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ANNUAL REPORT
IRON GATE SALMON AND STEELHEAD HATCHERY, 1991-92

by

Curtis A. Hiser
Region 1, Inland Fisheries

Inland Fisheries
Administrative Report No. 93-2
1993

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ABSTRACT

This report describes the operation of the Hatchery from July 1, 1991 through June 30, 1992. Appendix tables present daily records of water temperatures, weekly numbers of salmonids entering the Hatchery, total numbers of salmonids reared and released, and historical records.

There were 4,002 fall-run adult chinook salmon, Oncorhynchus tshawytscha, trapped, which produced 6,599,391 eggs. No spring-run chinook salmon were taken. The 360 adult coho salmon, O. kitsutch, which were trapped, produced 363,404 eggs. A total of 207 (107 fall-run and 100 spring-run) steelhead trout, O. mykiss, produced 145,369 eggs.

A total of 3,730,663 fingerling, 1,000,000 yearling chinook salmon, 84,999 yearling coho salmon, 48,202 yearling steelhead, and 139,999 two-year steelhead was planted or transferred in FY 1991-92.

^{1/} Inland Fisheries Administrative Report No. 93-2.
Submitted September 1990; Edited by K. A. Hashagen,
California Department of Fish and Game, 1416 Ninth Street,
Sacramento, CA 95814

INTRODUCTION

This report covers the 29th year of operation of the trapping facilities at Iron Gate Hatchery. These facilities were completed by the Pacific Power and Light Company in February 1962 and have been operated by the Department of Fish and Game during the spring and fall of each year.

The Hatchery was constructed by the Pacific Power and Light Company to compensate for spawning and nursery areas blocked by the Iron Gate Project. This is the 25th report since the Hatchery was completed in February 1966. The Department of Fish and Game, under agreement with the Pacific Power and Light Company, began operation of the Hatchery in March 1966. The trapping facilities and Hatchery are located on the Klamath River 8 miles east of Hornbrook, Siskiyou County.

PRODUCTION SUMMARY

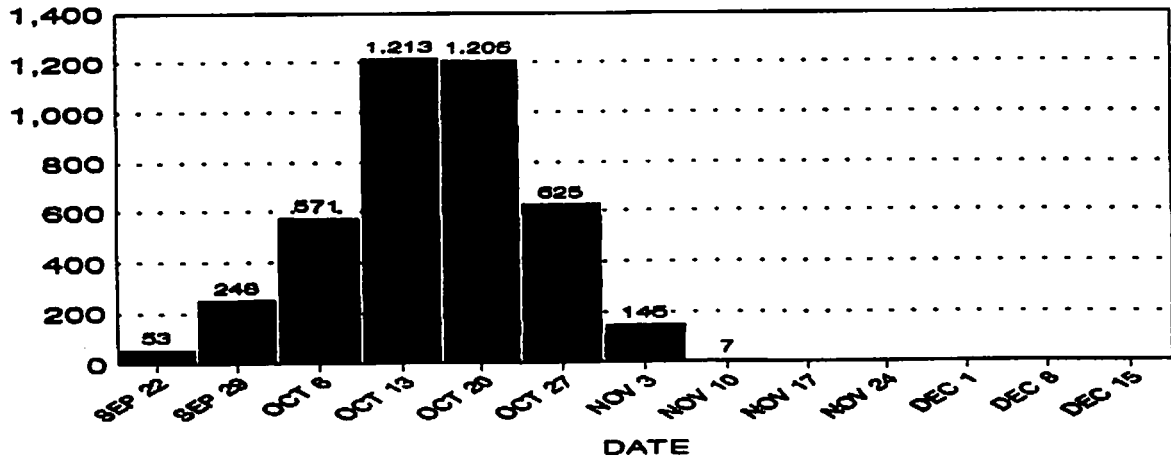
This report summarizes the numbers of fish trapped and spawned (Table 1 and Figure 1), production of eggs and fish (Table 1), and water temperatures (Appendix Figure 1) from July 1, 1991 through June 30, 1992.

TABLE 1. Production Summary, Iron Gate Salmon and Steelhead Hatchery, 1991-92

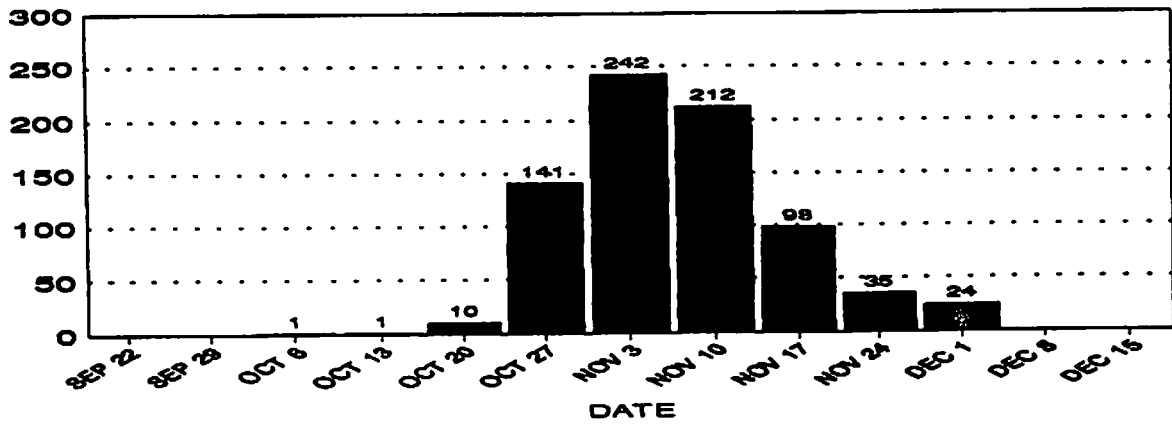
	Adults trapped	Eggs taken or received	Eggs transferred	Fingerlings planted and transferred	Yearlings planted	Total pounds planted and transferred
<u>Chinook salmon</u>						
1990 BY					1,000,000	125,000
1991 BY	4,002	6,599,391		3,730,663		43,812
<u>Coho salmon</u>						
1990 BY					84,999	5,512
1991 BY	360	363,404				
<u>Steelhead</u>						
1990 BY					139,999	42,424
1991 BY					48,202	7,179
1992 BY	207	145,369				

FIGURE 1. Trapping Data, Iron Gate Hatchery, 1991-92

CHINOOK SALMON 91/92 INCLUDING GRILSE



COHO SALMON 91/92 INCLUDING GRILSE



STEELHEAD 91/92

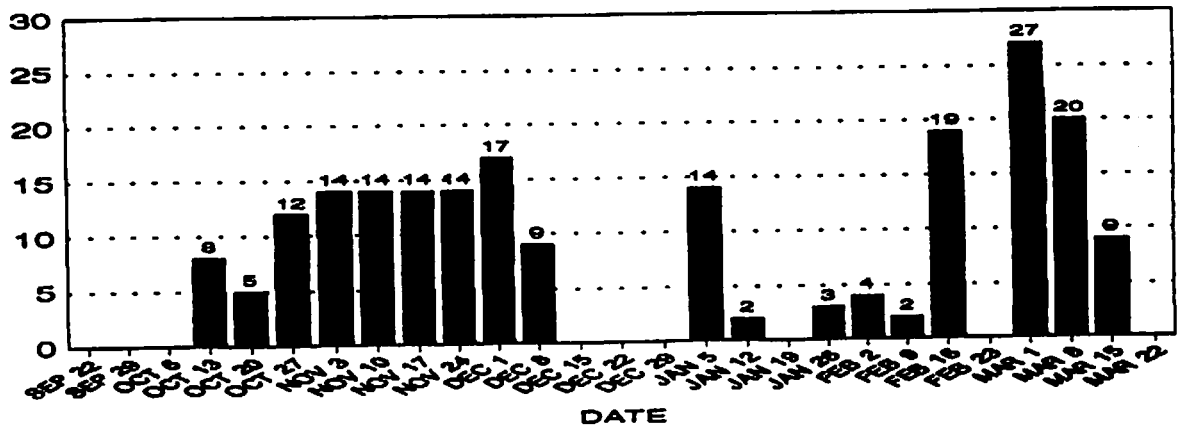


TABLE 2. Iron Gate Hatchery Chinook Salmon Distribution Data, 1991-92

Race and brood year	Date released	Average size/lb	Number released	Release site	Mark (Coded-wire tag number)
Fall-run, 1990	Planted:				
	11/15/91	8	95,880	IGH	06 57 03
	11/15/91	8	904,120	IGH	
	C SERIES	8	150,720	IGH	
	D SERIES	8	150,720	IGH	
	E SERIES	7	150,720	IGH	
	F SERIES	8	150,720	IGH	
	G SERIES	7	150,620	IGH	
	H SERIES	8	150,620	IGH	
=====					
Total yearlings			1,000,000		
Fall-run, 1991	Transferred to Klamath River Rearing Ponds:				
	5/6/92	100	40,000	Indian Creek	06 63 34
	5/7/92	96	40,032	Indian Creek	
	5/19/92	91	40,677	Bluff Creek	06 63 38
	5/22/92	73	39,954	Bluff Creek	

Total Transferred:			160,663		
	Planted:				
	6/7/92	80	191,200	IGH	0601020103 and 0601020107
	6/3-14/92	85	3,378,800	IGH	
	6/3-5 C SERIES	56	289,016	IGH	
	6/6-7 D SERIES	73	609,404	IGH	
	6/13 E SERIES	95	780,330	IGH	
	6/14 F SERIES	95	780,330	IGH	
	6/8-9 G SERIES	91	459,186	IGH	
	6/10-11 H SERIES	93	460,534	IGH	

Total planted:			3,570,000		
=====					
Total fingerlings			3,730,663		

COHO SALMON MAINTENANCE PROGRAM

History of the 1991 Run

The first coho salmon entered the trap on October 11, 1991 and the last on December 6, 1991. A total of 764 fish was trapped: 176 males, 184 females, and 404 grilse (≤ 56 cm or 22 inches FL) (Figure 1). The 160 females spawned produced 363,404 eggs, for an average of 2,271 eggs per female (Table 1). Approximately 148,000 fingerling coho salmon were on hand June 30, 1992.

Planting 1990 Brood Year Coho Salmon

There were 84,999 coho salmon planted during the 1991-92 season (Table 3).

TABLE 3. Iron Gate Coho Salmon Planting Data, 1991-92

Date	Average size/lb	Number released	Brood year	Release site	Mark (Coded wire tag No.)
3/26/92	12.8	34,995	1990	IGH	
3/26/92	18.0	47,856	1990	IGH	06 63 25
3/26/92	18.0	2,148	1990	IGH	
Total yearlings		84,999			

Marked Coho Salmon Recovered

Of the marked coho salmon recovered in the trap (Appendix Table 1), 162 were from Iron Gate Hatchery and the remainder (Ad) were of undetermined origin.

STEELHEAD TROUT MAINTENANCE PROGRAM

History of the 1991-92 Run

Between October 15 and December 31, 1991, a total of 107 steelhead entered the trap and were held for later spawning. An additional 100 steelhead were trapped between January 1 and March 18, 1992 (Figure 1). The 77 females spawned produced 145,369 eggs, for an average of 1,888 eggs per female. Approximately 72,000 steelhead fingerlings from the 1992 brood year were on hand June 30, 1992.

Planting 1990 Brood Year Steelhead

There were 139,999 2-year steelhead planted in 1991-92 (Table 4).

Planting 1991 Brood year Steelhead

There were 48,202 steelhead yearling planted in 1991-92 (Table 4).

TABLE 4. Iron Gate Hatchery Juvenile Steelhead Planting Data, 1991-92

Strain	Brood year	Date released	Average size/lb	Number released	Release site	Mark brand
KR	1990	3/27/92	3.3	82,760	IGH	LV
KR	1990	3/27/92	3.3	57,239	IGH	
Total 1990 BY			139,999			
KR	1991	5/19/92	8.9	30,643	IGH	
KR	1991	5/19/92	4.7	17,559	IGH	
Total 1991 BY				48,202		

Marked Steelhead Trapped

There were no marked steelhead trapped this year at Iron Gate Hatchery.

PUBLIC RELATIONS

During the 1991-92 fiscal year, 4,137 people visited the Hatchery, including 631 people in organized groups.

CHINOOK SALMON MAINTENANCE PROGRAM

History of the 1991 Run

Spring-Run, 1991 Brood Year

No spring-run chinook salmon appeared at the trap in 1991.

Fall-Run, 1991 Brood Year

A total of 4,067 fall-run chinook salmon was trapped: 1,733 males, 2,269 females, and 65 grilse (≤ 56 cm or 22 inches FL) (Figure 1). There were 2,104 females spawned; they produced 6,599,391 eggs (Table 1), for an average of 3,137 eggs per female. Eighteen lots of eggs were taken, with an average fertility of 82%; 3,570,002 chinook salmon fingerlings were released in June 1992.

Approximately 1,202,150 chinook salmon fingerlings were on hand as of June 30, 1992.

Distribution of the 1990 Brood Year Chinook Salmon

During November 1991, a total of 1,000,000 yearlings was planted at 8/lb (Table 2).

Distribution of the 1991 Brood Year Chinook Salmon

There were 3,570,000 fingerling chinook salmon planted June 3-14, 1992 averaging 85/lb (Table 2). From May 6 to May 22, 1992, a total of 160,663 fingerling chinook salmon was transferred to the Klamath River Rearing Ponds (Table 2).

Marked Chinook Salmon Recovered

Of the marked chinook salmon trapped during 1991-92 (Appendix Table 1), 149 were Iron Gate marks, 11 from Klamath River Rearing Ponds, 1 from Feather River Hatchery, 1 from Trinity River Hatchery, and the remainder (AD) were of undetermined origin.

APPENDIX TABLE 1. Coded-Wire-Tag (CWT) Recoveries for Iron Gate Hatchery (IGH) with Release Data

CWT code	Bgg source	Brood Year	Date	Release data			Recovery data				
				Number	#/lb	Site	Year	CWT Recoveries	Mean PL (cm)	male	female
FALL, CHIN											
06 63 32 ^a / ₁	IGH	86	11/20-21/87	25,153	12	IGH	91-92	1			
06 02 01	IGH	87	5/16/88	185,000	129	IGH	91-92	5			
06 59 36 ^a / ₂	IGH	87	10/19-26/88	100,000	8	IGH	91-92	117			
06 14 13,											
06 15 03,											
06 15 04,											
06 15 07 ^a / ₂	IGH	88	4/24/89	92,401	269	IGH	91-92	1			
06 15 10	IGH	88	6/2/89	198,193	122	IGH	91-92	13			
601020101 ^a / ₂	IGH	88	10/23/89	30,386	8.5	BLK CHBKK	91-92	4			
06 28 10 ^a / ₂	IGH	88	10/23/89	37,712	10	GRIDER CK	91-92	6			
06 28 11 ^a / ₂	IGH	88	10/23/89	40,806	7	BLUPP CK	91-92	1			
06 28 09	IGH	88	11/13-15/89	98,283	8	IGH	91-92	12			
06 59 62	IGH	88									
06 28 08 ^a / ₂											
06 14 04 ^a / ₂	FRH	87	5/88	108,586	70	COURTLAND	91-92	1			
06 14 05	TRH	89					91-92	1			
06 56 37											
10 00 00 ^b / ₁							91-92	8			
20 00 00 ^c / ₁							91-92	1			

APPENDIX TABLE 1. Coded-Hire-Tag (CWT) Recoveries for Iron Gate Hatchery (IGH) with Release Data

CWT code	Bgg source	Brood year	Date	Number	#/lb	Site	Year	Release data		Recovery data		
								actual	expanded	CWT Recoveries	Mean PL (cm)	female
<u>COHO</u>												
06 63 22	IGH	88	3/6/90	46,030	14	IGH	91-92	97				
06 63 20 ^a												
06 63 23	IGH	89	3/16/91	41,262	16	IGH	91-92	65				
10 00 00 ^{b/}												
20 00 00 ^{c/}												

^{a/} Soft-soist feed group.
^{b/} 10 00 00 = No CWT in head of Ad-marked fish.
^{c/} 20 00 00 = CWT lost in head dissection.

APPENDIX TABLE 2. Summary of Chinook Salmon Runs to Iron Gate Salmon and Steelhead Hatchery

Season	Fall-trapped			Spring-trapped		
	Adult	Grilse	Total	Adults	Grilse	Total
1962-63	2/	1,339	448	2,171	2,598	678
1963-64		1,914	954	1,294	2,708	2,687
1964-65		1,914	954	1,294	2,708	2,687
1965-66		1,914	954	1,294	2,708	2,687
1966-67		1,914	954	1,294	2,708	2,687
1967-68		1,914	954	1,294	2,708	2,687
1968-69		1,914	954	1,294	2,708	2,687
1969-70	8	1,914	954	1,294	2,708	2,687
1970-71	2	10,503	219	8,702	10,503	10,503
1971-72	16	10,769	326	3,499	10,769	10,769
1972-73	97	10,769	326	3,499	10,769	10,769
1973-74	18	10,769	326	3,499	10,769	10,769
1974-75	19	10,769	326	3,499	10,769	10,769
1975-76	25	10,769	326	3,499	10,769	10,769
1976-77	13	10,769	326	3,499	10,769	10,769
1977-78	0	10,769	326	3,499	10,769	10,769
1978-79	17	10,769	326	3,499	10,769	10,769
1979-80	0	10,769	326	3,499	10,769	10,769
1980-81	0	10,769	326	3,499	10,769	10,769
1981-82	0	10,769	326	3,499	10,769	10,769
1982-83	0	10,769	326	3,499	10,769	10,769
1983-84	0	10,769	326	3,499	10,769	10,769
1984-85	0	10,769	326	3,499	10,769	10,769
1985-86	0	10,769	326	3,499	10,769	10,769
1986-87	0	10,769	326	3,499	10,769	10,769
1987-88	0	10,769	326	3,499	10,769	10,769
1988-89	0	10,769	326	3,499	10,769	10,769
1989-90	0	10,769	326	3,499	10,769	10,769
1990-91	0	10,769	326	3,499	10,769	10,769
1991-92	0	10,769	326	3,499	10,769	10,769

1/ Fall-trapped spring-run chinook salmon are the same brood year as the spring-trapped spring-run salmon of the preceding reporting period. Spring run not differentiated from fall run prior to 1968-69.

2/ Blanks indicate data not available.

APPENDIX TABLE 3. Summary of Coho Salmon and Steelhead Trout Runs to Iron Gate Salmon and Steelhead Hatchery

Season	Coho salmon					Steelhead ^{1/}		Total
	Males	Females	Adults	Grilse	Total	Fall-trapped early run	Spring-trapped late run	
1963-64	81	95	176	14	190			1,542
1964-65	0	0	0	0	0			1,065
1965-66	2	0	2	0	2			227
1966-67	2	2	4	0	4			299
1967-68	27	24	51	28	79			984
1968-69	14	10	24	333	357			370
1969-70	84	118	202	749	951	381	813	1,194
1970-71	716	671	1,387	236	1,623	292	2,073	2,365
1971-72	74	52	126	21	147	174	3,583	3,757
1972-73	38	18	56	35	91	226	1,060	1,286
1973-74	201	212	413	428	841	665	1,200	1,865
1974-75	193	263	456	41	497	1,062	2,165	3,227
1975-76	45	37	82	478	560	423	1,100	1,523
1976-77	581	795	1,376	381	1,757	695	1,246	1,941
1977-78	92	159	251	375	626	3,197	1,214	4,411
1978-79	263	236	499	250	749	812	1,267	2,079
1979-80	213	282	495	1,906	2,401	505	1,152	1,657
1980-81	580	1,220	1,800	251	2,051	359	888	1,247
1981-82	402	502	904	93	997	1,903	358	2,261
1982-83	499	634	1,133	496	1,629	1,267	1,436	2,703
1983-84	128	90	218	71	289	470	362	832
1984-85	444	350	794	211	1,005	373	1,012	1,385
1985-86	1,041	1,228	2,269	408	2,677	1,286	1,879	3,165
1986-87	315	422	737	288	1,025	1,347	1,487	2,834
1987-88	1,343	1,238	2,581	312	2,893	2,771	999	3,770
1988-89	669	700	1,369	323	1,692	1,604	1,739	3,343
1989-90	459	451	910	61	971	286	473	759
1990-91	200	178	378	43	421	154	114	268
1991-92	176	184	360	404	764	107	100	207

^{1/} Fall-trapped steelhead not differentiated from spring-trapped prior to 1969-70.

APPENDIX TABLE 4. Weekly Adult Salmon and Steelhead Trapping Data for Iron Gate Salmon and Steelhead Hatchery, 1991-92

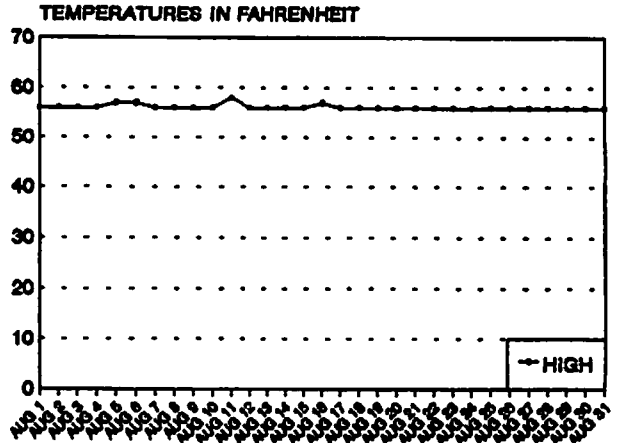
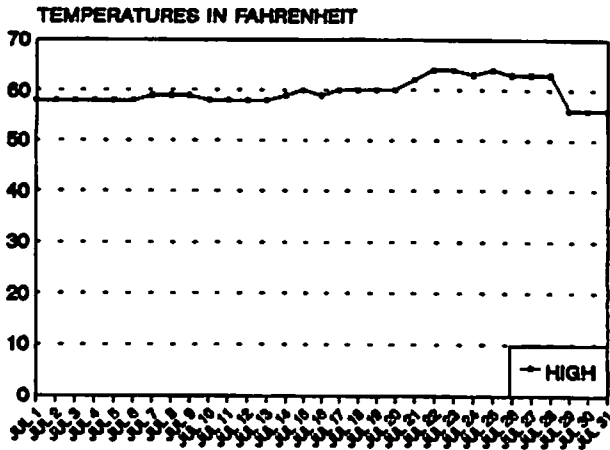
<u>Week</u>	<u>Chinook salmon</u>		<u>Coho salmon</u>		<u>Steelhead trout</u>	
	<u>adults</u>	<u>grilse</u>	<u>adults</u>	<u>grilse</u>	<u>fall</u>	<u>spring</u>
9/22-28	53					
9/29-10/5	246	2				
10/6-12	556	15		1		
10/13-19	1186	27		1	8	
10/20-26	1196	9	2	8	5	
10/27-11/2	616	9	61	80	12	
11/3-9	142	3	126	116	14	
11/10-16	7		96	116	14	
11/17-23			51	47	14	
11/24-30			16	19	14	
12/1-7			8	16	17	
12/8-14					9	
12/15-21						
12/22-28						
12/29-1/4						
1/5-11						14
1/12-18						2
1/19-25						
1/26-2/1						3
2/2-8						4
2/9-15						2
2/16-22						19
2/23-29						
3/1-7						27
3/8-14						20
3/15-21						9
Season Totals	4002	65	360	404	107	100

APPENDIX FIGURE 1. Daily Water Temperatures for Iron Gate Salmon and Steelhead Hatchery, 1991-92

DAILY WATER TEMPERATURES BY MONTH

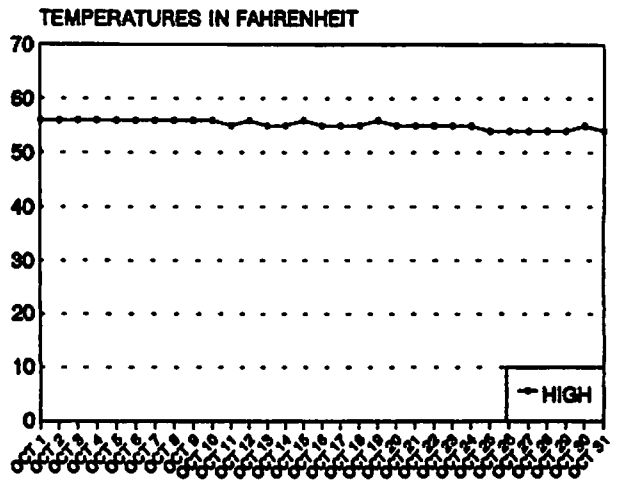
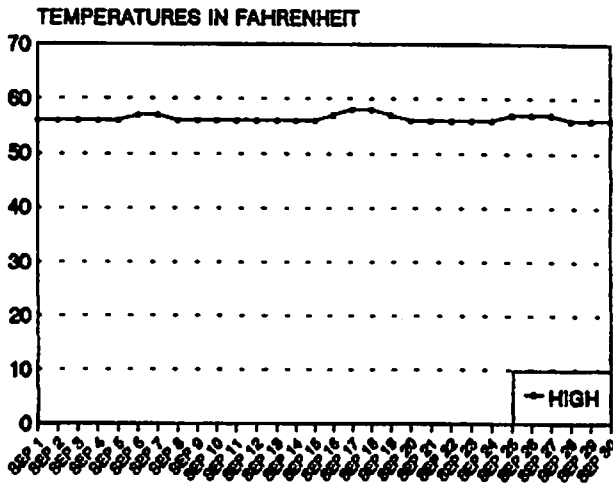
JULY 1991

AUGUST 1991



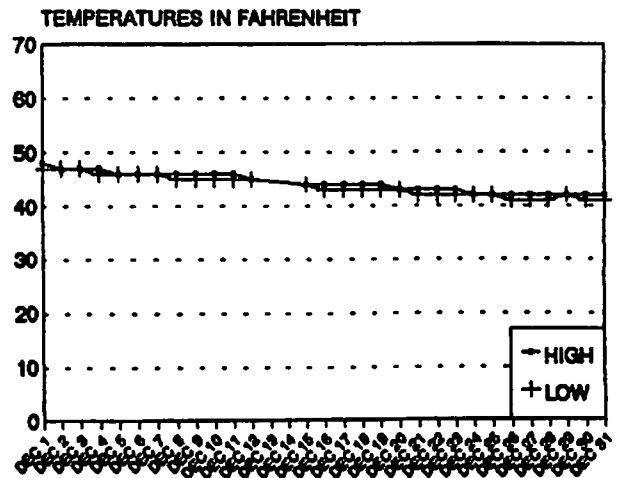
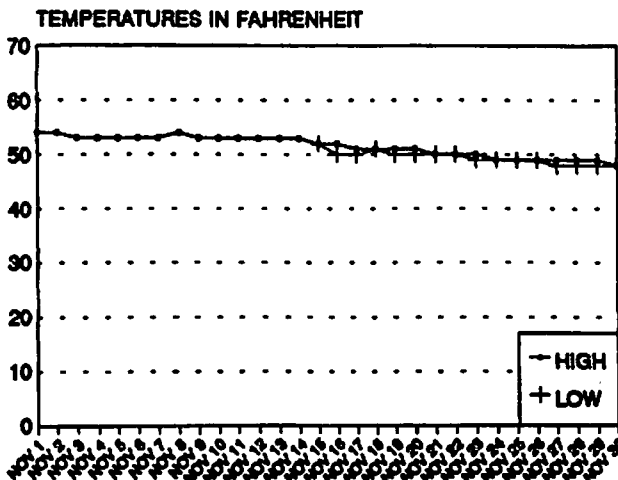
SEPTEMBER 1991

OCTOBER 1991



NOVEMBER 1991

DECEMBER 1991

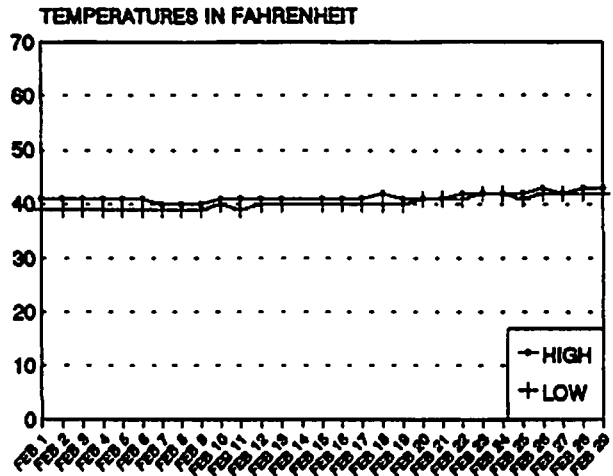
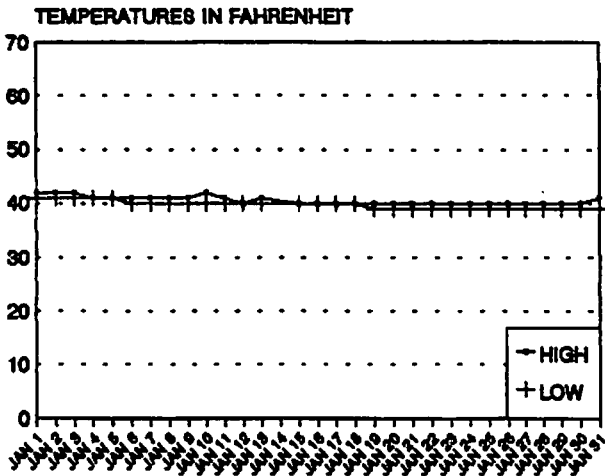


APPENDIX FIGURE 1. (Cont'd)

DAILY WATER TEMPERATURES BY MONTH

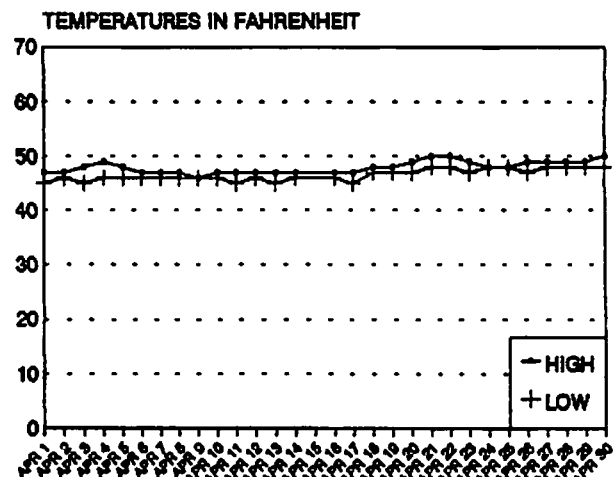
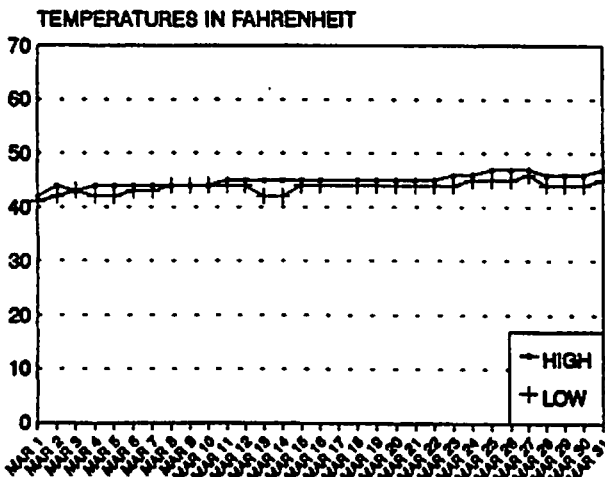
JANUARY 1992

FEBRUARY 1992



MARCH 1992

APRIL 1992



MAY 1992

JUNE 1992

