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ANNUAL REPORT
NIMBUS SALMON AND STEELHEAD HATCHERY, 1984-85^{1/}

by

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ABSTRACT

This report describes the operation of Nimbus Salmon and Steelhead Hatchery from July 1, 1984 through June 30, 1985. Tables present numbers of fish trapped, eggs taken, fish reared and released, daily river flow, weather conditions, and water and air temperatures. There were 12,249 chinook salmon, Oncorhynchus tshawytscha, trapped, which produced 18,246,755 eggs. There were 910 winter-run steelhead, Salmo gairdneri, trapped, from which 1,268,100 eggs were taken.

During the year we planted or transferred a total of 10,000,780 fingerling and 6,658,385 advanced fingerling chinook salmon and 354,570 fingerling and 474,485 yearling steelhead.

INTRODUCTION

This is the 30th annual report for Nimbus Salmon and Steelhead Hatchery. The hatchery is located on the American River near the base of Nimbus Dam and is operated by the California Department of Fish and Game under contract with the United States Bureau of Reclamation. This report summarizes the hatchery activities during 1984-85, with particular reference to numbers of fish trapped, spawned and released, eggs taken and fish produced, and other pertinent information.

PRODUCTION SUMMARY

During 1984-85, we took 19,514,855 eggs and planted 17,488,220 chinook salmon and steelhead (Table 1).

TABLE 1. Production Summary, Nimbus Salmon and Steelhead Hatchery, 1984-85

Species	Number of fish trapped	Eggs taken or received	Eggs transferred	Fingerlings planted	Adv. fgl. or yearling planted	Total weight planted (lb)
Chinook salmon						
1983 BY					2,978,285	63,700
1984 BY	12,249	18,246,755		10,000,780	3,680,100	80,476
Steelhead						
1984 BY				3,600	474,485	132,939
1985 BY	910	1,268,100	150,490	350,970		2,561

HATCHERY OPERATION

The Weir

The weir was installed September 13 and 14, 1984 by the Bureau of Reclamation. The pickets were lowered and capped on September 17, 1984. The lower gate in the ladder was removed and the holding pond was opened October 26, 1984. Water temperature was 60°.

Water Temperature Control

Shutters #8 and #9 were pulled July 13, 1984 when Hatchery water temperature reached 60°F. Shutters #1-#7 were removed on October 24 and 25, 1984. Water temperature in Nimbus ponds was in the 60°-63°F range on October 26, 1984. After shutters were removed, pond temperature had lowered to a constant 60°F by October 28, 1984.

Disposal of Salmon Carcasses

Edible carcasses were given to State and County institutions, community action groups and groups or councils representing the local Indians. Local zoos received carcasses of questionable quality and all inedible carcasses went to a local rendering plant. The total dispensed was 79,450 lb edible, 600 lb animal food and 4,000 lb inedible.

Public Relations

An estimated 224,460 persons visited Nimbus Hatchery this year. This number was arrived at by an automatic car counter installed at the parking lot entrance and employee counts of bus passengers and bicyclists. October was the peak month with 41,760 visitors.

CHINOOK SALMON MAINTENANCE PROGRAM

Chinook Salmon Counts

The fish ladder was opened October 26, 1984 and the first spawning took place on October 30, 1984. A total of 12,249 salmon entered the holding pond this season, including 4,548 males, 5,748 females, and 1,953 grilse (Appendix Table 1). Grilse are fish 60 cm (23.6 in.) FL or under. A total of 1,146 carcasses was removed from the weir: 409 males, 333 females, and 404 grilse.

Sorting and Spawning

Of the females counted, 4,449 were spawned, 141 died in the pond and 1,158 were accidentally killed or released.

The spawning season, which began October 30, 1984 and ended November 29, 1984, produced a total of 18,246,755 eggs, for an average of 4,101 eggs per female. Fertility, as determined by the difference between green eggs taken and the total eggs eyed, ranged from 88.8% to 63.7% with an average of 81.8%.

Marked Chinook Salmon Recoveries

All fish were examined for marks as they were processed or removed dead from the pond. Heads were removed from all adipose fin-clipped fish for recovery of coded wire tags by the District Biologist.

Chinook Salmon Planting

1983 Brood Year

There was an estimated 3,305,925 chinook salmon on hand July 1, 1984.

1984 Brood Year

We released 13,680,880 fingerlings and 2,978,285 smolts (Table 2). Of these, 51,300 were coded-wire tagged. On June 30, 1985 there were approximately 837,400 chinook salmon on hand to be released in July 1985.

TABLE 2. Planting Data for 1983 and 1984 Brood Year Chinook Salmon

Month	Release site	Fingerlings	Smolts	Average size/lb	Weight (lb)
1983 BY					
7-84	Maritime Academy		2,826,300	46	61,500
7-84	Port Chicago		50,710	36	1,400
7-84	Berkeley B.R.		50,675	36	1,400
7-84	Fort Baker		50,600	36	1,400
1984 BY					
1-85	Foot of Ladder	5,350,800		1,200	4,557
2-85	Foot of Ladder	3,407,900		1,168	2,917
3-85	Foot of Ladder	531,680		963	552
4-85	Garcia Bend	424,800		139	3,050
5-85	Garcia Bend	285,600		136	2,100
5-85	Mare Island	228,500		53	4,300
5-85	Maritime Academy	463,900		56	8,300
6-85	Mare Island	1,027,100		57	18,100
6-85	Maritime Academy	1,960,600		53	36,600
TOTALS		13,680,880	2,978,285		146,176

WINTER-RUN STEELHEAD MAINTENANCE PROGRAM

History of the 1985 Winter-run

Steelhead entering the holding pond were separated into two groups again this spawning season. Fish entering the holding pond from October 26, 1984, through November 29, 1985, were held and spawned as early-run steelhead. All steelhead entering the holding pond from January 14, 1985, through February 4, 1985, were spawned as late-run steelhead (Table 3). All fish were examined for marks as they were processed or removed dead from the pond. Heads were removed from adipose fin-clipped fish for recovery of coded-wire tags by the District Biologist.

TABLE 3. Counts of Winter-run Steelhead
Nimbus Salmon and Steelhead Hatchery, 1984-85

Date	Spawned and released		Pre-Spawning mortality		Released unspawned		Total
	M	F	M	F	M	F	
Dec. 11	13	12	12	29			66
Dec. 17	7	9	6	8	13	8	51
Dec. 21			11	14			25
Jan. 2	25	23	15	23			86
Jan. 9	5	18	2	5			30
Jan. 23	88	76	1	4	24	17	210
Jan. 31	69	66	2	2	34	13	186
Feb. 7					127	127	256
TOTALS	207	204	49	85	200	165	910

Spawning Data 1985 Brood Year

The 204 females spawned produced 1,268,100 eggs (395,340 early-run and 872,760 late-run) for an average of 6,216 eggs per female. Survival of green eggs to eyed eggs ranged from 53% to 97% with an average of 84%.

Winter-run Steelhead Planted

1984 Brood Year

From December 1984 through March 1985 a total of 474,485 yearling steelhead was planted (Table 4). Of those planted, 215,905 were early-run and 258,580 were late-run steelhead. In addition, 3,600 fingerlings were released from the hatchery in July. No tagged fish were released this year.

TABLE 4. Planting Data, 1984 Brood Year Winter-run Steelhead
Nimbus Salmon and Steelhead Hatchery, 1984-85

Month	Release site	Fingerlings	Yearlings	Average size/lb	Weight(lb)
July	Foot of Ladder	3,600		400.0	9
Dec.	Rio Vista		102,105	3.2	31,450
Jan.	Rio Vista		113,800	4.0	28,450
Feb.	Rio Vista		187,310	3.7	50,630
Mar.	Rio Vista		71,270	3.2	22,400
TOTALS		3,600	474,485		132,939

1985 Brood Year

Prior to June 15, 1985, 350,970 fingerlings at 137/lb were released into the American River at the base of the fish ladder. On June 30, 1985, approximately 615,585 Nimbus fingerlings were on hand; approximately 500,000 will be released in January and March 1986.

Steelhead Disease Information

1984 Brood Year

Four minor outbreaks of Columnaris were controlled by feeding Terramycin feed and drip treatments using Hyamine and Copper Sulfate.

Appendix Table 1

Nimbus Salmon and Steelhead Hatchery Weather, Water and
Fish Trapping Data July 1, 1984 through June 30, 1985

July 1984	Temperature (C*)				Weather	American River flow at Hatchery (m ³ /sec**)	Salmon	Steelhead
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	40.6	18.3	13.3	12.8	Clear	142.978		
2	40.0	15.6	13.9	13.3	Clear	142.270		
3	41.1	15.6	13.9	13.3	Clear	142.468		
4	38.9	21.1	13.9	13.3	Clear	141.788		
5	37.8	20.0	13.9	13.3	Partly Cloudy	142.241		
6	38.9	21.1	14.4	13.3	Clear	141.732		
7	33.9	19.4	14.4	13.9	Clear	142.015		
8	33.2	21.7	13.9	13.3	Clear	141.986		
9	35.6	16.1	14.4	13.9	Clear	141.222		
10	37.8	17.2	15.6	15.0	Clear	141.137		
11	37.8	17.8	15.6	15.0	Clear	139.410		
12	39.4	20.0	15.6	15.0	Clear	138.843		
13	40.0	23.3	16.1	15.6	Clear	141.024		
14	40.6	31.1	16.7	15.6	Clear	142.978		
15	38.9	23.3	16.1	15.6	Partly Cloudy	157.250		
16	38.9	16.7	16.7	15.6	Partly Cloudy	166.651		
17	40.0	15.6	16.1	15.6	Partly Cloudy	167.218		
18	36.7	22.2	16.1	15.6	Clear	168.067		
19	36.7	31.1	16.1	15.6	Clear	168.549		
20	32.2	23.3	17.2	16.1	Clear	167.189		
21	35.6	22.2	17.2	16.1	Clear	166.198		
22	35.6	12.2	17.2	16.1	Partly Cloudy	165.915		
23	30.0	12.8	16.7	16.1	Partly Cloudy-Rain	166.000		
24	29.4	17.8	16.7	16.7	Clear	153.767		
25	32.2	14.4	16.7	16.7	Clear	140.712		
26	37.2	16.7	17.2	16.7	Clear	121.541		
27	35.6	16.7	17.8	16.7	Clear	139.296		
28	37.8	16.7	17.8	17.2	Clear	139.664		
29	36.7	16.7	17.8	17.2	Clear	139.636		
30	37.8	17.8	17.8	17.2	Clear	138.730		
31	36.7	17.8	17.8	17.2	Clear	138.871		

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1 (Cont'd)

August 1984	Temperature (C#)				Weather	American River flow at Hatchery (m ³ /sec**)	Salmon	Steelhead
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	33.3	17.8	17.2	17.2	Clear	138.843		
2	28.9	15.6	17.8	17.2	Clear	111.658		
3	33.3	14.4	18.3	17.8	Clear	110.638		
4	36.7	16.7	18.3	17.8	Clear	96.961		
5	32.2	15.0	18.3	17.8	Clear-Hot	83.368		
6	35.0	15.6	18.3	18.3	Clear-Hot	72.975		
7	40.6	20.6	18.3	18.3	Clear-Hot	70.540		
8	39.4	20.0	18.3	17.8	Clear-Hot	55.673		
9	41.7	20.0	18.3	17.8	Clear-Hot	55.362		
10	33.9	21.1	18.3	17.8	Partly Cloudy	55.079		
11	36.7	17.8	18.3	17.8	Clear	54.569		
12	36.7	17.8	18.3	17.8	Clear	54.399		
13	36.7	20.0	18.3	17.8	Clear	54.569		
14	36.1	17.8	18.9	18.3	Clear	54.540		
15	36.7	17.8	18.9	18.3	Partly Cloudy	54.569		
16	33.3	23.3	18.9	18.3	Clear	54.909		
17	36.7	20.0	18.9	18.3	Clear	55.079		
18	37.8	20.0	18.9	18.3	Clear	54.994		
19	38.3	17.8	18.9	18.3	Clear	54.484		
20	33.9	15.6	18.9	18.3	Clear	41.146		
21	34.4	15.6	18.9	18.3	Clear	41.429		
22	34.4	15.6	18.9	18.3	Clear	45.224		
23	34.4	16.1	18.9	18.3	Clear	41.203		
24	28.3	15.6	18.9	18.3	Clear	41.344		
25	26.7	15.6	18.9	18.3	Clear	41.429		
26	28.9	15.6	18.9	18.3	Clear	41.203		
27	37.8	20.0	18.9	18.3	Clear	41.288		
28	38.9	15.6	18.9	18.3	Clear-Hot	41.486		
29	38.3	15.6	18.9	18.3	Clear-Hot	40.721		
30	25.6	15.6	18.9	18.3	Cloudy-Rain	41.826		
31	28.9	16.7	20.0	19.4	Clear	41.344		

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1 (Cont'd)

September 1984	Temperature (C*)				Weather	American River flow at Hatchery (m ³ /sec**)	Salmon	Steelhead
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	34.4	15.6	19.4	18.9	Clear	41.089		
2	36.7	15.6	19.4	18.9	Clear	41.004		
3	35.6	17.8	19.4	18.9	Clear	40.891		
4	37.2	17.8	19.4	18.9	Clear	41.089		
5	37.2	21.1	19.4	18.9	Clear	41.514		
6	33.3	16.7	20.0	19.4	Clear	41.684		
7	36.7	17.8	20.0	19.4	Clear	41.656		
8	38.9	20.0	20.0	19.4	Clear	41.599		
9	39.4	18.3	20.0	19.4	Clear	41.514		
10	34.4	20.0	19.4	19.4	Clear	28.771		
11	29.4	14.4	20.0	19.4	Clear	45.592		
12	33.3	16.7	20.6	19.4	Clear	62.300		
13	32.8	16.7	20.6	19.4	Clear	64.338		
14	33.9	16.7	20.6	19.4	Clear	64.225		
15	28.9	16.7	19.4	18.9	Clear	64.027		
16	36.7	17.8	19.4	18.9	Clear	64.282		
17	41.1	20.0	20.0	18.9	Clear	44.346		
18	38.9	22.2	20.0	19.4	Partly Cloudy	63.093		
19	34.4	22.2	21.1	19.4	Cloudy	62.639		
20	30.6	16.7	20.0	18.9	Clear	63.744		
21	30.6	16.7	20.0	18.9	Clear	63.800		
22	30.0	13.3	20.0	19.4	Clear	64.197		
23	25.6	13.3	19.4	18.3	Clear	63.064		
24	28.3	11.1	18.9	19.4	Clear	63.064		
25	30.6	10.0	18.9	18.3	Clear	63.036		
26	33.3	11.1	19.4	18.3	Clear	62.300		
27	34.4	14.4	19.4	18.9	Clear	62.809		
28	34.4	14.4	19.4	18.9	Clear	62.809		
29	32.2	15.6	19.4	18.9	Clear	62.724		
30	21.1	15.6	18.9	18.3	Cloudy-Rain	62.979		

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1 (Cont'd)

October 1984	Temperature (C*)				Weather	American River flow at Hatchery (m ³ /sec**)	Salmon	Steelhead
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	24.4	13.3	18.9	18.3	Clear	62.809		
2	27.8	14.4	19.4	18.9	Clear	62.923		
3	24.4	13.9	18.9	18.3	Clear	62.951		
4	25.6	14.4	18.9	18.3	Clear	62.979		
5	25.6	14.4	18.9	18.3	Partly Cloudy	63.008		
6	28.9	15.6	19.4	18.9	Clear	62.866		
7	31.1	14.4	19.4	18.3	Clear	62.554		
8	27.8	15.6	17.8	17.2	Clear	62.611		
9	26.7	14.4	17.8	17.2	Clear	62.809		
10	24.4	11.1	18.9	18.3	Cloudy-Rain	61.422		
11	31.1	12.2	18.9	18.3	Partly Cloudy	43.440		
12	24.4	11.1	19.4	18.3	Partly Cloudy	43.015		
13	24.4	15.6	18.9	18.3	Cloudy-Rain	49.160		
14	22.2	11.1	18.9	17.8	Clear	50.887		
15	21.1	10.6	18.3	17.8	Clear	49.500		
16	10.0	8.9	18.3	17.8	Rain	49.047		
17	18.9	4.4	17.2	16.1	Clear	49.896		
18	17.8	4.4	17.2	16.7	Rain	49.585		
19	17.8	4.4	17.8	16.7	Clear	56.494		
20	20.0	10.0	18.3	17.2	Clear	55.758		
21	16.7	5.6	17.8	17.2	Cloudy	55.418		
22	21.1	7.8	16.7	16.1	Partly Cloudy	63.206		
23	24.4	6.7	17.2	16.7	Clear	63.404		
24	19.4	6.7	17.2	16.7	Clear	63.177		
25	24.4	11.1	17.2	16.7	Clear	63.036		
26	27.8	11.1	16.7	16.1	Cloudy-Rain	63.149		
27	18.9	5.6	16.1	15.6	Partly Cloudy	63.404		
28	17.8	7.8	15.6	15.0	Rain	63.121		
29	16.7	5.6	15.0	15.0	Rain	63.602		
30	16.7	10.0	15.0	14.4	Foggy	62.470	734	
31	18.9	6.7	15.0	16.1	Foggy	55.702		

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1 (Cont'd)

November 1984	Temperature (C*)				Weather	American River flow at Hatchery (m ³ /sec**)	Salmon	Steelhead
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	20.0	5.6	16.7	15.6	Clear	55.645	819	
2	21.1	6.7	16.7	16.7	Clear	55.702		
3	21.1	6.7	16.7	16.1	Clear	55.390		
4	20.0	7.8	15.6	15.0	Clear	55.588		
5	20.0	8.9	15.6	15.0	Cloudy	55.673	1302	1
6	18.9	11.1	15.0	15.0	Rain	55.163		
7	18.9	8.9	15.0	14.4	Clear	49.103		
8	18.9	7.8	14.4	14.4	Rain	49.103	1778	1
9	18.3	5.0	14.4	13.9	Cloudy	49.160		
10	11.1	6.7	14.4	13.9	Rain	49.132		
11	11.1	4.4	13.9	13.3	Cloudy	49.018		
12	17.8	6.7	14.4	14.4	Cloudy-Rain	48.905	1669	
13	17.8	11.1	15.0	15.0	Cloudy-Rain	67.878		
14	18.3	5.6	15.0	14.4	Clear	142.779		
15	17.8	5.6	15.0	14.4	Cloudy	141.250	2007	2
16	18.3	5.6	15.0	14.4	Rain	142.185		
17	16.7	7.8	13.9	12.8	Fog	140.910		
18	15.6	10.0	13.3	12.8	Fog-Cloudy	141.024		
19	15.6	8.3	12.8	12.8	Fog-Cloudy	141.222	1587	7
20	12.2	6.7	15.0	14.4	Fog-Rain	94.809		
21	14.4	5.6	12.8	12.2	Clear	87.078		
22	12.8	3.3	12.2	12.2	Fog-Cloudy	86.172		
23	12.2	3.3	12.2	12.2	Fog-Cloudy	86.398		
24	12.2	8.9	12.2	12.2	Rain	86.143		
25	10.6	6.7	12.2	12.2	Partly Cloudy	86.851		
26	15.0	5.6	11.7	11.1	Clear	73.259	961	8
27	15.6	1.1	11.7	11.7	Rain	71.163		
28	14.4	1.1	11.7	11.7	Cloudy-Rain	70.908		
29	14.4	1.1	11.7	11.1	Clear	81.244	1302	
30	16.1	6.1	10.0	10.0	Clear	143.572		

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*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1 (Cont'd)

December 1984	Temperature (C*)				Weather	American River flow at Hatchery (m ³ /sec**)	Salmon	Steelhead
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	15.6	10.0	11.7	11.7	Partly Cloudy	142.156		
2	11.1	7.8	11.1	11.1	Fog - Rain	142.185		
3	15.0	7.8	10.0	10.0	Partly Cloudy	142.751		
4	11.7	6.1	10.0	10.0	Fog - Cloudy	141.194		
5	17.2	5.6	10.0	10.0	Cloudy - Rain	142.100		
6	16.1	4.4	10.0	9.4	Partly Cloudy	142.638		
7	16.7	5.0	9.4	9.4	Clear	142.270		
8	18.9	4.4	11.1	10.6	Partly Cloudy	140.372		
9	17.8	7.8	10.6	10.6	Partly Cloudy	93.053		
10	16.7	10.0	10.0	10.0	Cloudy - Rain	82.830		
11	14.4	7.8	10.6	10.6	Cloudy	82.858	67	42
12	14.4	7.8	10.6	10.0	Cloudy - Rain	82.774		
13	13.3	5.6	10.6	10.0	Clear	83.113		
14	15.6	4.4	10.0	9.4	Clear	83.425		
15	8.9	2.2	10.0	9.4	Rain	83.623		
16	10.0	2.2	10.0	9.4	Partly Cloudy	83.481		
17	13.3	2.2	10.0	9.4	Partly Cloudy	86.510	21	51
18	14.4	3.9	10.0	10.0	Cloudy	83.878		
19	12.2	3.3	10.0	9.4	Clear	83.566		
20	14.4	3.3	9.4	9.4	Partly Cloudy	83.623		
21	12.8	.0	10.0	9.4	Clear	80.763		
22	12.8	-1.1	10.0	9.4	Fog	56.098		
23	12.2	-1.1	10.0	9.4	Fog	55.900		
24	5.6	3.3	10.0	8.9	Fog	54.937		25
25	5.6	3.3	8.9	8.9	Fog	49.387		
26	5.6	3.3	9.4	8.9	Partly Cloudy	49.698		
27	10.0	-1.1	8.9	8.9	Fog - Clearing	49.585		
28	8.9	1.7	8.9	8.9	Fog - Clearing	49.585		
29	6.7	3.3	8.3	8.3	Cloudy - Fog	49.613		
30	6.1	.0	8.3	7.8	Cloudy - Fog	49.443		
31	10.0	4.4	8.9	8.9	Clear	49.557		

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*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1 (cont'd)

January 1985	Temperature (C*)				Weather	American River flow at Hatchery (m ³ /sec**)	Salmon	Steelhead
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	7.8	-0.6	8.9	8.9	Clear	49.557	2	86
2	15.6	-1.1	8.9	8.9	Clear	49.557		
3	15.6	-1.1	8.9	8.9	Clear	49.641		
4	13.3	-1.1	7.2	7.2	Fog - Cloudy	49.585		
5	8.9	-1.1	6.3	7.8	Fog - Cloudy	49.188		
6	12.2	5.6	7.8	7.8	Cloudy	49.415		
7	12.2	7.8	7.8	7.2	Rain	49.840		
8	12.2	5.6	7.2	6.7	Fog	49.330		
9	12.2	4.4	7.8	7.2	Rain	49.415		30
10	17.2	3.9	7.2	7.2	Fog	49.981		
11	11.1	5.6	7.2	7.2	Fog - Cloudy	49.981		
12	11.1	2.2	7.8	7.2	Fog	49.811		
13	13.3	-1.1	7.8	7.2	Fog - Cloudy	49.641		
14	13.3	1.1	8.3	7.8	Fog	49.726		85
15	4.4	2.8	7.2	7.2	Fog	49.896		
16	8.9	3.9	7.2	7.2	Fog	49.953		
17	12.2	-0.6	7.2	7.2	Fog	50.264		
18	7.8	-0.6	7.2	7.2	Fog	50.066		
19	4.4	1.1	7.2	7.2	Fog	50.264		
20	4.4	3.3	7.2	6.7	Fog	50.066		
21	4.4	5.0	9.4	9.4	Fog - Cloudy	50.095		
22	7.8	3.3	6.7	6.7	Fog - Cloudy	50.463		
23	12.2	3.3	6.7	6.7	Fog - Cloudy	50.463		169
24	8.9	4.4	7.2	7.2	Cloudy	50.406		
25	11.1	3.3	7.8	7.2	Cloudy	50.236		
26	12.2	5.6	7.8	7.8	Fog	50.349		
27	11.1	3.3	7.8	7.2	Fog	49.896		
28	12.2	4.4	7.8	7.2	Rain	50.151		
29	14.4	2.2	7.8	7.2	Fog	50.208		
30	13.9	-1.1	7.8	7.2	Clear	50.236		
31	14.4	-1.1	7.2	6.7	Clear	50.151		

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1 (cont'd)

February 1985	Temperature (C*)				Weather	American River flow at Hatchery (m ³ /sec**)	Salmon	Steelhead
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	15.6	-1.1	7.8	7.2	Partly Cloudy	50.378		
2	11.1	.0	7.2	7.2	Foggy-Clear	50.434		
3	10.0	1.1	6.7	6.7	Partly Cloudy	50.293		
4	12.2	3.3	7.8	7.2	Clear	50.066		
5	13.3	-1.1	7.8	7.2	Partly Cloudy	50.151		
6	13.3	3.3	7.2	7.2	Cloudy	50.208		
7	11.1	5.6	7.8	7.2	Rain	50.321		
8	15.6	5.6	7.8	7.2	Rain	50.095		256
9	13.3	2.2	7.8	7.2	Clear	50.321		
10	13.3	.0	7.8	7.2	Clear	49.953		
11	15.6	2.2	7.2	7.2	Cloudy	49.925		
12	17.8	7.8	7.2	7.2	Clear	49.613		
13	20.0	4.4	8.3	7.8	Clear	49.273		
14	22.2	4.4	9.4	8.3	Clear	48.707		
15	22.8	4.4	8.9	8.3	Clear	48.679		
16	21.1	5.6	8.9	8.3	Clear	52.587		
17	21.1	7.8	8.9	8.3	Clear	42.958		
18	22.2	5.6	8.3	7.8	Clear	71.418		
19	18.9	5.6	7.8	7.8	Partly Cloudy	83.651		
20	17.8	7.2	8.9	8.9	Clear	83.481		
21	23.3	7.8	8.9	8.9	Partly Cloudy	84.076		
22	25.6	6.7	9.4	8.3	Clear	85.011		
23	21.1	7.8	8.9	8.9	Clear	85.265		
24	22.2	6.7	9.4	8.9	Clear	84.784		
25	23.3	14.4	9.4	8.3	Clear	84.303		
26	25.0	12.8	9.4	8.3	Clear	83.878		
27	23.3	11.1	10.0	8.3	Clear	83.935		
28	23.9	12.8	9.4	8.3	Clear	81.301		

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*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1 (Cont'd)

March 1985	Temperature (C*)				Weather	American River flow at Hatchery (m ³ /sec**)	Salmon	Steelhead
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	20.6	10.6	9.4	8.3	Partly Cloudy	77.563		
2	14.4	5.6	9.4	8.9	Partly Cloudy	48.282		
3	15.6	3.3	8.9	8.3	Clear	48.169		
4	16.1	6.1	8.9	8.3	Rain	48.339		
5	16.7	4.4	8.3	8.3	Rain	50.349		
6	12.2	3.9	8.3	7.8	Rain	51.086		
7	14.4	5.0	7.8	7.2	Partly Cloudy	51.057		
8	17.8	.6	8.3	7.8	Partly Cloudy	50.066		
9	17.8	4.4	9.4	8.3	Clear	49.755		
10	10.0	5.6	10.0	9.4	Clear	49.613		
11	17.8	5.6	9.4	9.4	Partly Cloudy	51.171		
12	17.2	6.1	9.4	8.9	Partly Cloudy	49.076		
13	21.1	5.6	9.4	8.9	Clear	36.162		
14	22.2	6.1	10.0	8.9	Clear	36.332		
15	27.2	3.9	10.6	8.9	Clear	36.304		
16	23.3	6.7	10.0	9.4	Partly Cloudy	36.332		
17	16.7	6.7	10.0	9.4	Cloudy	36.304		
18	15.0	10.0	10.0	10.0	Rain	36.304		
19	17.8	5.6	10.0	10.6	Fog-Cloudy	36.445		
20	19.4	7.8	10.0	10.0	Fog-Cloudy	36.445		
21	17.8	6.7	10.6	9.4	Clear	36.134		
22	20.0	3.3	10.6	10.0	Clear	36.672		
23	21.1	4.4	10.6	10.0	Clear	36.077		
24	18.3	5.6	10.0	9.4	Rain	36.105		
25	18.3	8.3	11.1	10.0	Clear	36.077		
26	11.1	5.0	10.6	10.0	Rain	36.105		
27	16.1	2.8	9.4	9.4	Rain	36.955		
28	19.4	5.0	11.1	10.0	Partly Cloudy	36.360		
29	17.8	6.1	11.1	10.0	Clear	36.474		
30	21.1	5.6	10.6	10.0	Clear	36.530		
31	25.6	4.4	11.1	10.0	Clear	36.417		

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*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1 (Con't)

April 1985	Temperature (C*)				Weather	American River flow ₃ at Hatchery (m ³ /sec**)	Salmon	Steelhead
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	27.8	10.0	11.1	10.0	Clear	36.389		
2	30.6	11.1	11.7	10.6	Clear	36.332		
3	29.4	11.1	11.1	10.6	Clear	36.389		
4	29.4	12.2	13.3	11.1	Clear	35.284		
5	30.0	10.6	12.8	11.1	Clear	35.341		
6	27.2	10.6	12.2	11.1	Clear	35.482		
7	27.2	20.6	12.8	11.1	Clear	35.199		
8	29.4	10.0	12.2	11.7	Partly Cloudy	35.086		
9	27.8	12.2	12.2	11.1	Clear	35.511		
10	22.2	10.0	11.7	10.6	Cloudy	36.020		
11	24.4	10.0	12.2	11.1	Clear	35.822		
12	30.0	8.9	12.2	11.1	Clear	38.399		
13	30.6	19.4	13.3	11.7	Clear - Hot	55.277		
14	32.8	10.6	13.9	11.7	Clear - Hot	55.305		
15	26.1	12.2	10.6	10.6	Clear	55.730		
16	20.0	10.6	11.7	10.6	Cloudy	73.174		
17	20.6	10.6	11.1	10.6	Partly Cloudy	76.742		
18	21.1	7.8	10.6	10.0	Cloudy	76.147		
19	22.2	14.4	10.6	10.0	Partly Cloudy	76.402		
20	20.6	10.0	10.6	10.0	Partly Cloudy	72.947		
21	15.6	4.4	10.6	10.0	Rain	76.629		
22	21.7	12.2	10.6	10.6	Clear	77.478		
23	24.4	16.1	10.6	10.6	Clear	75.411		
24	22.8	5.6	12.2	11.1	Clear	54.540		
25	21.1	10.0	11.7	10.0	Clear	43.751		
26	26.1	10.0	10.6	10.0	Clear	42.307		
27	28.3	10.0	11.1	10.0	Clear	44.261		
28	27.8	8.9	11.1	10.0	Clear	44.884		
29	26.7	10.0	10.6	10.0	Partly Cloudy	57.429		
30	28.3	8.9	12.2	11.7	Clear	71.361		

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*Temperature measured to nearest whole degree F,₃ and later converted to C.**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1 (Con't)

May 1985	Temperature (C*)				Weather	American River flow at Hatchery (m ³ /sec**)	Salmon	Steelhea
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	31.1	10.0	12.2	11.7	Clear	87.474		
2	31.1	13.3	12.8	11.7	Partly Cloudy	91.439		
3	26.7	11.7	11.1	10.0	Clear	91.071		
4	26.7	11.7	11.1	10.0	Clear	91.156		
5	30.6	10.0	10.0	10.0	Clear	91.665		
6	23.9	10.0	10.0	9.4	Partly Cloudy	91.892		
7	22.8	11.7	10.0	9.4	Partly Cloudy	97.782		
8	25.6	7.8	11.7	10.0	Clear	105.598		
9	22.2	7.8	11.7	10.0	Cloudy	104.847		
10	23.3	7.2	11.7	10.0	Partly Cloudy	105.145		
11	22.8	11.1	10.6	10.0	Partly Cloudy	105.315		
12	27.2	10.6	11.7	10.0	Clear	105.258		
13	28.3	10.0	12.2	10.6	Clear - Hot	105.400		
14	28.3	10.0	11.7	10.0	Clear - Hot	82.066		
15	30.6	11.7	11.7	10.0	Clear	76.034		
16	31.1	11.7	11.7	11.7	Clear	47.518		
17	24.4	10.0	10.6	9.4	Clear	42.845		
18	26.7	10.0	11.7	10.0	Clear	42.760		
19	30.0	9.4	11.1	10.0	Clear	43.723		
20	30.6	7.8	13.3	10.0	Clear	56.353		
21	32.2	4.4	12.8	11.1	Clear	50.434		
22	32.2	15.0	10.6	11.1	Clear	42.987		
23	31.7	16.7	13.3	11.1	Clear	45.280		
24	30.6	13.3	12.8	11.7	Clear	51.935		
25	30.6	17.2	13.3	12.8	Clear	69.634		
26	25.6	9.4	13.9	12.8	Clear	71.106		
27	24.4	10.0	13.3	12.8	Clear	69.068		
28	21.7	9.4	12.8	12.2	Cloudy	56.353		
29	25.0	6.7	12.8	11.1	Clear	59.270		
30	27.8	11.1	13.3	12.8	Clear	56.834		
31	26.1	10.0	12.8	12.2	Clear	73.967		

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*Temperature measured to nearest whole degree F₃ and later converted to C.**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1 (Con't)

June 1985	Temperature (C*)				Weather	American River flow at Hatchery (m ³ /sec**)	Salmon	Steelhe
	Air		Water					
	Maximum	Minimum	Maximum	Minimum				
1	26.7	10.0	12.8	12.2	Cloudy	73.145		
2	21.7	10.0	12.8	12.2	Rain	73.627		
3	30.6	10.0	13.3	12.2	Partly Cloudy	74.533		
4	31.7	16.1	13.3	12.8	Partly Cloudy	77.252		
5	32.8	15.6	13.9	12.8	Clear	73.372		
6	34.4	14.4	13.3	12.8	Clear - Hot	73.429		
7	36.1	9.4	13.3	12.8	Clear - Hot	59.439		
8	34.4	12.2	13.3	12.8	Clear - Hot	56.636		
9	36.7	10.0	13.3	12.8	Clear - Hot	56.579		
10	36.7	17.2	14.4	13.9	Clear - Hot	56.381		
11	38.9	16.7	14.4	13.9	Clear - Hot	56.296		
12	39.4	20.6	14.4	13.9	Clear - Hot	79.262		
13	37.2	16.7	14.4	13.9	Clear - Hot	86.596		
14	40.0	21.1	15.0	13.3	Clear - Hot	85.832		
15	38.9	18.9	15.0	14.4	Clear - Hot	86.880		
16	42.2	21.1	14.4	13.9	Clear - Hot	85.832		
17	41.1	20.0	15.0	13.9	Clear - Hot	98.348		
18	40.0	15.6	15.0	14.4	Clear - Hot	113.499		
19	28.9	16.7	15.0	11.7	Clear	109.024		
20	30.0	17.8	15.0	14.4	Clear	110.752		
21	32.2	16.7	15.0	13.9	Clear	95.573		
22	32.2	15.0	15.6	14.4	Clear	94.214		
23	35.6	12.2	15.0	15.6	Clear	95.432		
24	32.2	10.0	16.1	15.0	Clear	100.019		
25	29.4	16.7	16.1	15.6	Clear	81.528		
26	35.6	16.1	15.6	15.0	Clear	80.027		
27	38.9	14.4	15.6	15.0	Clear - Hot	68.926		
28	38.3	16.1	15.6	15.0	Clear - Hot	68.954		
29	38.9	15.6	15.6	15.0	Clear - Hot	82.151		
30	33.3	13.3	15.0	14.4	Clear - Hot	84.954		

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*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.