76	0
08-Sep	2	0	0	0	1906	40	76	0
09-Sep	2	0	0	0	1908	40	76	0
IO-Sep	3	0	0	0	1911	40	76	0
II-Sep	1	0	0	0	1912	40	76	0
12-Sep	0	0	0	0	1912	40	76	0
13-Sep	3	0	0	0	1915	40	76	0
14-Sep	1	0	0	0	1916	40	76	0
15-Sep	1	0	0	0	1917	40	76	0
16-Sep	0	0	0	0	1917	40	76	0
17-Sep	0	0	0	0	1917	40	76	0
18-Sep	1	0	0	0	1918	40	76	0
19-Sep	1	0	0	0	1919	40	76	0
20-Sep	3	0	0	0	1922	40	76	0
21-Sep	0	0	0	0	1922	40	76	0
22-Sep	3	0	0	0	1925	40	76	0
23-Sep	0	0	0	0	1925	40	76	0
24-Sep	0	0	0	0	1925	40	76	0
25-Sep	3	0	0	0	1928	40	76	0
26-Sep	1	0	0	0	1929	40	76	0
27-Sep	1	0	0	0	1930	40	76	0
28-Sep	1	0	0	0	1931	40	76	0
29-Sep	0	0	0	0	1931	40	76	0
30-Sep	0	0	0	0	1931	40	76	0
September Total	29	29	0	0	1931	40	76	0

WCKA: Wild chinook adult
WCKJ: Wild chinook jack
HCKA: Hatchery chinook adult
HCKJ: Hatchery chinook jack

APPENDIX C
EGG-TO-FRY SURVIVAL ESTIMATES

Appendix Table C.1. Captures of spring chinook fry in Yakima River emergence traps in 1985.

Calendar Date	Easton Ridge 1		Easton Ridge 2		Easton Ridge 3		West Nelson		Elk Meadow		Sun Country	
	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cum.
03/28/85	0	0	0	0	0	0	0	0	0	0	0	0
04/01/85	0	0	0	0	0	0	0	0	0	0	1077	1077
04/02/85	1	1	0	0	0	0	0	0	0	0	126	1203
04/05/85	0	1	0	0	0	0	0	0	0	0	114	1317
04/08/85	0	1	0	0	0	0	0	0	0	0	4	1321
04/09/85	0	1	0	0	0	0	0	0	0	0	4	1325
04/10/85	0	1	0	4	3	3	0	0	0	0	2	1327
04/12/85	0		4	36	19	22	0	0	0	0	20	1347
04/18/85	24	2:	32			24	0	0	0	0	0	1347
04/19/85	0	25	0	36	24:	266	0	0	0	0	0	1347
04/20/85	0	25	42	78	230		0	0	0	0	0	1347
04/22/85	33	58	0	78	13	538	0	0	0	0	0	1347
04/23/85	22	80	0	78	29	552	41	41	0	0	0	1347
04/24/85	9	89	8	86	14		12	53	0	0	0	1347
04/25/85	22	111	0	86	3	555	13	66	0	0	0	1347
04/26/85	0	111	0	86	21		3	69	0	0	0	1347
04/27/85	0	111	0	86	20	596	5	74	0	0	0	1347
04/29/85	125	236	38	124	16	612	75		0	0	0	1347
05/01/85	169	405	17	141	0	612	10	189	644	644	0	1347
05/02/85	23	428	3	144	23	635	86	245	211	855	0	1347
05/03/85	16	444	6	150	IO	645	400	645	167	1022	0	1347
05/04/85	0	444	0	150	0	645	85	730	75	1097	0	1347
05/06/85	741	1185	243	393	515	1160	14	744	668	1765	0	1347
05/07/85	302	1487	388	781	43	1203	15	759	603	2368	0	1347
05/09/85	31	1518	259	1040	22	1225	51	810	172	2540	0	1347
05/10/85	128	1646	112	1152	9	1234	5		61	2601	0	1347
05/13/85	355	2001	450	1602	11	1245	9	828	124	2725	0	1347
05/14/85	30	2031	129	1731	17	1262	0		11	2736	0	1347
05/15/85	28	2059	87		0	1262	18	844	14	2750	0	1347
05/16/85	77	2136	40	1858	5	1267	400	1242	7	2757	0	1347
05/17/85	239	2375	31	1889	10	1277	903	2145	69	2826	0	1347
05/20/85	94	2469	21		7	1286	289	2434	26	2852	0	1347
05/21/85	14	2483	21	1930	2	1287	123	2557	10	2862	0	1347
05/22/85	18	2501	7		1		8	2565	0	2862	0	1347
05/24/85	28	2529	4	1942	1	1288	11	2576	1	2863	0	1347
05/28/85	11	2540	0		0	1288	3	2579		2863	0	1347
05/31/85	10	2550	0	1942	0	1288	47	2626	0	2863	0	1347
06/03/85	0	2550	0	1942		1288	0		0	2863	0	1347
06/06/85	0	2550	0	1942	0	1288	0	2626	0	2863	0	1347

Appendix Table C.2. Captures of spring chinook fry in Yakima River emergence traps in March 15%.

Calendar date	Salmon La Sac		Sun Country 1		Sun Country 3		Elk Meadows 1		Elk Meadows 2		LDS		Run Acres		Side Channel	
	Total	Cum.	Total	Cum.	Total	CM.	Total	Cum.	Total	Cum.	Total	Cun.	Total	Cum.	Total	Cum.
03/17/86	--	\a	—	--	--	—	--	--	—	—	—	--	—	--	—	—
03/18/86		—	--		—	--			--			--			--	--
03/19/86	//	—	--	//	—	--	//	//	--	//	//	--	//	//	--	--
03/20/86		—	--	--	—	--	—	--	--	--	--	--	--	--	--	--
03/21/86	θ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/22/86	--		--	0	—	0		0		0		0	--	0		0
03/23/86	--	;	--	0	—	0	//	0	//	0	//	0	--	0	//	0
03/24/86	—	0	;	0	—	0	- :	0	--	0	--	0	--	0	--	0
03/25/86	0	0	//	0	691	691	0	0	--	0	--	0	—	0	--	0
03/26/86	--	0	--	0	65	756	--	0	--	0	--	0	—	0	--	0
03/27/86	--	0	--	0	138	894	--	0	--	0	--	0	--	0	--	0
03/28/86	0	0	0	0	144	1038	0	0	0	0	0	0	0	0	0	0
03/29/86	0	0	0	0	45	1083	0	0	0	0	0	0	0	0	0	0
03/30/86	--	0	--	0	—	1083	--	0	—	0	--	0	—	0	--	0
03/31/86	0	0	0	0	244	1327	0	0	0	0	0	0	0	0	0	0

\a Trap wasn't checked.

Appendix Table C.3. Captures of spring chinook fry in Yakima River emergence traps in April 1986.

Calerdar date	Salmon La sac		Sun Country 1		Sun Country 3		Elk Meadows 1		Elk Meadows 2		LDS		Run Acres		Side Channel	
	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cum.
04/01/86	0	0	0	0	0	1327	0	0	0	0	0	0	0	0	0	0
04/02/86	0	0	0	0	43	1370	0	0	0	0	0	0	0	0	0	0
04/03/86	0	0	0	0	0	1370	0	0	0	0	0	0	0	0	0	0
04/04/86	0	0	0	0	0	1370	0	0	0	0	0	0	0	0	46	46
04/05/86	0	0	0	0	37	1407	0	0	0	0	0	0	0	0	11	57
04/06/86	0	0	0	0	8	1415	0	0	24	24	0	0	0	0	20	77
04/07/86	0	0	0	0	22	1437	0	0	115	139	0	0	0	0	45	122
04/08/86	0	0	0	0	34	1471	61	61	158	297	0	0	0	0	43	165
04/09/86	0	0	0	0	21	1492	34	95	64	361	0	0	0	0	28	193
04/10/86	0	0	0	0	0	1492	0	95	23	384	0	0	0	0	35	228
04/11/86	0	0	7	7	3	1495	3	98	66	450	0	0	0	0	27	255
04/12/86	0	0	120	127	0	1495	7	105	21	471	0	0	0	0	6	261
04/13/86	0	0	197	324	0	1495	48	153	17	488	0	0	0	0	47	308
04/14/86	0	0	393	717	0	1495	55	208	26	514	0	0	0	0	41	349
04/15/86	0	0	74	791	0	1495	71	279	0	514	0	0	0	0	38	387
04/16/86	0	0	20	811	0	1495	150	429	0	514	0	0	0	0	81	468
04/17/86	0	0	30	841	0	1495	52	481	4	518	1	1	0	0	28	496
04/18/86	0	0	151	992	0	1495	80	561	3	521	0	1	0	0	11	507
04/19/86	0	0	90	1082	0	1495	65	626	0	521	0	1	0	0	46	553
04/20/86	0	0	230	1312	0	1495	50	676	0	521	0	1	0	0	11	564
04/21/86	0	0	613	1925	0	1495	141	817	120	641	45	46	0	0	27	591
04/22/86	185	185	322	2206	— \a	1495	90	907	84	725	45	91	0	0	58	649
04/23/86	304	489	159		0	1495	292	1199	184	909	205	296	0	0	22	671
04/24/86	148	637	41	2447	—	1495	76	1275	53	962	140	436	17	17	52	723
04/25/86	119	756	20	2467	0	1495	25	1300	42	1004	166	602	322	339	14	737
04/26/86	119	875	17	2484	—	1495	32	1332	20	1024	69	671	670	1009	24	761
04/27/86	61	936	0	2484	0	1495	10	1342	21	1045	756	1427	364	1373	37	798
04/28/86	184	1120	17	2501	—	1495	28	1370	75	1120	689	2116	150	1523	64	862
[illegible]/86	189	1309	6	2507	0	1495	10	1380	67	1187	105	2221	45	1568	37	899
04/30/86	123	1432	5	2512	—	1495	4	1384	13	1200	43	2264	8	1576	65	964

\a Trap wasn't checked.

Appendix Table C.4. Captures of spring chinook fry in Yakima River emergence trips in May 1986.

Calendar date	Salmon La Sac		Sun Country 1		Sun Country 3		Elk Meadows 1		Elk Meadows 2		LDS		Run Acres		Sick Channel	
	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cun.	Total	Cum.	Total	Cum.	Total	Cum.
05/01/86	227	1659	5	2517	0	1495	4	1388	10	1210	4	2268	13	1589	16	980
05/02/86	152	1811	3	2520	—	1495	7	1395	22	1232	4	2272	4	1593	3	983
05/03/86	146	1957	11	2531	0	1495	5	1400	1	1233	11	2283	1	1594	0	983
05/04/86	93	2050	10	2541	—	1495	5	1405	5	1238	48	2331	247	1841	0	983
05/05/86	76	2126	7	2548	0	1495	2	1407	15	1253	121	2452	329	2170	0	983
05/06/86	54	2180	3	2551	—	1495	0	1407	21	1274	68	2520	141	2311	0	983
05/07/86	151	2331	15	2566	0	1495	3	1410	65	1339	30	2550	138	2449	0	983
05/08/86	147	2478	17	2583	0	1495	11	1421	4	1343	13	2563	153	2602	-	983
05/09/86	64	2542	19	2602	0	1495	12	1433	11	1354	137	2700	107	2709	0	983
05/10/86	71	2613	14	2616	—	1495	6	1439	52	1406	20	2720	90	2799	0	983
05/11/86	53	2666	8	2624	0	1495	2	1441	21	1427	5	2725	21	2820	1	984
05/12/86	57	2723	14	2638	—	1495	7	1448	36	1463	53	2778	19	2839	0	984
05/13/86	120	2843	9	2647	0	1495	4	1452	8	1471	37	2815	38	2877	0	984
05/14/86	34	2877	11	2658	—	1495	9	1461	4	1475	10	2825	31	2908	0	984
05/15/86	18	2895	1	2659	0	1495	4	1465	6	1481	1	2826	34	2942	0	984
05/16/86	15	2910	3	2662	—	1495	2	1467	2	1483	10	2836	7	2949	1	985
05/17/86	51	2961	0	2662	0	1495	4	1471	4	1487	5	2841	3	2952	0	985
05/18/86	84	3045	2	2664	—	1495	9	1480	5	1492	12	2853	74	3026	0	985
05/19/86	70	3115	5	2669	0	1495	14	1494	0	1492	14	2867	2	3028	0	985
05/20/86	39	3154	5	2674	0	1495	5	1499	0	1492	14	2881	3	3031	0	985
05/21/86	12	3166	1	2675	0	1495	0	1499	1	1493	4	2885	6	3037	0	985
05/22/86	-- \a	3166	--	2675	—	1495	--	1499	--	1493	-	2885	-	3037	-	985
05/23/86	7	3173	3	2678	0	1495	0	1499	8	1501	2	2887	2	3039	2	987
05/25/86	31	3204	0	2678	0	1495	1	1500	0	1501	0	2887	24	3063	3	990
05/27/86	48	3252	2	2680	—	1495	0	1500	0	1501	1	2888	0	3063	0	990
05/29/86	18	3270	0	2680	—	1495	20	1520	2	1503	2	2890	15	3078	0	990
05/31/86	16	3286	2	2682	—	1495	3	1523	2	1505	3	2893	-	3078	0	990

\a Trap wasn't checked.

Appendix Table C.5. Captures of spring chinook fry in Yakima River emergence traps in June 1986.

Calendar date	Salmon La sac		Sun Country 1		Sun Country 3		Elk Meadow 1		Elk Meadows 2		LDS		Run Acres		Side Channel	
	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cum.	Total	Cm.	Total	Cum.	Total	Cum.
06/02/86	12	3298	0	2682		1495	0	1523	0	1505	0	2893	0	3078	2	992
06/04/86	24	3322 3332	0	2682	= la	1495	0	1523	0	1505 1505	1	2896	0	3081	0	992
06/06/86	0			2682	—	1495			0	1505	1	2897	0	3081	0	992
06/09/86	15	3332 3347	8	2683	—	1495 1495	8	1523 1524	0	1505	1	2898	0	3081	6	992
06/11/86														3081		9 %
06/13/86	6	3353	0	2683	—	1495	0	1524	0	1505	0	2898	0	3081	1	999
06/16/86	3	3356	0	2683	—	1495	0	1524	0	1505	1	2899	0	3081	4	1003
06/18/86	0	3356	0	2683	—	1495	0	1524	0	1505	1	2900	0	3081	0	1003

APPENDIX D
EXPERIMENTAL PROTOCOL FOR ESTIMATING PASSAGE AT PROSSER JUVENILE FISH TRAP

Introduction

The Chandler smolt trap is located on Chandler canal, which, except for about a month's maintenance in early November, continuously diverts 1,200 cubic feet per second to 1,400 cfs from the Yakima River at Prosser Dam (RM 47.1; Fig. D1). The percent of total discharge diverted (PDD) into the canal varies from a low of around 10% to 20% in the early spring to over 90% in the late spring and summer. The headworks of the canal is located on the left bank side of the dam, about .75 mile above the new screens and the bypass/counting facility. (Note that the bypass/counting facility was located about 1.5 miles below the headworks before the system was completely rebuilt in 1987.)

Water enters the canal through a series of tainer gates. Water velocity through the tainer gate orifice is undoubtedly too great for entrained smolts to exit the canal through the headworks. The upstream half of the canal is narrow, concrete-lined and swift-flowing (4-5 feet per second), and the remainder is wide, riprapped and slow-flowing (~ 1 fps). By a number of techniques, it has been demonstrated that the new screens are, and the old screens were, essentially fish-tight; no smolts were observed in the old trap after the new screens were installed (Hosey et al. 1987) and only four smolts were electrofished from behind the old screens during an intensive, jet-boat survey in early May 1984 (Wasserman et al. 1984). Thus, any entrained smolt not observed in the trap (during the course of an entire season) can be assumed to have died in the canal.

The goal of the Chandler operation has been to estimate daily outmigration (N_i) from the daily raw catch (C_i) and estimated entrainment (E_i):

1. $$N_i = \frac{C_i}{E_i}$$

As E_i varies with the percent discharge diverted (PDD_i), it has been necessary to describe the relationship between E_i and PDD_i. The protocol that has been used to develop this relationship is as follows. Differentially freeze-branded groups of fish were released in the river above the dam and in the upper portion of the canal. Usually, the "experimental subjects" consisted of wild spring chinook smolts captured on site, although hatchery spring chinook, hatchery coho, wild steelhead and wild fall chinook smolts have been used on occasion. After branding, all fish were held for two to four days to allow for darkening of brands and to cull moribund fish. Only active, vigorously swimming fish were released and

a small fraction of all releases were held on site to assess delayed handling mortality. Recapture data was discarded when delayed mortality among held fish was greater than 10%, or when brands could not reliably be distinguished.

In estimating E_i, we considered the following biological facts:

1) Outmigrating smolts are stressed by being trapped, held, branded and transported. Stressed smolts are known to lose their migratory disposition temporarily (Barton et al. 1980).

2) Intracanal mortality is substantial and may be considerably larger than the losses associated with traversing short reaches of the river above Prosser Dam (see Page 183, 1985 Annual Report, Yakima River Spring Chinook Enhancement Report).

Entrainment was estimated from the recaptures (at Chandler) of river-released fish ("river fish") and canal-released fish ("canal fish") over a short "base period" in which PDD was relatively constant. The criterion of PDD constancy was that no daily PDD could differ from a moving average by more than 25% (most base periods entailed maximum PDD deviations of 10% or less). The base period was never longer than seven days, and was usually two to four days. From 1984 through 1986, river fish were released at about 0800 hours, 2.5 or 3.5 miles above Prosser Dam. Canal fish were released in the upper canal, several hundred yards below the headgates, at approximately the same time. In 1987, night releases were made as well, usually at 2200 hours the night preceding the day release (see validity section below). Point estimates of entrainment were calculated with the following expression suggested by Douglas Chapman of the Center for Quantitative Science at the University of Washington.

2. $$E_i = \frac{C_{r,i}}{R_{r,i}\left(\frac{C_{c,i}}{R_{c,i}}\right)}$$

where E_i = percent entrainment, release i;
$C_{r,i}$ = base period recaptures of canal fish, release i;
$R_{r,i}$ = number of river fish released, release i;
$C_{c,i}$ = base period recaptures of canal fish, release i; and
$R_{c,i}$ = number of canal fish released, release i.

. 3-mile release point
2-mile release point

. 1/2-mile release point

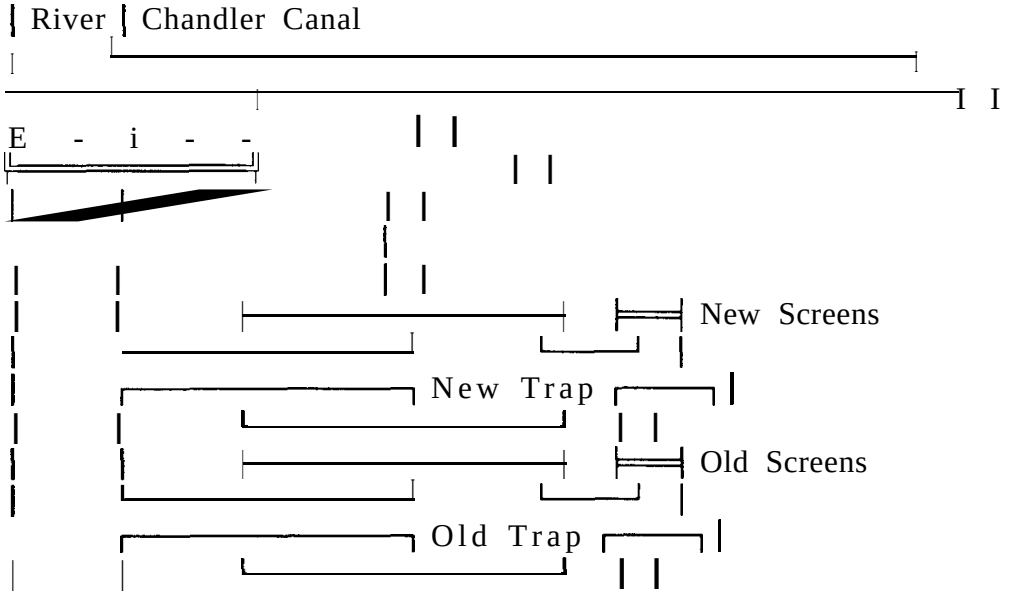

Figure D 1. General layout, old and new Chandler smolt traps.

The expression $(C_{c,i}/R_{c,i})$ is assumed to estimate the proportion of river fish that both resume migration during the base period and, if entering the canal, survive passage through it:

3. $$\frac{C_{c,i}}{R_{c,i}} = (M_{r,i})\ (S_{r,c,i})$$

where $M_{r,i}$ = base period "migration rate" for river fish, with release. Migration rate is defined as the proportion of fish resuming migration during the base period; and

$S_{r,c,i}$ = the trans-canal survival for river fish, ith release.

Thus, the product of $R_{r,i}$ and $(C_{c,i}/R_{c,i})$ is intended to estimate the number of river fish available for capture during the base period. This estimate is problematic because it is based on the recaptures of canal fish. Neither $M_{r,i}$ nor $S_{r,c,i}$ could be independently measured with the tools available at the time. (Note, however, that these parameters, among others, *can* be estimated with a protocol based on PIT-tag recoveries. This protocol will be implemented in 1991 and 1992, and will be used to refine the existing flow/entrainment relationship, and to revise the outmigration numbers and survival rates in this report.) Frequent fluctuations of PDD, and therefore of E, obscured the relationship between percent total catch of river fish and $M_{r,i}$, and $S_{r,c,i}$ could not be estimated without knowing E_i.

It should be noted that the expression intended to quantify the number of river fish available for capture contains no term to account for losses in the river. This is because three releases made in 1984 indicated open-river losses in the reach immediately above the dam were small relative to the "noise" in the system. These releases were made simultaneously and occurred at sites exactly one mile apart, 3.5 miles and 2.5 miles above the dam. It was assumed that canal survival, migration rate and trapping efficiency were the same for 2-mile and 3-mile releases; and that the ratio of total percent recapture of 3-mile fish to 2-mile fish would therefore represent the survival rate per mile. Using this procedure, survival rate per mile was estimated at 0.85, 1.5 and 1.4. Again, the explanation for these anomalous results is that the variability of entrainment attributable to river morality was smaller than the basic behavioral/hydraulic variability associated with fish entering the canal. Thus, if random variability resulted in the entrainment rate for 3-mile fish being substantially greater than for 2-mile fish, the slightly larger river losses incurred by 3-mile fish would be obscured.

Much data has been collected since 1984; there are 68 points of the type (PDD_i, E_i). We regressed E_i on PDD_i in a number of ways. The best tits have always been linear, exponential or logistic. We have chosen the logistic fit because the residual sum of squares is lower than or comparable to other fits, and because other types of regression have

predicted absurd entrainment rates (negative numbers or numbers greater than 100 percent) at not-so-extreme PDD values. Use of a logistic fit has, however, complicated matters statistically. In particular, it has made assignment of confidence intervals to entrainment and outmigration estimates non-trivial.

In rough order of importance, the existing entrainment estimator suffers from the following problems.

1) Entrainment estimates have never been independently validated.

2) It has not been possible to assign meaningful confidence intervals to the flow/entrainment regression.

3) There have been very few point estimates of entrainment for very low PDD conditions (very high river flows).

4) There is a very large amount of variability associated with the existing relationship.

5) The relationship is properly applied only to spring chinook; species-specific relationships, as well as relationships specific to rearing history (hatchery vs. wild), remain to be developed.

6) Intracanal mortality for unhandled fish has never been estimated.

7) Forebay mortality has never been directly estimated. The present estimator assumes negligible forebay mortality. If forebay mortality is *not negligible, then the existing relation-ship underestimates entrainment (and overestimates outmigration).*

Validity Assessment

A good test of estimator validity might consist of a series of simultaneous releases of branded fish, released according to the standard protocol, and groups of fish equipped with radio or sonic transmitters. If radio or sonically tagged fish released in the river above the dam could be detected shortly after they entered the canal or passed over the dam, entrainment (Ei) could be estimated directly:

4.

$$E_i = \frac{C_i}{C_i + R_i}$$

where C_i = number of fish detected in the canal, day i; and
R_i = number of fish detected in the river below the dam, day i.

If the number of fish available for capture (i.e., for entrainment) were estimated daily as the sum of the fish entering the canal and passing over the dam, then entrainment estimates might not be compromised by mortalities either in the river or the canal, and entrainment could be more tightly associated with percent diversion. Assuming that the probability of entrainment is the same for fish destined to survive or not to survive river passage, it would be acceptable to base entrainment estimates solely on survivors (fish spilled plus fish entrained). Thus, so long as entrained fish could be detected shortly after entering the canal, before significant "intra-canal" losses could occur, entrainment estimates would be unaffected by river losses. Obviously, restricting the base period to one day would reduce the variability of the diversion/entrainment relationship, as the river would simply "have less time" to fluctuate while data was being collected.

If, under this scenario, it could also be demonstrated that the tags had no affect on behavior, and that tagged fish were neither "trap happy" or "trap shy," such estimates would almost certainly be valid. (Confounds due to the use of previously trapped fish could be avoided by using fish captured elsewhere, such as the traps at Roza or Wapatox.) The lack of a significant difference between a series of simultaneous entrainment estimates generated by the standard protocol and a radio-tagged procedure might be construed as validating the existing estimator.

It has, however, not been possible to assess validity in this manner. Alternatively, we have made a number of releases that addressed theoretical problems with the estimator. Specifically, we addressed the issue of whether it is appropriate to estimate the number of river fish available for capture during a short base period by the product of the number of river fish released and the fraction of recaptured canal fish (see Equation 2). a procedure is liable to the following objections.

1) River fish must negotiate 2.5 miles of the Prosser pool before even reaching the dam and the entrance to the canal. Canal fish, on the other hand, immediately find themselves in comparatively fast-moving water only .75 mile from the trap. One might suppose river fish would take significantly longer to reach the trap than canal fish, even if fish in both groups recovered from migration-suppressing stress at the same rate.

2) River fish are liberated in an environment in which predatory mortality is thought to be relatively low. Moreover, they generally enter the canal at night, when predatory losses should be minimal. Canal fish, on the other hand, are released in the morning into a concrete and riprap channel in which squawfish are known to reside. There is thus reason to suspect that the "trans-canal" survival rate for canal fish would be lower than for river fish.

In 1987 we assessed the effect of making night releases very close (-0.5 mile) to the dam. This type of release should minimize the main objections to the old protocol, and would thus have a stronger theoretical claim to validity. We had hoped that an analysis of covariance of the (linearized logistic) flow-entrainment relationship for 1987 data and 1984-1986 data would show that the data sets were "compatible" and could be pooled. Of course, the statistical indistinguishability of the pre-1987 relationship from a relationship with a stronger theoretical claim to validity would itself constitute evidence for the validity of the whole enterprise.

A related, secondary objective of the 1987 work was to determine the impact of the new canal/screen/trap configuration on the flow-entrainment relationship. We did not expect an impact. Entrainment is a function of the hydraulic situation immediately above the dam, and of smolt behavior. The new system at Chandler has decreased canal residence time, but cannot have had any impact on forebay hydraulics or the behavior of fish before they enter the canal. Moreover, the entrainment estimator contains a term, C_{ci}/Rci, that (theoretically) corrects for variations in travel time and canal mortality. Thus, with the 1987 data, we hoped to show both that the flow-entrainment relationship has a reasonably strong theoretical base and that it has not been altered by the new bypass system.

Pooling Data and Deriving Diversion/Entrainment Relationship

We had hoped to demonstrate that flow-entrainment data from 1984-1986 and 1987 could be pooled by linearizing the logistic equation (Eq. 5), fitting both data sets to the linearized form (Eq. 6), and showing by analysis of covariance that the fits are statistically indistinguishable.

5. $$Y = \frac{1}{1 + e^{(-bx - a)}}$$

6. $$-\ln\left[\frac{(1 - Y)}{Y}\right] = a + bx$$

We also hoped to be able to use the confidence intervals around the pooled, linearized fit to assign confidence intervals to daily estimates of entrainment and outmigration.

1987 Releases

In 1987, for the first time, we incorporated replication within individual releases. Unfortunately, it was not possible to hold constant the types of release groups, the replicates per group, or the number of fish per replicate. This inconsistency precluded a

comprehensive analysis of all individual replicates [a release type by release date factorial analysis of variance (ANOVA) of individual E_i's].

Some of the 1987 releases entailed replicated canal releases and others did not. When canal releases were replicated, the unweighted mean percent recapture of canal fish was used in the entrainment estimator:

7. $$E_i = \frac{C_r}{(R_r)(M_c)}$$

where E_i, C_r and R_r are as in Eq. 1, and M_c is the mean recapture rate for all canal-fish replicates.

The small number of fish per replicate (10 to 30) led to a problem we have yet to solve definitively -- individual entrainment estimates that were either zero or greater than 100%. Obviously, such numbers cannot be transformed in the manner described in Equations 5 and 6. The approach we adopted in a provisional analysis is one commonly used when performing ANOVAs on arcsine-square root transformed data; 1/4N was substituted for 0.0, and (1 - 1/4N) for 1.0+, where N is the number of river fish available for capture -- $(R_r)(M_c)$.

The following groups were included in 1987 releases.

1) Night river groups released 0.5 mile above the dam at 2200 hours.

2) Day river groups released 2.5 miles above the dam at 0800 hours the day after the night release.

3) Night and day canal groups released into the upper end of the canal at about the same time as the river releases.

Night river groups were further subdivided into those made from the right bank ("night right" groups), from the left bank ("night left"), and from the middle of the river ("night middle"; see Table D1 for summary of 1987 releases). These latter releases were made to determine whether, within a half mile of the dam, entrainment was affected by point of release along a line perpendicular to the thalweg. Such an effect is easily conceivable; the canal opens only along a ~50-foot section of the extreme left bank side of the dam. It was felt that any difference in entrainment estimates for "simultaneous" day and night releases would be due to distance and illumination/predation if no significant difference were found for night fish released at different "horizontal" points.

In a provisional analysis of 1987 data, two types of statistical analyses were performed. The first consisted of four one-way ANOVAs of the E_i's (as percentages) from Releases l-4 in Table D1. These releases included night-right, night-left, night-middle and, for Releases 2-4, day releases made two miles above the dam as well. There were no significant differences between horizontal release points for night releases, nor were there significant differences between day releases and the three types of night release.

We next performed a randomized complete block ANOVA on the entrainment from nine releases associated with PDD values ranging from 27% to 79% (see Table D4 at end of appendix). Treatments were blocked by release date (or, more significantly, by the PDD obtaining at release) and consisted of release type (night-right, night-left, and 2-mile day). Treatments were not significant. Together, these two sets of ANOVAs suggest that the four types of river release did not affect entrainment, and that all 1987 group mean entrainment data can be pooled into a single diversion/entrainment relationship. The entrainment rates generated by the standard "day, 2-mile" protocol were not significantly different from "night, 0.5-mile" releases. This fact supports the validity of the estimator.

Because pooling 1987 data across all release types appeared justified for group means, and because small replicate size exaggerated errors in individual reps, it was decided to use group means in developing the diversion/entrainment relationship for 1987 data.

Table D2 summarizes 1984-1986 data used in the development of the diversion/entrainment relationship. This data entailed the release primarily of wild spring chinook smolts, although a much smaller number of releases used hatchery coho or wild steelhead. As entrainment rates for simultaneous spring chinook/coho and spring chinook/steelhead releases were quite similar, it was assumed these species behaved similarly with respect to entrainment, and that these species' data could be pooled.

Table D1. Summary of 1987 entraiwnt estimates at Chandler. Note that the coho and fall chinook in Releases 9A and 9C, respectively, uere held seven days prior to release, whereas the coho in Release 9B were held only two days. The coho in Releases 9A and 9B uere tracked separately to guard against confounding with pre-release holding time. Pre-release holding time for fish in all other releases was identical.

RELEASE NUMBER	SPECIES	RELEASE DATE	NUMBER OF REPS	FISH PER REP	RELEASE TYPE	BASE PERIOD (days)	MEAN PDD (%)	MEAN GROUP ENTRAINMENT (%)
1	SPG CHK	3/28/87	6	10	night right	4	53.3	70.2
1	SPG CHK	3/28/87	6	10	night middle	4	53.3	67.1
1	SPG CHK	3/28/87	6	10	night left	4	53.3	87.3
2	SPG CHK	4/6/87	5	10	night right	2	36.6	41.2
2	SPG CHK	4/6/87	5	10	night middle	2	36.6	64.1
2	SPG CHK	4/6/87	5	10	night left	2	36.6	49.2
2	SPG CHK	4/6/87	15	10	day 2-mile	2	36.6	65.2
3	SPG CHK	4/17/87	5	IO	night right	2	43.2	79.1
3	SPG CHK	4/17/87	5	10	night middle	2	43.2	66.4
3	SPG CHK	4/17/87	5	10	night left	2	43.2	56.3
3	SPG CHK	4/17/87	15	IO	day 2-mile	2	43.2	85.9
4	SPG CHK	4/26/87	5	12	night right	3	61.9	70.8
4	SPG CHK	4/26/87	6	12	night middle	3	61.9	61.2
4	SPG CHK	4/26/87	6	12	night left	3	61.9	100.3
4	SPG CHK	4/26/87	12	12	day 2-mile	3	61.9	96.6
5A	SPG CHK	5/8/87	2	25	night right	1	34.0	48.8
5A	SPG CHK	5/8/87	1	25	night left	1	34.0	32.6
5A	SPG CHK	5/8/87	2	25	day 2-mile	1	34.0	32.6

Table DI. Summary of 1987 entrainment estimates at Chandler. Note that the coho and fall chinook in Releases 9A and 9C, respectively, were held seven davs prior to release, uhereas the coho in Release 9B were held only tuo days. The coho in Releases 9A and 9B were tracked separately to guard against confounding uith pre-release holding time. Pre-release holding time for fish in all other releases was identical.

RELEASE NUMBER	SPECIES	RELEASE DATE	NUMBER OF REPS	FISH PER REP	RELEASE TYPE	BASE PERIOD (days)	MEAN PDD (%)	MEAN GROUP ENTRAINMENT (%)
5B	FALL CHK	518187	1	25	night right	1	34.0	16.0
5B	FALL CHK	5/8/87	1	25	night left	1	34.0	17.4
5B	FALL CHK	5/8/87	2	25	day 2-mile	1	34.0	26.0
6	SPG CHK	5/10/87	4	25	day 2-mile	1	22.9	00.0
7	COHO	5114187	2	25	night right	1	27.0	7.6
7	COHO	5/14/87	1	25	night left	1	27.0	3.8
7	COHO	5/14/87	4	25	day 2-mile	1	27.0	13.9
8	COHO	5/20/87	2	25	night right	2	73.3	110.5
8	COHO	5/20/87	2	25	night left	2	73.3	96.2
8	COHO	5120187	4	25	day 2-mile	2	73.3	67.0
9A	COHO	5/29/87	2	25	night right	1	77.5	101.4
9A	COHO	5/29/87	2	25	night left	1	77.5	86.5
9B	COHO	5129187	2	25	night right	1	77.5	94.5
9B	COHO	5129187	2	25	night left	1	77.5	89.1
9B	COHO	5/29/87	4	30	day 2-mile	2	79.4	78.8
9c	FALL CHK	5/29/87	2	18	night right	1	77.5	70.6
9c	FALL CHK	5129187	2	18	night left	1	77.5	76.2

Table D1. Summary of 1987 entrainment estimates at Chandler. Note that the coho and fall chinook in Releases 9A and 9C, respectively, were held seven davs prior to release, whereas the coho in Release 9B were held only two days. The coho in Releases 9A and 9B were tracked separately to guard against confounding with pre-release holding time. Pre-release holding time for fish in all other releases was identical.

RELEASE NUMBER	SPECIES	RELEASE DATE	NUMBER OF REPS	FISH PER REP	RELEASE TYPE	BASE PERIOD (days)	MEAN PDD (%)	MEAN GROUP ENTRAINMENT (%)
10A	COHO	6/5/87	1	18	night right	1	78.9,	66.8
10A	COHO	6/5/87	1	18	night left	1	78.9	103.2
10A	COHO	615187	2	18	day 2 mile	2	79.2	82.3
10B	SPG CHK	615187	1	18	night right	1	78.9	94.9
10B	COHO	6/5/87	1	18	night left	1	78.9	100.5
10B	COHO	615187	2	18	day 2-mile	2	79.2	88.9

Table D2. Entrainment data set, 1984-1986, for Chandler smolt trap. Note that unless otherwise specified, all releases involved spring chinook smolts.

RELEASE DATE	RELEASE TYPE	PDO	ENTRAINMENT (PERCENT)	COMMENTS
4/10/84	day, 2-mile	45.5	43.6	
4110184	day, 3-mile	45.5	38.9	
4/17/84	day, 2-mile	40.1	73.3	
4/20/84	day, 2-mile	43.8	53.3	
4/20/84	day, 3-mile	43.8	69.9	
4/27/84	day, 2-mile	53.9	52.3	
4127184	day, 3-mile	53.9	69.2	
4/29/84	day, 2-mile	53.2	62.7	
5/11/84	day, 2-mile	54.6	94.0	
5/11/84	day, 2-mile	54.6	91.0	steelhead smolts
5/15/84	day, 2-mile	29.3	21 .o	
5/15/84	day, 2-mile	29.3	20.8	steelhead smolts
5/22/84	day, 2-mile	27.2	11.6	
4/19/85	day, 2-mile	35.4	33.0	
5/1/85	day, 2-mile	67.4	87.0	
5/1/85	day, 2-mile	67.4	90.3	steelhead smolts
518185	day 2-mile	78.4	109.6	transformed to 99.8
5/8/85	day, 2-mile	78.4	102.2	steelhead smolts transformed to 99.8

Table D2. Entrainment data set, 1984-1986, for Chandler smolt trap. Note that unless otherwise specified, all releases involved spring chinook smolts.

RELEASE DATE	RELEASE TYPE	PDD	ENTRAINMENT (PERCENT)	COMMENTS
5/11/85	day, 2-mile	67.4	95.2	
5/19/85	day, 2-mile	39.7	58.7	
5/23/85	day, 2-mile	37.4	66.2	
5125185	day, 2-mile	40.5	66.5	
6/7/85	day, 2-mile	25.7	20.5	
4/12/86	day, 2-mile	36.2	62.5	
4/15/86	day, 2-mile	54.6	67.0	
4118186	day, 2-mile	60.7	74.5	
4/30/86	day, 2-mile	72.8	74.5	
5/7/86	day, 2-mile	57.1	94.6	
5/10/86	day, 2-mile	62.7	79.1	
5/19/86	day, 2-mile	62.1	86.7	
5123186	day, 2-mile	66.6	93.6	
5126186	day, 2-mile	53.2	77.8	

All Releases Since 1984

We regressed linearized entrainment data on PDD for 1984-1986 and 1987 data and, although we did not perform an analysis of covariance, we did estimate confidence intervals about regression coefficients and we did perform a t-test on the difference in slopes.

The expression for the regression of linearized entrainment on PDD for the 1984-1986 data was:

8. $-\ln[(1-E)/E] = -4.3264 + O.\ 1065$

The 95% confidence intervals about the y-intercept (b_0) and the slope ((b_1) were, respectively:

$-5.717 < b_0 < -2.935$ and
$0.0804 < b_1 < 0.1327$.

The equation for the 1987 regression was:

9. $-\ln[(1-E)/E] = -3.6982 + 0.0862$

The 95% confidence intervals about b_0 and b_1 were:

$-5.181 < b_0 < -2.125$ and
$0.0612 < b_1 < 0.1112$.

A t-test for the difference in slopes was insignificant (t = 1.054, 64 df).

We therefore tentatively concluded that the 1984-1986 and 1987 data could be pooled. The confidence intervals about regression coefficients overlapped, the t-test of slope difference was insignificant, and the subjective impression of superimposed plots of linearized regression lines and confidence intervals was one of similarity.

A regression of linearized entrainment on PDD for <u>all</u> data (1984-1987) resulted in the following equation:

10. $-\ln[(1-e)/E] = -3.7717 + 0.0912$

Equation 10 was rearranged as follows to give the entrainment figures from which outmigration is estimated:

11.

$$E_i = \frac{1}{1 + e^{[(-.0912)(PDD) + 3.77121}}$$

It should be noted that all raw capture data from 1983 through 1989 has been expanded by this expression.

Confidence Intervals

The author has not been able to fit appropriate confidence intervals to a logistic regression. The confidence intervals around the linearized equation were algebraically transformed and superimposed on a plot of Equation 11 with troubling results (Fig. D2); most of the points fell outside the "bounds" of the putative 95% confidence interval. **For this reason, no estimates of statistical precision have been applied to smolt outmigration estimates in this study.**

Lack of Data for Low PDD Values

As shown in Tables D 1 and D2 and Figure D2, no releases have been made when the PDD was less that 22.9%. This lack is a simple reflection of the fact that Chandler canal typically diverts around 1,400 cfs, and river flows large enough to make such a figure relatively small are rarely observed in the main period of outmigration (April through June). However, this very rarity makes the lack of data less important; few observation requiring "low-PDD" extrapolations exist.

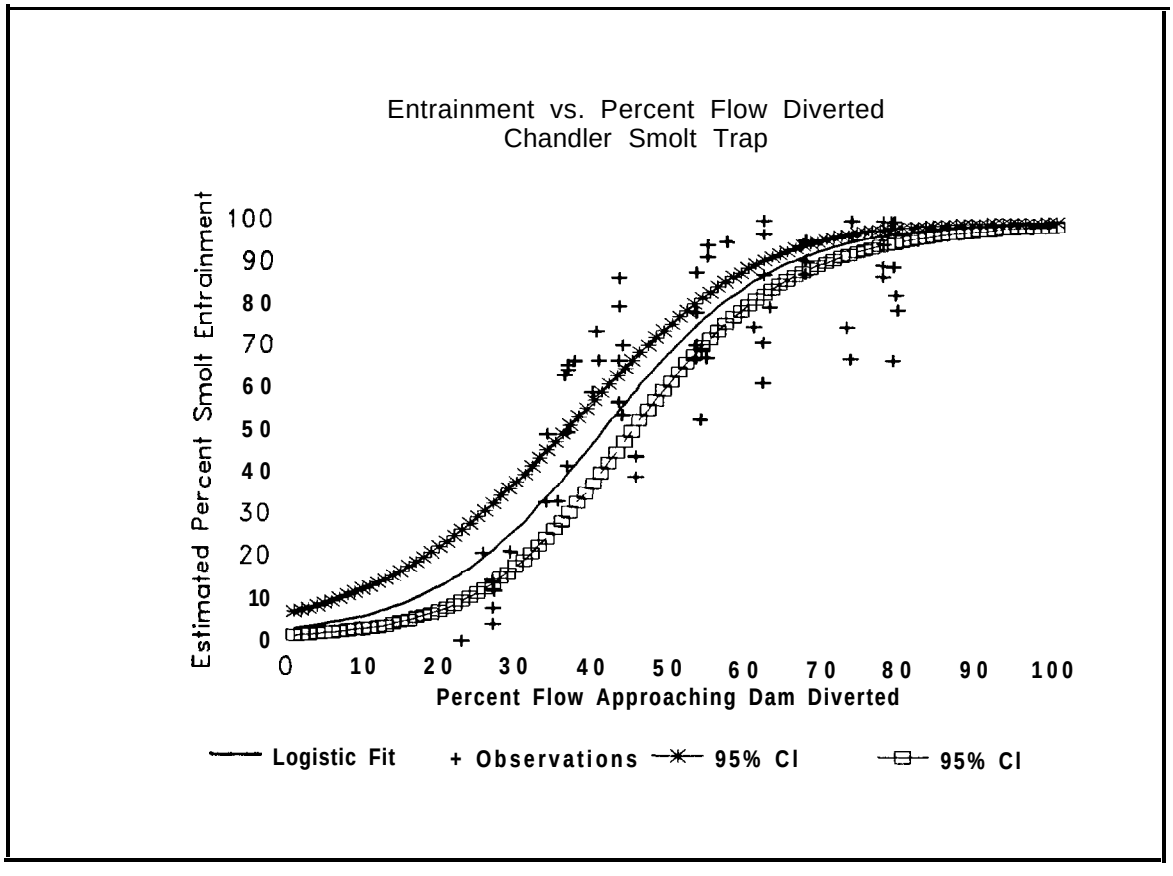

Figure D2. Estimated and observed entrainment rates at Prosser smolt trap plotted as a function of percent discharge diverted.

High Variability of Existing Diversion/Entrainment Relationship

The variability of the existing relationship may be a more serious problem than the lack of low-PDD observation, as it might seriously limit the detectability of differences in smolt survival between treatment groups.

It is suggested that much of this variability is due to the relatively lengthy period of canal passage for fish released in 1984 and 1985, and for all releases made before the new system was installed in 1987. In 1984, only 78% of the recaptures of canal fish and 72% of the recaptures of river fish occurred in the first week after release. Thus, the base period was initially "set" at a week, because it was felt that a week would be sufficient time for the bulk of a release to move past the dam, yet not so long a time as to include substantially different PDDs and entrainment rates. In the first years, the base period was never truncated unless such a seven-day period would entail unacceptable fluctuations in PDD, or unless the last river fish was captured before the seventh day. Again, the criterion for unacceptable fluctuation was set at 25% of the mean PDD for the period.

In 1985 and 1986, after a series of repairs to the old bypass system was made, and particularly after the bypass system was rebuilt in 1987, passage through the canal increased dramatically. In 1987, over 90% of the recaptures of river and canal fish occurred in the first 24 hours, and the variability of PDD during much shorter base periods was considerably less. Thus, the necessity of a long base period and liberal allowable PDD fluctuation was eliminated.

Another, possible cause of variability is the occasional use of species other than spring chinook in entrainment estimates. Because entrainment estimates for simultaneously released wild steelhead and spring chinook were quite comparable, as were the estimates for hatchery coho and wild spring chinook, it is suggested that the problem of interspecific confounding is minimal for these three species. However, such may not be the case for fall chinook. Simultaneous release of wild spring and fall chinook in 1987 indicated fall chinook were being entrained at substantially lower rates than spring chinook.

To the extent they could be identified by size, fall chinook were excluded from all releases not specifically designed to be "a fall chinook release." However, in late May, and especially in June, most of the outmigration consists of fall chinook and the size overlap between spring and fall chinook smolts is large. For this reason, it is probable that all "spring chinook" releases made after the second week in May include some fall chinook.

A combination of the following procedures might reduce the variability of the existing diversion/entrainment relationship:

1) Recalculate all entrainment figures with a base period of 24 hours.

2) Recalculate all entrainment figures with a base period admitting no more than a 5% (or 10%?) fluctuation of PDD.

3) Derive a relationship based exclusively on 1987 data.

4) Recalculate the diversion/entrainment relationship based on a data set excluding releases made after the second week in May, when fall chinook usually begin to comprise a substantial proportion of the run.

With some effort, existing data could be reanalyzed using a number of combinations of the preceding suggestion. It might be assumed that the new regression with the smallest residual sum of squares would be "the best."

Species-Specific Entrainment Rates

One might reasonably suspect that the nature of the diversion/entrainment relationship would differ across species and runs (such as spring and fall chinook). There is some evidence from our work that diversion/entrainment relationships are mostly a function of size, not species. Thus, we have assumed that the diversion/entrainment relationship is equivalent for spring chinook, coho and steelhead, but different for the much smaller fall chinook. In two simultaneous releases in 1984, and two in 1985, estimated entrainment was nearly identical for spring chinook and steelhead. The results of two simultaneous releases of coho and spring chinook in 1987 were also closely comparable. On the other hand, in four comparisons of fall chinook and spring chinook or coho, estimated entrainment for fall chinook was always lower. Thus, the development of a separate diversion/entrainment relationship for fall chinook would seem to be a necessity. It might also be advisable to make additional simultaneous releases of spring chinook, steelhead and coho to ensure that their entrainment behavior is indeed equivalent.

Intracanal Mortalities

As mentioned, daily outmigration is estimated by dividing raw catch by entrainment. This procedure suffers from a troublesome flaw; we have no reliable way of adjusting raw catches for intracanal mortalities (this problem is discussed in detail on Pages 45-46 and 166-170 of the 1986 Annual Report, Yakima River Spring Chinook Enhancement Study).

We have made an attempt to estimate canal losses by using recapture data from nighttime canal releases to estimate M_{ic}, the instantaneous rate of natural mortality in the canal. We used an equation developed by Seber (1982) that is applicable to populations subject to simultaneous exponential rates of natural and fishing mortality, assuming we could substitute trap recaptures for losses to the "fishery":

12. $M_{ic} = (R_c - C_{c,tot})(C_{c,tot} - 1)/(R_c)(T)(C_{c,tot})$

where M_{ic} = instantaneous intra-canal mortality rate;
R_c = number of fish released in canal (initial population size);
$C_{c,tot}$ = total catch of canal fish (total catch of "fishery"); and
T = mean day of recapture of all fish in the trap (or the "fishery").

In this effort, we assumed all unhandled migrants moved through the canal in one day, and that their losses in doing so were the same as the losses of branded fish released in the canal at night. We also assumed that M_{ic} would vary through the season, at least on a monthly basis, increasing as the water warmed and predatory fish aggregated inside the canal. Using the appropriate monthly M_{ic}, we hoped to be able to adjust our outmigration estimates (NJ for canal losses by dividing the raw daily catch (C_i) by estimated one-day canal survival before applying the entrainment rate (E_i):

13. $$N_i = \frac{C_i}{e^{-M_{ic}} E_i}$$

Unfortunately, one of the major assumptions underlying Seber's expression is violated by our data; virtually none of the temporal distributions of recaptures of canal fish were exponential. Almost invariably, there were too many recaptures on the first day, and too few thereafter. This temporal pattern is even more characteristic of 1987 data than earlier data.

In spite of the violated assumption, we estimated $e^{-M_{ic}}$ for the old and new canal configurations. Mean, one-day canal survival for the old canal configuration was 92% in April and 87.2% in May. Surprisingly, comparable figures for the new canal configuration are lower, 80.9% in April and 75% in May. We do not know how to interpret these figures, or even if they merit interpretation at all. It is, however, interesting to note that <u>total</u> survival (total recaptures canal fish through season)/(number canal fish released) has not improved after reconstruction. Rather, it appears to have worsened, as Table D3 demonstrates.

The figures in Table D3 are slightly confounded with delayed handling mortality. The mean mortality rate among branded smolts held on site 48 hours after release was 3.7 % before reconstruction and 7.9% after reconstruction.

It must be noted that existing outmigration estimates are not corrected for intracanal losses. Until canal losses can be reliably estimated, no correction will be made.

Losses of River Fiih Prior to Entering the Canal

As mentioned, in two of three simultaneous releases, the total percent recapture for fish released three miles above the dam was greater than fish released two miles above the dam. If open-river mortality is strictly a function of distance traveled, these results would seem to indicate that river losses are negligible. If, however, mortality is concentrated at some point, such as the forebay of the dam, a different interpretation may be possible. The existing data would not be inconsistent with substantial, but highly variable, predatory losses in the forebay of Prosser Dam.

If open-river losses have not been negligible, then the existing diversion/entrainment relationship underestimates entrainment. A simultaneous release of radio-tagged squawfish and smolts might shed some light on the matter.

Table D3. Total percent live recaptures of branded smolts released in Chandler canal at 2200 hours and 0800 hours the following day.

		Mean total survival, night releases	Mean total survival, day releases
BEFORE RECONSTRUCTION	April	85.2%	81.6%
	May	72.1%	55.0%
AFTER RECONSTRUCTION	April	68.3%	54.4%
	May	62.1%	62.4%

Table D4. Randomized complete block ANOVA of group mean entrainment, 1987 Chandler canal releases.

	Treatments (units are entrainment percent)			
Blocks	Night Right	Night Left	Day 2-Mile	Totals
Rel. 2	41.2	64.1	65.2	170.5
Rel. 3	79.1	56.3	85.9	221.3
Rel. 4	70.8	100.3	96.6	267.7
Rel. 5A	48.8	32.6	32.6	114.0
Rel. 7	7.6	3.8	13.9	25.3
Rel. 8	110.5	96.2	67.0	273.7
Rel. 9A-B	98.0	87.8	78.8	264.6
Rel. 10B	94.4	100.0	100.0	294.4
Rel. 10A	66.8	103.2	84.6	254.6
Totals	617.2	644.3	624.6	1886.1

(Note that Releases 9A and 9B were averaged).

N = 27

SOURCE	SS	df	MS	F
TOTAL	24,941.667	26		
TRT	43.60222	2	21.80111	21.80111 / 212.44155 = **0.1026**
BLK	21,499.0	8	2,687.375	
REMAINDER	3,399.0648	16	212.44155	

For alpha = 0.05, and 2 and 16df, F = 4.69

Literature Cited. Appendix D

Barton, B.A., R.E. Peter and C.R. Parlencu. 1980. Plasma cortisol levels of fingerling rainbow trout (Salmo gairdneri) at rest, and subject to handling, confinement, transport and stocking. Canadian Journal of Fisheries and Aquatic Sciences 37:805-811.

Hosey and Associates and Fish Management Consultants. 1990. Evaluation of effectiveness of fish protection facilities: Evaluation of the Chandler, Columbia, Roza and Easton screening facilities: Completion Report. Prepared for Bureau of Reclamation, Contract 7-CS-10-07720. Prepared by Hosey and Associates Engineering Company and Fish Management Consultants, September 1990.

APPENDIX E
PROSSER JUVENILE FISH OUTMIGRATION ESTIMATES

Appendix Table E.1. Smolt outmigration estimates past Prosser for March 1983.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
03/01/83	130	130	0.08	0.08	8,218
03/02/83	130	260	0.16	0.08	7,794
03/03/83	130	390	0.23	0.08	7,624
03/04/83	130	520	0.31	0.08	6,964
03/05/83	130	650	0.39	0.08	6,993
03/06/83	130	780	0.47	0.08	6,834
03/07/83	130	910	0.54	0.08	6,826
03/08/83	130	1,040	0.62	0.08	7,722
03/09/83	130	1,170	0.70	0.08	8,010
03/10/83	130	1,300	0.78	0.08	11,302
03/11/83	130	1,430	0.86	0.08	15,136
03/12/83	130	1,560	0.93	0.08	16,879
03/13/83	130	1,690	1.01	0.08	16,479
03/14/83	130	1,820	1.09	0.08	16,956
03/15/83	130	1,950	1.17	0.08	16,818
03/16/83	130	2,080	1.24	0.08	14,778
03/17/83	130	2,210	1.32	0.08	12,733
03/18/83	130	2,340	1.40	0.08	11,315
03/19/83	130	2,470	1.48	0.08	10,351
03/20/83	130	2,600	1.56	0.08	8,556
03/21/83	130	2,730	1.63	0.08	8,127
03/22/83	130	2,860	1.71	0.08	7,560
03/23/83	130	2,990	1.79	0.08	6,730
03/24/83	130	3,120	1.87	0.08	6,666
03/25/83	130	3,250	1.95	0.08	6,463
03/26/83	130	3,380	2.02	0.08	6,342
03/27/83	130	3,510	2.10	0.08	6,133
03/28/83	130	3,640	2.18	0.08	5,917
03/29/83	130	3,770	2.26	0.08	5,564
03/30/83	130	3,900	2.33	0.08	7,483
03/31/83	130	4,030	2.41	0.08	8,848
March 1983 TOTAL	4,030				

Appendix Table E.2. Smolt outtnigration estimates past Prosser for April 1983.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
04/01/83	1,384	5,414	3.24	0.83	7,810
04/02/83	1,384	6,798	4.07	0.83	7,607
04/03/83	1,384	8,182	4.90	0.83	7,452
04/04/83	630	8,812	5.27	0.38	6,797
04/05/83	1,063	9,875	5.91	0.64	6,220
04/06/83	1,973	11,848	7.09	1.18	5,666
04/07/83	3,159	15,007	8.98	1.89	5,487
04/08/83	826	15,833	9.48	0.49	5,367
04/09/83	1,077	16,910	10.12	0.64	5,496
04/10/83	963	17,873	IQ.70	0.58	5,198
04/11/83	1,041	18,914	11.32	0.62	4,956
04/12/83	656	19,570	11.71	0.39	4,652
04/13/83	776	20,346	12.18	0.46	4,563
04/14/83	I ,283	21,629	12.95	0.77	4,336
04/15/83	3,028	24,657	14.76	1.81	4,178
04/16/83	6,125	30,782	18.42	3.67	4,172
04/17/83	4,873	35,655	21.34	2.92	4,485
04/18/83	4,420	40,075	23.99	2.65	4,799
04/19/83	12,266	52,341	31.33	7.34	5,162
04/20/83	6,802	59,143	35.40	4.07	5,960
04/21/83	9,856	68,999	41.30	5.90	6,832
04/22/83	10,114	79,113	47.35	6.05	7,518
04/23/83	7,962	87,075	52.12	4.77	8,108
04/24/83	6,462	93,537	55.98	3.87	8,060
04/25/83	5,220	98,757	59.11	3.12	8,639
04/26/83	3,519	102,276	61.21	2.11	8,238
04/27/83	2,767	105,043	62.87	1.66	7,443
04/28/83	3,176	108,219	64.77	1.90	6,926
04/29/83	2,935	111,154	66.53	1.76	6,508
04/30/83	4,920	116,074	69.47	2.94	6,172
April 1983 TOTAL	112,044				

Appendix Table E.3. Smolt outmigration estimates past Prosser for May 1983.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
05/01/83	4,257	120,331	72.02	2.55	6,523
05/02/83	4,413	124,744	74.66	2.64	6,974
05/03/83	3,824	128,568	76.95	2.29	7,110
05/04/83	2,467	131,035	78.43	1.48	6,937
05/05/83	3,361	134,396	80.44	2.01	6,668
05/06/83	2,200	136,596	81.76	1.32	7,873
05/07/83	3,051	139,647	83.58	1.83	8,486
05/08/83	1,824	141,471	84.67	1.09	8,328
05/09/83	1,145	142,616	85.36	0.69	8,077
05/10/83	929	143,545	85.92	0.56	7,318
05/11/83	1,047	144,592	86.54	0.63	6,617
05/12/83	1,112	145,704	87.21	0.67	6,123
05/13/83	1,527	147,231	88.12	0.91	5,328
05/14/83	1,363	148,594	88.94	0.82	4,844
05/15/83	1,004	149,598	89.54	0.60	4,850
05/16/83	771	150,369	90.00	0.46	4,784
05/17/83	807	151,176	90.48	0.48	4,374
05/18/83	1,040	152,216	91.11	0.62	4,067
05/19/83	730	152,946	91.54	0.44	4,117
05/20/83	744	153,690	91.99	0.45	4,195
05/21/83	1,740	155,430	93.03	1.04	4,445
05/22/83	2,245	157,675	94.37	1.34	5,809
05/23/83	2,042	159,717	95.59	1.22	6,763
05/24/83	853	160,570	96.11	0.51	6,988
05/25/83	984	161,554	96.69	0.59	7,460
05/26/83	577	162,131	97.04	0.35	8,174
05/27/83	317	162,448	97.23	0.19	8,541
05/28/83	308	162,756	97.41	0.18	9,044
05/29/83	595	163,351	97.77	0.36	10,384
05/30/83	677	164,028	98.18	0.41	11,911
05/31/83	263	164,291	98.33	0.16	13,583
Hay 1983 TOTAL	48,217				

Appendix Table E.4. Smolt outmigration estimates past Prosser for June 1983.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
06/01/83	385	164,676	98.56	0.23	15,041
06/02/83	212	164,888	98.69	0.13	15,198
06/03/83	103	164,991	98.75	0.06	13,750
06/04/83	194	165,185	98.87	0.12	11,960
06/05/83	179	165,364	98.97	0.11	9,877
06/06/83	375	165,739	99.20	0.22	a,472
06/07/83	126	165,865	99.27	0.08	7,781
06/08/83	176	166,041	99.38	0.11	6,332
06/09/83	141	166,182	99.46	0.08	5,766
06/10/83	147	166,329	99.55	0.09	5,635
06/11/83	59	166,388	99.59	0.04	5,715
06/12/83	94	166,482	99.64	0.06	6,234
06/13/83	97	166,579	99.70	0.06	6,312
06/14/83	78	166,657	99.75	0.05	5,852
06/15/83	25	166,682	99.76	0.01	4,851
06/16/83	94	166,776	99.82	0.06	3,841
06/17/83	48	166,824	99.85	0.03	3,267
06/18/83	96	166,920	99.91	0.06	2,768
06/19/83	18	166,938	99.92	0.01	2,693
06/20/83	32	166,970	99.94	0.02	2,711
06/21/83	19	166,989	99.95	0.01	2,434
06/22/83	7	166,996	99.95	0.00	2,170
06/23/83	12	167,008	99.96	0.01	1,986
06/24/83	I ?	167,025	99.97	0.01	2,008
06/25/83	0	167,025	99.97	0.00	2,070
06/26/83	0	167,025	99.97	0.00	2,081
06/27/83	11	167,036	99.98	0.01	2,259
06/28/83	33	167,069	100.00	0.02	2,493
06/29/83	a	167,077	100.00	0.00	2,303
06/30/83	0	167,077	100.00	0.00	2,409
June 1983 TOTAL	2,786				

Appendix Table E.5. Smolt outmigration estimates past Prosser for March 1984.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
03/01/84	13	13	0.01	0.01	4,289
03/02/84	13	26	0.02	0.01	3,988
03/03/84	13	39	0.03	0.01	3,846
03/04/84	13	52	0.04	0.01	3,692
03/05/84	16	68	0.05	0.01	3,676
03/06/84	9	77	0.05	0.01	3,601
03/07/84	14	91	0.06	0.01	3,603
03/08/84	11	102	0.07	0.01	3,693
03/09/84	12	114	0.08	0.01	3,840
03/10/84	12	126	0.09	0.01	3,962
03/11/84	15	141	0.10	0.01	4,386
03/12/84	16	157	0.11	0.01	4,655
03/13/84	I ?	174	0.12	0.01	4,672
03/14/84	13	187	0.13	0.01	4,543
03/15/84	6	193	0.13	0.00	4,169
03/16/84	3	196	0.14	0.00	4,391
03/17/84	19	215	0.15	0.01	4,549
03/18/84	23	238	0.17	0.02	4,877
03/19/84	41	279	0.19	0.03	4,902
03/20/84	14	293	0.20	0.01	4,801
03/21/84	61	354	0.25	0.04	5,364
03/22/84	237	591	0.41	0.17	7,947
03/23/84	417	1,008	0.70	0.29	8,260
03/24/84	277	I ,285	0.90	0.19	7,799
03/25/84	331	1,616	1.13	0.23	7,348
03/26/84	338	1,954	1.36	0.24	7,075
03/27/84	128	2,082	1.45	0.09	6,610
03/28/84	165	2,247	1.57	0.12	6,058
03/29/84	208	2,455	1.71	0.15	5,516
03/30/84	253	2,708	1.89	0.18	5,153
03/31/84	445	3,153	2.20	0.31	4,879
March 1984 TOTAL	3,153				

Appendix Table E.6. Smolt outmigration estimates past Prosser for April 1984.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
04/01/84	675	3,828	2.67	0.47	4,732
04/02/84	804	4,632	3.23	0.56	4,481
04/03/84	671	5,303	3.70	0.47	4,231
04/04/84	1,113	6,416	4.48	0.78	4,124
04/05/84	1,633	8,049	5.62	1.14	3,990
04/06/84	2,009	10,058	7.02	1.40	3,922
04/07/84	1,582	11,640	8.12	1.10	3,802
04/08/84	1,334	12,974	9.05	0.93	3,641
04/09/84	1,479	14,453	IQ.08	1.03	3,543
04/10/84	1,106	15,639	IO.91	0.83	3,296
04/11/84	1,214	16,853	11.76	0.85	3,475
04/12/84	929	17,782	12.41	0.65	3,452
04/13/84	502	18,284	12.76	0.35	3,370
04/14/84	467	18,751	13.08	0.33	3,268
04/15/84	605	19,356	13.50	0.42	3,180
04/16/84	1,871	21,227	14.81	1.31	3,304
04/17/84	7,686	28,913	20.17	5.36	6,825
04/18/84	3,968	32,881	22.94	2.77	4,187
04/19/84	5,195	38,076	26.57	3.62	4,090
04/20/84	4,127	42,203	29.44	2.88	4,016
04/21/84	2,928	45,131	31.49	2.04	3,810
04/22/84	2,000	47,131	32.88	1.40	3,805
04/23/84	2,545	49,676	34.66	1.78	3,823
04/24/84	2,487	52,163	36.39	1.74	3,540
04/25/84	1,844	54,007	37.68	1.29	3,114
04/26/84	2,238	56,245	39.24	1.56	2,986
04/27/84	2,874	59,119	41.25	2.01	2,959
04/28/84	1,641	60,760	42.39	1.14	2,690
04/29/84	1,033	61,793	43.11	0.72	2,519
04/30/84	1,172	62,965	43.93	0.82	2,536
April 1984 TOTAL	59,812				

Appendix Table E.?. Smolt outmigration estimates past Prosser for Hay 1984.

DATE	NUMBER OF FISH PASSAGE	SEASON CUH	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
OS/01/84	1,374	64,339	44.89	0.96	2,505
05/02/84	2,225	66,564	46.44	1.55	2,581
05/03/84	2,278	68,842	48.03	1.59	2,993
05/04/84	2,840	71,602	50.01	1.98	3,076
05/05/84	2,096	73,778	51.47	1.46	2,880
05/06/84	1,446	75,224	52.48	1.01	2,777
05/07/84	748	75,972	53.00	0.52	2,677
05/08/84	5 %	76,568	53.42	0.42	2,451
05/09/84	805	77,373	53.98	0.56	2,300
05/10/84	1,113	78,486	54.76	0.78	2,333
05/11/84	695	79,181	55.24	0.48	2,351
05/12/84	1,001	80,182	55.94	0.70	2,348
05/13/84	1,030	81,212	56.66	0.72	3,343
05/14/84	1,752	82,964	57.88	1.22	3,818
05/15/84	5,252	88,216	61.55	3.66	4,487
05/16/84	6,945	95,161	66.39	4.85	5,081
05/17/84	6,640	101,801	71.03	4.63	5,390
05/18/84	4,821	106,622	74.39	3.36	5,239
05/19/84	4,544	111,166	77.56	3.17	5,065
05/20/84	3,449	114,615	79.97	2.41	5,385
05/21/84	3,673	118,288	82.53	2.56	6,274
05/22/84	2,196	120,484	a4.w	1.53	6,205
05/23/84	1,570	122,054	85.16	1.10	5,866
05/24/84	1,375	123,429	06.11	0.96	5,757
05/25/84	990	124,419	86.81	0.69	5,343
05/26/84	1,371	125,790	07.76	0.96	5,199
05/27/84	749	126,539	88.28	0.52	5,123
05/28/84	3,030	129,569	90.40	2.11	4,857
05/29/84	2,283	131,852	91.99	1.59	4,525
05/30/84	4,975	136,827	95.46	3.47	4,831
05/31/84	1,286	138,113	96.36	0.90	6,276
May 1984 TOTAL	75,148				

Appendix Table E.O. Smolt outmigration estimates past Prosser for June 1984.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
06/01/84	662	138,775	96.82	0.46	6,122
06/02/84	525	139,300	97.19	0.37	5,015
06/03/84	342	139,642	97.43	0.24	4,124
06/04/84	530	140,172	97.80	0.37	4,020
06/05/84	687	140,859	98.28	0.48	4,974
06/06/84	309	141,168	98.49	0.22	6,585
W/Q?/04	360	141,528	98.74	0.25	6,933
06/08/84	95	141,623	98.81	0.07	6,885
06/09/84	70	141,693	98.86	0.05	6,742
06/10/84	109	141,802	98.93	0.08	6,533
06/11/84	88	141,890	98.99	0.06	6,331
06/12/84	1 %	142,086	99.13	0.14	5,804
06/13/84	104	142,190	99.20	0.07	4,905
06/14/84	299	142,489	99.41	0.21	4,982
06/15/84	422	142,911	99.71	0.29	5,386
06/16/84	129	143,040	99.80	0.09	6,544
06/17/84	38	143,078	99.82	0.03	9,054
06/18/84	15	143,093	99.83	0.01	9,894
06/19/84	49	143,142	99.07	0.03	8,500
06/20/84	93	143,235	99.93	0.06	6,905
06/21/84	57	143,292	99.97	0.04	7,063
06/22/84	39	143,331	100.00	0.03	8,560
06/23/84	0	143,331	100.00	0.00	9,785
06/24/84	0	143,331	100.00	0.00	9,806
06/25/84	0	143,331	100.00	0.00	9,790
06/26/84	0	143,331	100.00	0.00	9,740
06/27/84	0	143,331	100.00	0.00	9,859
06/28/84	0	143,331	100.00	0.00	9,491
06/29/84	0	143,331	100.00	0.00	8,570
06/30/84	0	143,331	100.00	0.00	8,017
June 1984 TOTAL	5,218				

Appendix Table E.9. Smolt outmigration estimates past Prosser for March 1985.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
03/01/85	5	5	0.01	0.01	2,877
03/02/85	5	10	0.01	0.01	3,247
03/03/85	5	15	0.02	0.01	2,871
03/04/85	5	20	0.02	0.01	2,684
03/05/85	5	25	0.03	0.01	2,452
03/06/85	5	30	0.03	0.01	2,542
03/07/85	5	35	0.04	0.01	2,523
03/08/85	5	40	0.04	0.01	2,410
03/09/85	5	45	0.05	0.01	2,367
03/10/85	5	50	0.05	0.01	2,334
03/11/85	7	57	0.06	0.01	2,314
03/12/85	7	64	0.07	0.01	2,287
03/13/85	3	67	0.07	0.00	2,255
03/14/85	4	71	0.07	0.00	2,308
03/15/85	0	71	0.07	0.00	2,402
03/16/85	0	71	0.07	0.00	2,433
03/17/85	14	85	0.09	0.01	2,585
03/18/85	5	90	0.09	0.01	2,802
03/19/85	a	98	0.10	0.01	2,956
03/20/85	10	108	0.11	0.01	2,864
03/21/85	29	137	0.14	0.03	2,698
03/22/85	0	137	0.14	0.00	2,619
03/23/85	22	159	0.16	0.02	2,903
03/24/85	45	204	0.21	0.05	2,928
03/25/85	67	271	0.28	0.07	2,800
03/26/85	31	302	0.31	0.03	2,542
03/27/85	61	363	0.38	0.06	2,359
03/28/85	43	406	0.42	0.04	2,244
03/29/85	22	428	0.44	0.02	1,967
03/30/85	8	436	0.45	0.01	1,895
03/31/85	11	447	0.46	0.01	2,015
March 1985 TOTAL	447				

Appendix Table E.IO. Smolt outmigration estimates past Prosser for April 1985

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
04/01/85	14	461	0.48	0.01	2,152
04/02/85	28	489	0.51	0.03	2,450
04/03/85	147	636	0.66	0.15	3,191
04/04/85	476	1,112	1.15	0.49	4,281
04/05/85	590	1,702	1.77	0.61	4,418
04/06/85	568	2,270	2.35	0.59	4,219
04/07/85	673	2,943	3.05	0.70	4,305
04/08/85	597	3,540	3.67	0.62	4,508
04/09/85	565	4,105	4.26	0.59	4,046
04/10/85	3,595	7,700	7.99	3.73	4,931
04/11/85	3,284	10,984	11.39	3.41	5,286
04/12/85	9,306	20,290	21.04	9.65	6,122
04/13/85	3,337	23,627	24.51	3.46	6,270
04/14/85	1,885	25,512	26.46	1.96	6,303
04/15/85	1,256	26,768	27.76	1.30	6,701
04/16/85	2,367	29,135	30.22	2.46	7,126
04/17/85	2,725	31,860	33.05	2.83	6,835
04/18/85	3,278	35,138	36.45	3.40	5,967
04/19/85	448	35,586	36.91	0.46	4,919
04/20/85	158	35,744	37.07	0.16	3,825
04/21/85	93	35,837	37.17	0.10	3,191
04/22/85	134	35,971	37.31	0.14	2,751
04/23/85	238	36,209	37.56	0.25	2,302
04/24/85	918	37,127	38.51	0.95	1,917
04/25/85	939	38,066	39.48	0.97	1,690
04/26/85	1,291	39,357	40.82	1.34	1,757
04/27/85	2,871	42,228	43.80	2.98	2,227
04/28/85	5,536	47,764	49.54	5.74	2,541
04/29/85	2,765	50,529	52.41	2.87	2,855
04/30/85	2,535	53,064	55.04	2.63	2,769
April 1985 TOTAL	52,617				

Appendix Table E.II. Smolt outmigration estimates past Prosser for Hay 1985.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOU CFS
05/01/85	1,576	54,640	56.67	1.63	2,161
05/02/85	1,872	56,512	58.61	1.94	1,985
05/03/85	2,375	58,887	61.08	2.46	2,151
05/04/85	3,208	62,095	64.41	3.33	2,834
M/05/85	2,348	64,443	66.84	2.44	3,029
05/06/85	1,469	65,912	68.36	1.52	2,505
05/07/85	828	66,740	69.22	0.86	2,008
05/08/85	765	67,505	70.02	0.79	1,810
05/09/85	631	68,136	70.67	0.65	1,715
05/10/85	1,113	69,249	71.83	1.15	1,820
05/11/85	752	70,001	72.61	0.78	2,002
05/12/85	695	70,696	73.33	0.72	2,020
05/13/85	706	71,402	74.06	0.73	2,006
05/14/85	927	72,329	75.02	0.96	1,988
05/15/85	519	72,848	75.56	0.54	2,030
05/16/85	610	73,458	76.19	0.63	2,130
05/17/85	1,613	75,071	77.86	1.67	2,115
05/18/85	2,081	77,152	80.02	2.16	2,716
05/19/85	2,698	79,850	82.82	2.80	3,739
05/20/85	1,453	81,303	84.33	1.51	4,118
05/21/85	1,375	82,678	85.75	1.43	3,919
05/22/85	923	83,601	86.71	0.96	3,416
05/23/85	1,171	84,772	87.93	1.21	3,686
05/24/85	1,517	86,289	89.50	1.57	4,019
05/25/85	443	86,732	89.96	0.46	4,313
05/26/85	725	87,457	90.71	0.75	4,170
05/27/85	851	88,308	91.59	0.88	3,679
05/28/85	628	88,936	92.24	0.65	3,328
05/29/85	542	89,478	92.81	0.56	2,854
05/30/85	399	89,877	93.22	0.41	2,500
05/31/85	780	90,657	94.03	0.81	2,387
May 1985 TOTAL	37,593				

Appendix Table E.12. Smolt outmigration estimates past Prosser for June 1985.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUR PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
06/01/85	522	91,179	94.57	0.54	2,380
06/02/85	571	91,750	95.16	0.59	2,336
06/03/85	435	92,185	95.61	0.45	2,349
06/04/85	1,063	93,248	96.72	1.10	2,432
06/05/85	381	93,629	97.11	0.40	2,480
06/06/85	418	94,047	97.55	0.43	2,431
06/07/85	456	94,503	98.02	0.47	2,570
06/08/85	318	94,821	98.35	0.33	4,494
06/09/85	198	95,019	98.55	0.21	6,970
06/10/85	138	95,157	98.70	0.14	5,786
06/11/85	191	95,348	98.90	0.20	4,419
06/12/85	394	95,742	99.30	0.41	3,441
06/13/85	303	96,045	99.62	0.31	2,603
06/14/85	202	96,247	99.83	0.21	2,350
06/15/85	50	96,297	99.88	0.05	2,190
06/16/85	22	96,319	99.90	0.02	1,910
06/17/85	27	96,346	99.93	0.03	1,757
06/18/85	28	96,374	99.96	0.03	1,734
06/19/85	6	96,380	99.97	0.01	1,523
06/20/85	2	96,382	99.97	0.00	1,408
06/21/85	4	96,386	99.97	0.00	1,604
06/22/85	8	96,394	99.98	0.01	1,590
06/23/85	2	96,396	99.98	0.00	1,423
06/24/85	2	96,398	99.98	0.00	1,461
06/25/85	3	96,401	99.99	0.00	1,571
06/26/85	1	96,402	99.99	0.00	1,453
06/27/85	2	96,404	99.99	0.00	1,549
06/28/85	4	96,408	99.99	0.00	1,607
06/29/a5	3	96,411	100.00	0.00	1,568
06/30/85	2	96,413	100.00	0.00	1,608
June 1985 TOTAL	5,756				

Appendix Table E.13. Smolt outmigration estimates past Proster for March 1986

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
03/01/86	106	106	0.06	0.06	14,669
03/02/86	1 %	302	0.17	0.11	13,417
03/03/86	0	302	0.17	0.00	13,548
03/04/86	113	415	0.23	0.06	12,876
03/05/86	107	522	0.29	0.06	12,052
03/06/86	51	573	0.32	0.03	11,527
03/07/86	81	654	0.36	0.04	10,969
03/08/86	85	739	0.41	0.05	11,821
03/09/86	235	974	0.54	0.13	13,133
03/10/86	125	1,099	0.61	0.07	12,786
03/11/86	38	1,137	0.63	0.02	11,949
03/12/86	103	1,240	0.69	0.06	10,974
03/13/86	15	1,255	0.69	0.01	10,048
03/14/86	0	1,255	0.69	0.00	9,679
03/15/86	13	1,268	0.70	0.01	8,767
03/16/86	46	1,314	0.73	0.03	8,122
03/17/86	71	1,385	0.77	0.04	7,642
03/18/86	33	1,418	0.78	0.02	6,782
03/19/86	31	1,449	0.80	0.02	6,676
03/20/86	35	1,484	0.82	0.02	6,394
03/21/86	169	1,653	0.91	0.09	6,182
03/22/86	78	1,731	0.96	0.04	6,341
03/23/86	65	1,796	0.99	0.04	6,428
03/24/86	14	1,810	1.00	0.01	6,268
03/25/86	34	1,844	1.02	0.02	5,547
03/26/86	27	1,871	1.03	0.01	5,343
03/27/86	71	1,942	1.07	0.04	5,424
03/28/86	178	2,120	1.17	0.10	5,565
03/29/86	408	2,528	1.40	0.23	6,045
03/30/86	569	3,097	1.71	0.31	6,568
03/31/86	244	3,341	1.85	0.13	6,906
March 1986 TOTAL	3,341				

Appendix Table E.14. Smolt outmigration estimates past Prosser for April 1986

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOU CFS
04/01/86	117	3,458	3.76	0.06	6,872
04/02/86	153	3,611	3.85	0.08	6,403
04/03/86	138	3,749	3.92	0.08	5,836
04/04/86	316	4,065	4.10	0.17	5,316
04/05/86	578	4,643	4.42	0.32	5,306
04/06/86	1,172	5,815	5.06	0.65	5,892
04/07/86	2,535	8,350	6.47	1.40	5,887
04/08/86	9,714	18,064	11.84	5.37	5,882
04/09/86	15,224	33,288	20.26	8.42	5,228
04/10/86	7,261	40,549	24.28	4.02	4,417
04/11/86	3,066	43,615	25.97	1.70	4,342
04/12/86	1,752	45,367	26.94	0.97	4,128
04/13/86	2,112	47,479	28.11	1.17	3,811
04/14/86	1,077	48,556	28.71	0.60	3,370
04/15/86	1,158	49,714	29.35	0.64	2,842
04/16/86	2,123	51,837	30.52	1.17	2,600
04/17/86	2,006	53,843	31.63	1.11	2,447
04/18/86	809	54,652	32.08	0.45	2,338
04/19/86	600	55,252	32.41	0.33	2,120
04/20/86	848	56,100	32.88	0.47	2,054
04/21/86	1,402	57,502	33.65	0.78	2,067
04/22/86	4,046	61,548	35.89	2.24	2,014
04/23/86	13,929	75,477	43.60	7.70	2,605
04/24/86	14,734	90,211	51.75	8.15	2,761
04/25/86	6,239	96,450	55.20	3.45	2,336
04/26/86	2,030	98,480	56.32	1.12	2,047
04/27/86	2,443	loo,923	57.67	1.35	1,797
04/28/86	2,691	103,614	59.16	1.49	1,729
04/29/86	3,950	107,564	61.34	2.18	1,772
04/30/86	1,931	109,495	62.41	1.07	1,677
April 1986 TOTAL	106,154				

Appendix Table E.15. Smolt outmigration estimates past Prosser for Hay 1986.

DATE	NUMBER OF FISH PASSAGE	SEASON cun	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
05/01/86	1,519	111,014	121.97	0.84	1,669
05/02/86	3,346	114,360	123.82	1.85	1,702
05/03/86	2,469	116,829	125.19	1.37	1,799
05/04/86	3,862	120,691	127.32	2.14	1,898
05/05/86	1,385	122,076	128.09	0.77	1,975
05/06/86	2,389	124,465	129.41	1.32	2,229
05/07/86	5,618	130,083	132.52	3.11	2,718
05/08/86	3,200	133,283	134.29	1.77	2,493
05/09/86	2,019	135,302	135.40	1.12	2,198
05/10/86	2,110	137,412	136.57	1.17	2,127
05/11/86	1,749	139,161	137.54	0.97	2,171
05/12/86	1,216	140,377	138.21	0.67	2,181
05/13/86	1,385	141,762	138.98	0.77	2,095
05/14/86	1,005	142,767	139.53	0.56	2,041
05/15/86	487	143,254	139.80	0.27	2,091
05/16/86	436	143,690	140.04	0.24	1,838
05/17/86	627	144,317	140.39	0.35	1,612
05/18/86	526	144,843	140.68	0.29	1,585
05/19/86	634	145,477	141.03	0.35	1,865
05/20/86	569	146,046	141.35	0.31	2,109
05/21/86	977	147,023	141.89	0.54	2,258
05/22/86	731	147,754	142.29	0.40	2,232
05/23/86	733	148,487	142.70	0.41	1,922
05/24/86	642	149,129	143.05	0.36	1,649
05/25/86	1,154	150,283	143.69	0.64	1,696
05/26/86	2,250	152,533	144.94	1.24	2,131
05/27/86	3,187	155,720	146.70	1.76	2,907
05/28/86	4,261	159,981	149.06	2.36	3,743
05/29/86	4,427	164,408	151.50	2.45	3,414
05/30/86	2,917	167,325	153.12	1.61	3,406
05/31/86	5,285	172,610	156.04	2.92	4,019
Hay 1986 TOTAL	63,115				

Appendix Table E.16. Smolt outmigration estimates past Prosser for June 1986.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOU CFS
06/01/86	3,024	175,634	192.62	1.67	4,366
06/02/86	1,295	176,929	193.34	0.72	4,257
06/03/86	946	177,875	193.86	0.52	3,614
06/04/86	428	178,303	194.10	0.24	2,829
06/05/86	306	178,609	194.27	0.17	2,599
06/06/86	241	178,850	194.40	0.13	2,322
06/07/86	279	179,129	194.56	0.15	2,065
06/08/86	274	179,403	194.71	0.15	1,851
06/09/86	83	179,486	194.76	0.05	1,898
06/10/86	128	179,614	194.83	0.07	1,935
06/11/86	147	179,761	194.91	0.08	1,928
06/12/86	160	179,921	195.00	0.09	1,814
06/13/86	92	180,013	195.05	0.05	1,639
06/14/86	91	180,104	195.10	0.05	1,516
06/15/86	46	180,150	195.12	0.03	1,467
06/16/86	121	180,271	195.19	0.07	1,787
06/17/86	115	180,386	195.25	0.06	2,009
06/18/86	58	180,444	195.29	0.03	1,920
06/19/86	42	180,486	195.31	0.02	1,820
06/20/86	36	180,522	195.33	0.02	1,775
06/21/86	33	180,555	195.35	0.02	1,559
06/22/86	44	180,599	195.37	0.02	1,540
06/23/86	37	180,636	195.39	0.02	1,515
06/24/86	45	180,681	195.42	0.02	1,612
06/25/86	31	180,712	195.43	0.02	1,467
06/26/86	13	180,725	195.44	0.01	1,345
06/27/86	6	180,731	195.44	0.00	1,348
06/28/86	12	180,743	195.45	0.01	1,418
06/29/86	21	180,764	195.46	0.01	1,663
06/30/86	25	180,789	195.48	0.01	1,822
June 1986 TOTAL	8,179				

Appendix Table E.17. Smolt outmigration estimates past Prosser for November 1986.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE
11/01/86	198	198	0.26	0.26
11/02/86	198	396	0.52	0.26
11/03/86	198	594	0.78	0.26
11/04/86	198	792	1.04	0.26
11/05/86	198	990	1.30	0.26
11/06/86	198	1,188	1.56	0.26
11/07/86	198	1,386	1.82	0.26
11/08/86	198	1,584	2.08	0.26
11/09/86	198	1,782	2.35	0.26
11/10/86	198	1,980	2.61	0.26
11/11/86	198	2,178	2.87	0.26
11/12/86	198	2,376	3.13	0.26
11/13/86	198	2,574	3.39	0.26
11114186	522	3,096	4.07	0.69
11/15/86	282	3,378	4.45	0.37
11/16/86	416	3,794	4.99	0.55
11/17/86	797	4,591	6.04	1.05
11/18/86	430	5,021	6.61	0.57
11/19/86	195	5,216	6.86	0.26
11/20/86	122	5,338	7.03	0.16
11/21/86	19	5,357	7.05	0.03
11/22/86	46	5,403	7.11	0.06
11/23/86	38	5,441	7.16	0.05
11/24/86	20	5,461	7.19	0.03
11/25/86	0	5,461	7.19	0.00
11/26/86	138	5,599	7.37	0.18
11/27/86	81	5,680	7.48	0.11
11/28/86	33	5,713	7.52	0.04
11/29/86	40	5,753	7.57	0.05
11130186	63	5,816	7.65	0.08
November 1986 TOTAL	5,816			

Appendix Table E.18. Smolt outmigration estimates past Prosser for December 1986.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE
12/01/86	495	6,311	8.31	0.65
12/02/86	1,390	7,701	10.14	1.83
12/03/86	2,708	10,409	13.70	3.56
12/04/86	2,646	13,055	17.18	3.48
12/05/86	3,663	16,718	22.00	4.82
12/06/86	4,454	21,172	27.86	5.86
12/07/86	1,826	22,998	30.27	2.40
12/08/86	1,228	24,226	31.88	1.62
12/09/86	717	24,943	32.83	0.94
12/10/86	1,096	26,039	34.27	1.44
12/11/86	2,410	28,449	37.44	3.17
12/12/86	3,248	31,697	41.72	4.27
12/13/86	1,590	33,287	43.81	2.09
12/14/86	1,001	34,288	45.13	1.32
12/15/86	728	35,016	46.08	0.96
12/16/86	1,308	36,324	47.81	1.72
12/17/86	323	36,647	48.23	0.43
12/18/86	170	36,817	48.45	0.22
12119186	262	37,079	48.80	0.34
12/20/86	135	37,214	48.98	0.18
12/21/86	188	37,402	49.22	0.25
12/22/86	232	37,634	49.53	0.31
12/23/86	211	37,845	49.81	0.28
12/24/86	182	38,027	50.05	0.24
12/25/86	181	38,208	50.28	0.24
12/26/86	244	38,452	50.61	0.32
12/27/86	205	38,657	50.88	0.27
12/28/86	112	38,769	51.02	0.15
12/29/86	872	39,641	52.17	1.15
12/30/86	140	39,781	52.36	0.18
12/31/86	90	39,871	52.47	0.12
December 1986 TOTAL	34,055			

Appendix Table E.19. Smolt outmigration estimates past Prosser for January 1987.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE
01/01/87	88	39,959	52.59	0.12
01/02/87	146	40,105	52.78	0.19
01/03/87	160	40,265	52.99	0.21
01/04/87	91	40,356	53.11	0.12
01/05/87	177	40,533	53.34	0.23
01/06/87	177	40,710	53.58	0.23
01/07/87	104	40,814	53.71	0.14
01/08/87	152	40,966	53.91	0.20
01/09/87	114	41,080	54.06	0.15
01/10/87	117	41,197	54.22	0.15
01/11/87	162	41,359	54.43	0.21
01/12/87	573	41,932	55.19	0.75
01/13/87	785	42,717	56.22	1.03
01/14/87	604	43,321	57.01	0.79
01/15/87	615	43,936	57.82	0.81
01/16/87	599	44,535	58.61	0.79
01/17/87	462	44,997	59.22	0.61
01/18/87	473	45,470	59.84	0.62
01/19/87	498	45,968	60.50	0.66
01/20/87	546	46,514	61.22	0.72
01/21/87	542	47,056	61.93	0.71
01/22/87	401	47,457	62.46	0.53
01/23/87	427	47,884	63.02	0.56
01/24/87	376	48,260	63.51	0.49
01125187	407	48,667	64.05	0.54
01/26/87	315	48,982	64.46	0.41
01/27/87	383	49,365	64.97	0.50
01/28/87	217	49,582	65.25	0.29
01/29/87	117	49,699	65.41	0.15
01/30/87	142	49,841	65.59	0.19
01/31/87	77	49,918	65.70	0.10
January 1987 TOTAL	10,047			

Appendix Table E.20. Smolt outmigration estimates past Prosser for February 1987.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE
02/01/87	147	50,065	65.89	0.19
02/02/87	2,497	52,562	69.18	3.29
02/03/87	4,044	56,606	74.50	5.32
02/04/87	298	56,904	74.89	0.39
02/05/87	336	57,240	75.33	0.44
02/06/87	251	57,491	75.66	0.33
02/07/87	1,050	58,541	77.04	1.38
02108187	2,724	61,265	80.63	3.59
02/09/87	126	61,391	80.80	0.17
02/10/87	768	62,159	81.81	1.01
02/11/87	768	62,927	82.82	1.01
02/12/87	768	63,695	83.83	1.01
02/13/87	768	64,463	84.84	1.01
02/14/87	768	65,231	85.85	1.01
02/15/87	768	65,999	86.86	1.01
02/16/87	768	66,767	87.87	1.01
02/17/87	768	67,535	88.88	1.01
02/18/87	768	68,303	89.89	1.01
02119187	768	69,071	90.90	1.01
02/20/87	768	69,839	91.91	1.01
02/21/87	768	70,607	92.92	1.01
02/22/87	768	71,375	93.94	1.01
02123187	768	72,143	94.95	1.01
02/24/87	768	72,911	95.96	1.01
02/25/87	768	73,679	96.97	1.01
02/26/87	768	74,447	97.98	1.01
02/27/87	768	75,215	98.99	1.01
02128187	768	75,983	100.00	1.01
February 1987 TOTAL	26,065			

Appendix Table E.21. Smolt outmigration estimates past Prosser for March 1987

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
03/01/87	768	768	0.30	0.30	986
03/02/87	768	1,536	0.60	0.30	747
03/03/87	768	2,304	0.91	0.30	808
03/04/87	768	3,072	1.21	0.30	2,410
03/05/87	768	3,840	1.51	0.30	3,609
03/06/87	768	4,608	1.81	0.30	4,772
03/07/87	768	5,376	2.11	0.30	5,300
03/08/87	768	6,144	2.41	0.30	5,200
03/09/87	195	6,339	2.49	0.08	5,052
03/10/87	12	6,351	2.50	0.00	4,929
03/11/87	100	6,451	2.53	0.04	4,899
03/12/87	50	6,501	2.55	0.02	5,016
03/13/87	242	6,743	2.65	0.10	6,526
03/14/87	990	7,733	3.04	0.39	7,303
03/15/87	541	8,274	3.25	0.21	7,624
03/16/87	882	9,156	3.60	0.35	8,098
03/17/87	741	9,897	3.89	0.29	6,880
03/18/87	520	10,417	4.09	0.20	6,140
03119187	422	10,839	4.26	0.17	5,687
03/20/87	224	11,063	4.35	0.09	5,328
03/21/87	277	11,340	4.46	0.11	4,979
03/22/87	166	11,506	4.52	0.07	4,577
03/23/87	261	11,767	4.62	0.10	4,226
03/24/87	248	12,015	4.72	0.10	3,730
03/25/87	272	12,287	4.83	0.11	3,321
03/26/87	191	12,478	4.90	0.08	3,070
03/27/87	228	12,706	4.99	0.09	2,932
03/28/87	241	12,947	5.09	0.09	2,876
03/29/87	163	13,110	5.15	0.06	2,764
03/30/87	126	13,236	5.20	0.05	2,627
03/31/87	140	13,376	5.26	0.06	2,455
March 1987 TOTAL	13,376				

Appendix Table E.22. Smolt outmigration estimates past Prosser for April 1987

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOU CFS
04/01/87	305	13,681	5.38	0.12	2,427
04/02/87	582	14,263	5.60	0.23	2,381
04/03/87	2,970	17,233	12.03	1.17	2,561
04/04/87	7,410	24,643	14.94	2.91	3,234
04/05/87	5,536	30,179	17.11	2.18	3,919
04/06/87	2,360	32,539	18.04	0.93	4,118
04/07/87	2,224	34,763	18.92	0.87	4,004
04/08/87	3,650	38,413	15.09	1.43	3,555
04/09/87	4,033	42,446	16.68	1.58	3,507
04/10/87	5,758	48,204	18.94	2.26	3,318
04/11/87	4,342	52,546	20.65	1.71	2,961
04112187	3,550	56,096	22.04	1.39	2,795
04/13/87	3,296	59,392	23.34	1.30	2,623
04/14/87	8,017	67,409	26.49	3.15	2,425
04/15/87	8,950	76,359	30.00	3.52	2,261
04116187	14,036	90,395	35.52	5.52	2,398
04117187	13,037	103,432	40.64	5.12	3,091
04/18/87	6,121	109,553	43.05	2.41	3,454
04/19/87	2,647	112,200	44.09	1.04	3,172
04/20/87	3,115	115,315	45.31	1.22	2,790
04/21/87	3,358	118,673	46.63	1.32	2,443
04/22/87	7,158	125,831	49.44	2.81	2,125
04/23/87	8,214	134,045	52.67	3.23	2,032
04/24/87	4,591	138,636	54.48	1.80	2,030
04/25/87	6,735	145,371	57.12	2.65	2,319
04/26/87	4,238	149,609	58.79	1.67	2,394
04/27/87	4,206	153,815	60.44	1.65	2,271
04/28/87	4,403	158,218	62.17	1.73	2,154
04/29/87	10,242	168,460	66.19	4.02	3,074
04130187	40,782	209,242	82.22	16.02	5,280
April 1987 TOTAL	195,866				

Appendix Table E.23. Smolt outmigration estimates past Prosser for May 1987.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
05/01/87	6,194	215,436	84.65	2.43	6,366
05/02/87	4,948	220,384	86.60	1.94	7,051
05/03/87	553	220,937	86.81	0.22	6,515
05/04/87	629	221,566	87.06	0.25	5,463
05/05/87	1,033	222,599	87.47	0.41	4,141
05/06/87	3,779	226,378	88.95	1.48	3,369
05107187	3,712	230,090	90.41	1.46	3,438
05/08/87	5,115	235,205	92.42	2.01	4,331
05/09/87	2,701	237,906	93.48	1.06	5,670
05/10/87	1,597	239,503	94.11	0.63	6,440
05/11/87	1,020	240,523	94.51	0.40	6,239
05/12/87	772	241,295	94.81	0.30	5,216
05/13/87	903	242,198	95.17	0.35	5,413
05/14/87	706	242,904	95.45	0.28	5,472
05/15/87	713	243,617	95.73	0.28	4,155
05/16/87	565	244,182	95.95	0.22	3,529
05/17/87	533	244,715	96.16	0.21	3,121
05/18/87	539	245,254	96.37	0.21	2,564
05/19/87	371	245,625	96.52	0.15	2,075
05/20/87	118	245,743	96.56	0.05	1,780
05/21/87	243	245,986	96.66	0.10	1,832
05/22/87	259	246,245	96.76	0.10	2,119
05123187	377	246,622	96.91	0.15	2,111
05/24/87	320	246,942	97.03	0.13	1,954
05/25/87	706	247,648	97.31	0.28	2,035
05/26/87	562	248,210	97.53	0.22	2,097
05/27/87	556	248,766	97.75	0.22	1,965
05/28/87	377	249,143	97.90	0.15	1,926
05/29/87	429	249,572	98.07	0.17	1,863
05/30/87	589	250,161	98.30	0.23	1,749
05/31/87	243	250,404	98.39	0.10	1,924
May 1987 TOTAL	41,162				

Appendix Table E.24. Smolt outmigration estimates past Prosser for June 1987.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOU CFS
06/01/87	168	250,572	98.46	0.07	2,298
06/02/87	141	250,713	98.51	0.06	2,340
06/03/87	94	250,807	98.55	0.04	1,992
06/04/87	658	251,465	98.81	0.26	1,818
06/05/87	921	252,386	99.17	0.36	1,809
06/06/87	402	252,788	99.33	0.16	1,831
06/07/87	348	253,136	99.47	0.14	1,854
06/08/87	68	253,204	99.49	0.03	1,760
06/09/87	78	253,282	99.52	0.03	1,746
06/10/87	87	253,369	99.56	0.03	1,787
06/11/87	107	253,476	99.60	0.04	1,664
06/12/87	80	253,556	99.63	0.03	1,457
06/13/87	90	253,646	99.67	0.04	1,428
06/14/87	86	253,732	99.70	0.03	1,483
06/15/87	82	253,814	99.73	0.03	1,571
06/16/87	78	253,892	99.76	0.03	1,621
06/17/87	73	253,965	99.79	0.03	1,551
06/18/87	70	254,035	99.82	0.03	1,424
06/19/87	66	254,101	99.85	0.03	1,390
06/20/87	62	254,163	99.87	0.02	1,364
06/21/87	20	254,183	99.88	0.01	1,447
06/22/87	45	254,228	99.90	0.02	1,655
06/23/87	65	254,293	99.92	0.03	1,657
06124187	63	254,356	99.95	0.02	1,625
06/25/87	61	254,417	99.97	0.02	1,589
06/26/87	33	254,450	99.98	0.01	1,433
06/27/87	33	254,483	I w . w	0.01	1,383
06/28/87	6	254,489	I w . w	0.00	1,407
06129187	4	254,493	I w . w	0.00	1,382
06130187	1	254,494	I w . w	0.00	1,401
June 1987 TOTAL	4,090				

Appendix Table E.25. Smolt outmigration estimates past Prosser for March 1988.

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOU CFS
03/01/88	148	148	0.06	0.06	2,237
03/02/88	26	174	0.07	0.01	2,323
03/03/88	44	218	0.08	0.02	2,367
03/04/88	83	301	0.12	0.03	2,494
03/05/88	126	427	0.17	0.05	2,607
03/06/88	126	553	0.22	0.05	2,617
03/07/88	66	619	0.24	0.03	2,490
03/08/88	6	625	0.24	0.00	2,346
03/09/88	1	626	0.24	0.00	2,237
03/10/88	6	632	0.25	0.00	2,156
03/11/88	12	644	0.25	0.00	2,258
03/12/88	11	655	0.25	0.00	2,156
03/13/88	11	666	0.26	0.00	2,029
03/14/88	17	683	0.27	0.01	1,953
03/15/88	15	698	0.27	0.01	1,853
03/16/88	7	705	0.27	0.00	1,750
03/17/88	20	725	0.28	0.01	1,636
03/18/88	16	741	0.29	0.01	1,565
03/19/88	18	759	0.30	0.01	1,552
03/20/88	46	805	0.31	0.02	1,491
03/21/88	37	842	0.33	0.01	1,333
03/22/88	5	847	0.33	0.00	1,292
03/23/88	30	877	0.34	0.01	1,648
03/24/88	49	926	0.36	0.02	1,691
03/25/88	33	959	0.37	0.01	1,787
03/26/88	97	1,056	0.41	0.04	1,709
03/27/88	71	1,127	0.44	0.03	1,676
03/28/88	53	1,180	0.46	0.02	2,069
03/29/88	45	1,225	0.48	0.02	2,198
03/30/88	78	1,303	0.51	0.03	2,154
03/31/88	160	1,463	0.57	0.06	1,693
March 1988 TOTAL	1,463				

Appendix Table E.26 Smolt outmigration estimates past Prosser for April 1988.

	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOU CFS
04/01/88	411	1,874	0.73	0.16	1,508
04/02/88	1,076	2,950	1.15	0.42	1,345
04/03/88	997	3,947	1.54	0.39	1,400
04/04/88	581	4,528	1.76	0.23	2,018
04/05/88	386	4,914	1.91	0.15	2,268
04/06/88	826	5,740	2.23	0.32	2,036
04/07/88	1,967	7,707	3.00	0.77	1,743
04/08/88	948	8,655	3.37	0.37	2,179
04/09/88	857	9,512	3.70	0.33	2,188
04/10/88	4,120	13,632	5.31	1.60	1,887
04/11/88	6,531	20,163	7.85	2.54	1,692
04/12/88	8,602	28,765	11.20	3.35	1,543
04/13/88	7,110	35,875	13.97	2.77	1,473
04/14/88	10,798	46,673	18.17	4.20	1,905
04/15/88	15,201	61,874	24.09	5.92	3,217
04/16/88	23,668	85,542	33.30	9.21	4,598
04117188	15,517	101,059	39.34	6.04	5,710
04/18/88	6,824	107,883	42.00	2.66	5,902
04119188	4,147	112,030	43.61	1.61	5,189
04/20/88	1,850	113,880	44.33	0.72	4,375
04/21/88	1,810	115,690	45.04	0.70	3,933
04/22/88	7,670	123,360	48.02	2.99	3,959
04/23/88	7,574	130,934	so.97	2.95	4,747
04/24/88	5,329	136,263	53.05	2.07	4,688
04/25/88	3,151	139,414	54.27	1.23	4,137
04/26/88	2,565	141,979	55.27	1.00	3,550
04127188	5,977	147,956	57.60	2.33	3,063
04/28/88	7,543	155,499	60.54	2.94	2,803
04/29/88	3,460	158,959	61.88	1.35	2,611
04/30/88	2,062	161,021	62.69	0.80	2,654
April 1988 TOTAL	159,558				

Appendix Table E.27 Smolt outmigration estimates past Prosser for May 1988.

	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
05/01/88	1,820	162,841	63.39	0.71	2,759
05/02/88	1,082	163,923	63.82	0.42	2,598
05/03/88	1,557	165,480	64.42	0.61	2,453
05/04/88	1,590	167,070	65.04	0.62	2,243
05/05/88	2,231	169,301	65.91	0.87	2,105
05/06/88	1,966	171,267	66.67	0.77	2,054
05/07/88	2,950	174,217	67.82	1.15	1,898
05/08/88	2,528	176,745	68.81	0.98	1,800
05/09/88	3,722	180,467	70.26	1.45	1,722
05/10/88	5,087	185,554	72.24	1.98	1,618
05/11/88	1,669	187,223	72.89	0.65	1,543
05/12/88	1,478	188,701	73.46	0.58	1,552
05/13/88	1,691	190,392	74.12	0.66	2,248
05/14/88	43,318	233,710	90.98	16.86	4,070
05115188	5,928	239,638	93.29	2.31	4,169
05/16/88	4,579	244,217	95.07	1.78	3,080
05/17/88	1,207	245,424	95.54	0.47	2,575
05/18/88	1,036	246,460	95.95	0.40	2,542
05/19/88	801	247,261	96.26	0.31	2,402
05/20/88	360	247,621	96.40	0.14	2,056
05/21/88	504	248,125	96.60	0.20	1,811
05/22/88	1,318	249,443	97.11	0.51	1,699
05/23/88	393	249,836	97.26	0.15	1,720
05/24/88	745	250,581	97.55	0.29	2,191
05/25/88	244	250,825	97.65	0.09	2,066
05/26/88	115	250,940	97.69	0.04	1,648
05/27/88	515	251,455	97.89	0.20	1,378
05/28/88	69	251,524	97.92	0.03	1,240
05/29/88	686	252,210	98.19	0.27	1,327
05/30/88	423	252,633	98.35	0.16	1,788
05/31/88	337	252,970	98.48	0.13	1,843
May 1988 TOTAL	91,949				

Appendix Table E.28 Smolt outmigration estimates past Prosser for June 1988.

	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOW CFS
06/01/88	223	253,193	98.57	0.09	1,565
06102188	344	253,537	98.70	0.13	1,664
06/03/88	288	253,825	98.81	0.11	1,779
06/04/88	237	254,062	98.91	0.09	2,115
06/05/88	184	254,246	98.98	0.07	2,108
06/06/88	440	254,686	99.15	0.17	2,048
06/07/88	374	255,060	99.30	0.15	2,041
06/08/88	183	255,243	99.37	0.07	2,030
06/09/88	147	255,390	99.42	0.06	2,047
06/10/88	151	255,541	99.48	0.06	2,111
06/11/88	339	255,880	99.61	0.13	2,101
06/12/88	271	256,151	99.72	0.11	2,060
06/13/88	16	256,167	99.73	0.01	1,942
06/14/88	278	256,445	99.83	0.11	1,821
06/15/88	127	256,572	99.88	0.05	1,664
06/16/88	37	256,609	99.90	0.01	1,587
06/17/88	115	256,724	99.94	0.04	1,580
06/18/88	52	256,776	99.96	0.02	1,473
06/19/88	35	256,811	99.98	0.01	1,378
06/20/88	15	256,826	99.98	0.01	1,243
06/21/88	0	256,826	99.98	0.00	1,278
06/22/88	15	256,841	99.99	0.01	1,427
06/23/88	15	256,856	99.99	0.01	1,345
06/24/88	0	256,856	99.99	0.00	1,251
06/25/88	3	256,859	l w . w	0.00	1,180
06/26/88	0	256,859	l w . w	0.00	1,224
06/27/88	0	256,859	l w . w	0.00	1,425
06128188	1	256,860	l w . w	0.00	1,507
06/29/88	6	256,866	l w . w	0.00	1,384
06/30/88	4	256,870	l w . w	0.00	1,265
June 1988 TOTAL	3,900				

Appendix Table E.29. Smolt outmigration estimates past Prosser for March 1990

DATE	NUMBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOU CFS
03/01/90	208	208	0.10	0.10	3,150
03/02/90	82	290	0.14	0.04	2,952
03/03/90	67	357	0.18	0.03	3,027
03/04/90	49	406	0.20	0.02	3,023
03/05/90	52	458	0.23	0.03	2,997
03/06/90	45	503	0.25	0.02	2,716
03/07/90	33	536	0.26	0.02	2,745
03/08/90	32	568	0.28	0.02	2,829
03/09/90	IQ	578	0.28	0.00	2,915
03/10/90	9	587	0.29	0.00	3,035
03/11/90	23	610	0.30	0.01	3,115
03/12/90	27	637	0.31	0.01	3,020
03/13/90	33	670	0.33	0.02	2,859
03/14/90	47	717	0.35	0.02	2,748
03/15/90	36	753	0.37	0.02	2,654
03/16/90	37	790	0.39	0.02	2,715
03/17/90	33	823	0.41	0.02	2,568
03/18/90	36	859	0.42	0.02	2,409
03/19/90	63	922	0.45	0.03	2,472
03/20/90	58	980	0.48	0.03	2,885
03/21/90	192	1,172	0.58	0.09	3,330
03/22/90	168	1,340	0.66	0.08	3,802
03/23/90	81	1,421	0.70	0.04	3,875
03/24/90	75	1,496	0.74	0.04	3,696
03/25/90	45	1,541	0.76	0.02	3,309
03/26/90	50	1,591	0.78	0.02	3,003
03/27/90	45	1,636	0.81	0.02	2,605
03/28/90	IQ?	1,743	0.86	0.05	2,426
03/29/90	84	1,827	0.90	0.04	2,463
03/30/90	102	1,929	0.95	0.05	2,522
03/31/90	152	2,081	1.03	0.07	2,721
March 1990 TOTAL	2,081				

Appendix Table E.30. Smolt outmigration estimates past Prosser for April 1990

DATE	NUMBER OF FISH PASSAGE	SEASON CUH	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOU CFS
04/01/90	392	2,473	1.22	0.19	3,197
04/02/90	3,535	6,008	2.96	1.74	4,578
04/03/90	9,523	15,531	7.65	4.69	5,781
04/04/90	9,740	25,271	12.45	4.80	6,247
04/05/90	4,269	29,540	14.56	2.10	5,836
04/06/90	2,975	32,515	16.02	1.47	4,947
04/07/90	4,177	36,692	18.08	2.06	4,699
04/08/90	3,772	40,464	19.94	1.86	4,945
04/09/90	2,587	43,051	21.21	1.27	5,269
04/10/90	522	43,573	21.47	0.26	4,392
04/11/90	364	43,937	21.65	0.18	3,508
04/12/90	2,801	46,738	23.03	1.38	3,153
04/13/90	437	47,175	23.25	0.22	3,064
04/14/90	5,546	52,721	25.98	2.73	3,104
04/15/90	14,465	67,186	33.11	7.13	3,572
04/16/90	74,736	141,922	69.94	36.83	5,124
04/17/90	22,785	164,707	81.16	11.23	6,903
04/18/90	5,255	169,962	83.75	2.59	8,179
04/19/90	0	169,962	83.75	0.00	7,951
04/20/90	1,673	171,635	84.58	0.82	6,777
04/21/90	1,147	172,782	85.14	0.57	5,791
04/22/90	69	172,851	85.18	0.03	5,020
04/23/90	259	173,110	85.30	0.13	4,763
04/24/90	1,550	174,660	86.07	0.76	4,580
04/25/90	7	174,667	86.07	0.00	4,073
04/26/90	2,700	177,367	87.40	1.33	3,560
04/27/90	2,099	179,466	88.44	1.03	3,445
04/28/90	271	179,737	88.57	0.13	3,436
04/29/90	1,196	180,933	89.16	0.59	3,943
04/30/90	1,551	182,484	89.92	0.76	4,041
April 1990 TOTAL	180,403				

Appendix Table E.31. Smolt outmigration estimates past Prosser for May 1590.

DATE	NUHBER OF FISH PASSAGE	SEASON CUM	CUH PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOU CFS
05/01/90	1,512	183,996	90.67	0.75	3,836
05/02/90	689	184,685	91.01	0.34	3,524
05/03/90	1,645	186,330	91.82	0.81	3,492
05/04/90	530	186,860	92.08	0.26	3,571
05/05/90	974	187,834	92.56	0.48	3,533
05/06/90	1,936	189,770	93.51	0.95	3,921
05/07/90	1,271	191,041	94.14	0.63	4,887
05/08/90	1,002	192,043	94.63	0.49	4,672
05/09/90	484	192,527	94.87	0.24	3,541
05/10/90	162	192,689	94.95	0.08	3,041
05/11/90	221	192,910	95.06	0.11	2,960
05/12/90	711	193,621	95.41	0.35	2,906
05/13/90	309	193,930	95.56	0.15	2,477
05/14/90	328	194,258	95.73	0.16	2,879
05/15/90	631	194,889	96.04	0.31	2,766
05/16/90	259	195,148	96.16	0.13	2,513
05/17/90	272	195,420	96.30	0.13	2,302
05/18/90	186	195,606	96.39	0.09	2,146
05/19/90	183	195,789	96.48	0.09	2,114
05/20/90	150	195,939	96.55	0.07	2,158
05/21/90	152	196,091	96.63	0.07	2,240
05/22/90	106	196,197	96.68	0.05	2,442
05/23/90	240	196,437	96.80	0.12	2,776
05/24/90	563	197,000	97.08	0.28	3,519
05/25/90	636	197,636	97.39	0.31	3,675
05/26/90	436	198,072	97.61	0.21	3,454
05/27/90	204	198,276	97.71	0.10	3,364
05/28/90	157	198,433	97.78	0.08	3,452
05/29/90	144	198,577	97.85	0.07	4,018
05/30/90	437	199,014	98.07	0.22	4,268
05/31/90	580	199,594	98.36	0.29	4,405
Ray 1990 TOTAL	17,110				

Appendix Table E.32. Smolt outaigretion estimates past Prosser for June 1990.

DATE	NUHBER OF FISH PASSAGE	SEASON CUM	CUM PERCENT PASSAGE	DAILY PERCENT PASSAGE	DAILY PROSSER FLOU CFS
06/01/90	88	199,682	98.40	0.04	4,621
06/02/90	509	200,191	98.65	0.25	4,600
06/03/90	270	200,461	98.78	0.13	4,289
06/04/90	67	200,528	98.82	0.03	4,405
06/05/90	70	200,598	98.85	0.03	4,885
w/w/90	54	200,652	98.88	0.03	5,302
06/07/90	169	200,821	98.96	0.08	5,659
06/08/90	280	201,101	99.10	0.14	6,114
06/09/90	54	201,155	99.12	0.03	6,244
06/10/90	28	201,183	99.14	0.01	6,682
06/11/90	0	201,183	99.14	0.00	7,585
06/12/90	75	201,258	99.18	0.04	7,791
06/13/90	78	201,336	99.21	0.04	7,806
06/14/90	116	201,452	99.27	0.06	7,890
06/15/90	118	201,570	99.33	0.06	6,952
06/16/90	110	201,680	99.38	0.05	5,095
06/17/90	136	201,816	99.4s	0.07	4,070
06/18/90	1,050	202,866	99.97	0.52	4,036
06/19/90	46	202,912	99.99	0.02	3,943
06/20/90	13	202,925	lW.W	0.01	4,372
06/21/90	0	202,925	lW.W	0.00	4,493
06/22/90	0	202,925	100.00	0.00	4,976
06/23/90	0	202,925	100.00	0.00	4,958
W/24/90	0	202,925	lw.w	0.00	5,325
06/25/90	0	202,925	lw.w	0.00	5,570
06/26/90	0	202,922	lw.w	0.00	5,199
06/27/90	0	202,925	lw.w	0.00	4,246
06/28/90	0	202,925	lw.w	0.00	3,367
06/29/90	0	202,925	lw.w	0.00	2,881
06/30/90	7	202,932	lw.w	0.00	2,424
June 1990 TOTAL	3,338				