
Coho and Steelhead Restoration Project

Annual Section 10 Permit Data Report July 1, 1999 – June 30, 2000



**NATIONAL PARK SERVICE
Point Reyes National Seashore
Golden Gate National Recreation Area
Muir Woods National Monument**

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1999-2000 COHO SALMON SECTION 10 PERMIT DATA REPORT PERMIT #1046

GOAL / PURPOSE OF SAMPLING

The National Park Service (NPS) implemented a long term watershed restoration project in response to the Federal Endangered Species Act listing of coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*O. mykiss*) along the central California coast. The Coho and Steelhead Restoration Project (CSRP) is a five year cooperative effort between Golden Gate National Recreation Area, Muir Woods National Monument, and Point Reyes National Seashore in western Marin County. The objectives of the CSRP are to:

- Collect baseline data on the abundance and distribution of threatened juvenile, outmigrant, and adult salmonids;
- collect baseline watershed and habitat data;
- identify and implement habitat restoration projects; and
- develop and implement long term habitat and fish abundance monitoring programs.

The CSRP began monitoring trends in fish abundance and distribution to prioritize habitat restoration efforts in the Olema, Lagunitas, Pine Gulch, and Redwood Creek watersheds in 1997 (Figure 1). Field sampling continued during the 1999-2000 period and covered select areas in each watershed (Table 1). To date our efforts have focused on filling gaps in current knowledge and extending existing data sets. Adult spawner surveys are conducted during the fall and winter, juvenile abundance is estimated during summer, and fish distribution is assessed year round in large portions of each watershed. Smolt emigration is monitored in the spring on selected streams. Physical habitat measurements, including water quality and hydrologic characteristics, are collected in conjunction with each survey. In addition, interviews with long time residents and searches in archives have been conducted in an attempt to establish historical trends. Intensive fish sampling will continue for the next year and a long-term monitoring plan will be developed based on the results.

This report presents data from sampling pursuant to permit #1046 for threatened coho salmon. The CSRP has applied to the National Marine Fisheries Service (NMFS) for a section 10 permit to take threatened steelhead trout and this report includes data for both species. The format of the report follows a NMFS document attached to permit #1046 dated August 1, 1997.

SAMPLING ACTIVITIES

Spawner and Carcass Surveys

Coho salmon spawner surveys were conducted November 1999 through February 2000 in the Lagunitas, Olema, and Redwood Creek watersheds. Occasional steelhead adults were observed and counted incidental to coho observations. Surveys on Redwood Creek occurred approximately every 2 weeks during favorable weather and stream flow

conditions, with less frequent surveys on other creeks and during less favorable conditions. Surveys were conducted by trained volunteers and CSRPs staff. Survey protocol involved walking upstream along creek margins and banks where possible and looking for carcasses or live fish. Typically, teams of 2 people surveyed reaches of 2-4 km in length. Live fish were identified to species and assigned to approximate size classes. Salmonid carcasses were handled to collect length, weight, and sex. When possible, scales and tissues from the operculum were collected for future genetic work. Take during spawner surveys consisted of occasional disturbance of adult fish. Particular care was taken not to disturb redds or actively spawning adults.

Smolt Trapping

Smolts and other juvenile salmonids were sampled from March-June 2000 using a downstream migrant pipe trap. This year one trap was installed on Blueline Creek, a tributary to Olema Creek. The pipe traps used by the CSRPs operate by impounding water behind a weir constructed of 6 to 13 mm square-mesh metal screen, fence posts, rocks, and sand bags that span the entire width of the stream. The traps are designed to minimize impingement under high flows and in-trap predation on young-of-the-year fish. Flow is directed into a series of 6.2 m long, 20 cm diameter PVC pipes. To decrease water velocity, the pipe empties onto a slanted, perforated metal ramp. The ramp is connected to a 125 x 74 x 50 cm live box constructed of wood and 3 mm metal mesh screen. The live box contains baffles to further slow water velocity. Rocks, vegetation, and a mesh divider screen are added to the live box to provide cover and refugia for fry. In addition, the weir contains a notch that allows any late spawning adult steelhead to migrate upstream unimpeded.

The trap was operated 24 hours per day, flow permitting, and checked once daily. We were primarily interested in salmonid smolts, parr, and fry but the numbers and lengths of all captured fish were recorded. Stream temperature and water level were recorded when the trap was checked. Mark-recapture methods were used to estimate trap efficiency and smolt population size. Daily, no more than 30 smolts of each species (coho and steelhead) were anesthetized with carbon dioxide and marked with small but identifiable fin clips. Marked smolts were released at a predetermined site no more than 200 m above the trap site. Mark combinations were alternated weekly. All recaptured smolts, adults, parr, and fry were released immediately after measurement in low velocity areas below the trap. Anesthetized fish were allowed to recover fully in an aerated "recovery bucket" before release.

Most of the salmonids captured during spring 2000 pipe trapping were steelhead fry. Only 14 coho fry were captured, and no coho smolts. One adult steelhead found its way into the Blueline trap; it was immediately released downstream unharmed.

Sources of mortality included fish becoming stranded on the ramps, predation of fry by larger fish, and general stress and trauma to fry during trapping and handling. The first source was minimized by carefully checking the traps daily and making adjustments as needed to ensure adequate flows across the ramp to prevent stranding. Fry mortality was minimized by providing adequate refugia in the trap box, and by netting, handling, counting, and releasing them as expeditiously as possible. Despite the divider screens in each live box, many of the fry remained in the unscreened areas and were subject to predation. Some

of the juvenile steelhead captured had distended bellies or regurgitated fry during handling. Since it was not possible to quantify fry mortality due to predation, it is not included in the take figures. Protocols called for suspending trap operations if either smolt or fry mortality exceeded five percent during a one week period. Overall juvenile mortality levels were 1.6% for steelhead and 0% for coho, and all but one of the steelhead mortalities were fry.

Snorkel Surveys

A presence-absence snorkel survey for coho and steelhead was conducted in the Pine Gulch mainstem during the spring of 2000. Typically, a single diver made one snorkel pass in each selected pool to determine the presence or absence of different species and size or age classes. Standard dive lights were used to search undercut banks and woody debris for fish. Occasional second passes were made in large or complex pools. The potential for injury or mortality from snorkel observations is minimal. No handling of fish occurs from snorkel observations, and only minimal disturbance/ harassment occurs. Since no counts were made, an exact estimate of take is not possible. However, previous snorkel counts in this creek found a maximum of 50 young-of-year and 10 1+ steelhead per pool. Applying a maximum estimate of 60 juvenile steelhead per pool to the 75 pools snorkeled in spring 2000 yields a rough figure of 4500 fish. As expected, no coho were detected in the snorkel survey.

Electrofishing

During July and August 1999 the CSRP conducted electrofishing surveys of seven index sections on the Olema Creek mainstem. In August and October a 3.2 km section of upper Olema Creek was sampled using electrofishing, in conjunction with snorkel surveys, to establish a Hankin-Reeves index. Electrofishing surveys on Redwood Creek involved the second part of a mark-recapture study begun in June 1999. During spring 2000, several of the intermittent tributaries of Olema Creek were sampled as they were drying up to determine numbers of potentially stranded fish. The CSRP has applied to NMFS for a permit modification to allow for moving stranded salmonid juveniles to stream reaches not subject to dessication.

All electrofishing activities utilized standard multiple pass depletion techniques. Attempts were made to minimize injuries during electrofishing activities by using new generation electrofishing equipment, accepted sampling and fish handling protocols, and providing adequate training to personnel. CSRP biologists used a state of the art programmable waveform backpack electrofisher (Smith-Root Model 12 B-POW) with an 11-inch ring anode. Fish were captured using either pulsed or straight direct current with the minimum voltage, pulse width, and frequency necessary for immobilization. Under most conditions, a setting of P16 (unpulsed DC) at 200 volts was found to be the most effective while preventing injury to the fish. A log was kept of all settings, pertinent environmental conditions, and fish response (appendix A).

Potential sources of mortality or injury included general stress during capture and handling, respiratory failure, and hemorrhaging or spinal injuries associated with shocking. If a pattern of mortality or injury was recognized, techniques were altered to reduce impacts. Total mortality rates associated with electrofishing surveys during summer and fall 1999 were 0.2% for coho and 0.4% for steelhead. Captured fish were sedated using carbon

dioxide, identified to species and age class, measured, and weighed. Some individuals were handled to collect fin clips or scale samples for age and/or genetic analysis. Fish were kept in aerated holding buckets before and after handling, and allowed to recover fully before being released. During electrofishing surveys as well as smolt trapping activities, the smaller salmonids were kept in separate buckets from sculpin and other fish to prevent predation.

DATA AND SAMPLE PROCESSING

All field data is entered into a Microsoft Access database, and double checked for accuracy and quality control before and after data entry. Take estimates are derived by querying the database for different species, age, and take categories. The estimates are therefore highly accurate, and in most cases represent exact counts of the actual numbers of fish taken in each category. All tissue and scale samples are air dried, catalogued, and stored in a dessicator. Tissue samples will be sent to Dr. Carlos Garza at the NMFS Santa Cruz lab for genetic analysis. Scales will be mounted and read in house for age analysis.

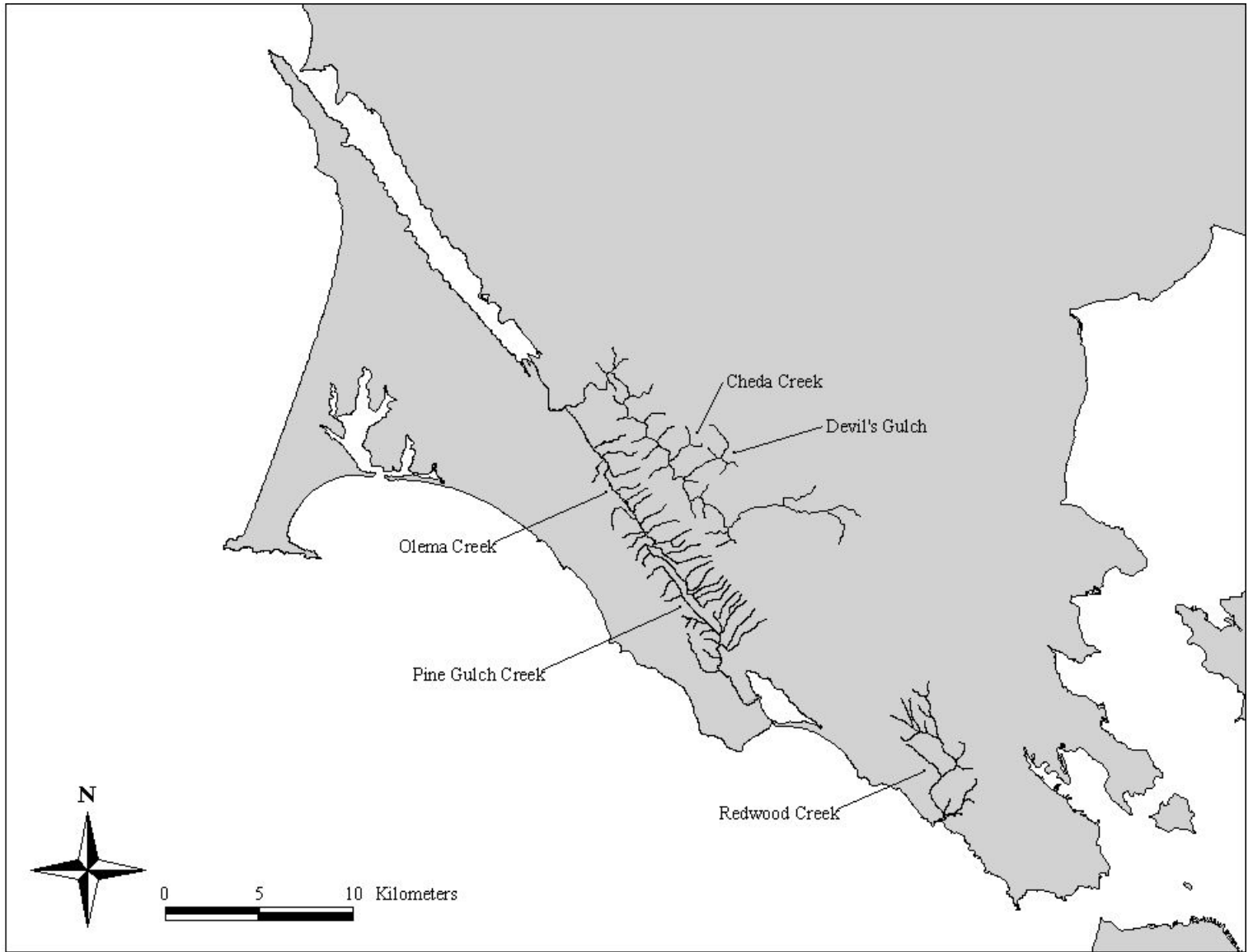


Figure1. Coho and Steelhead Restoration Project watersheds. Marin County, CA.

Table 1. Streams and sampling activities conducted by the National Park Service CSRP during July 1999- June 2000.

Watershed	County	Stream	Activities
Lagunitas	Marin	Devil's Gulch	Spawner Surveys
		Cheda Creek	Spawner Survey
Lagunitas - Olema	Marin	Olema Creek (mainstem)	Spawner Surveys, Snorkel Survey Electrofishing Surveys
		Blueline Creek	Spawner Surveys, Smolt Trapping, Stranding Survey
		Boundary Gulch	Spawner Survey, Stranding Survey
		Giacomini Creek	Spawner Survey, Stranding Survey
		Horse Camp Creek	Stranding Survey
Redwood	Marin	Redwood Creek (mainstem)	Spawner Surveys, Electrofishing Survey
		Fern Creek	Spawner Surveys
Pine Gulch	Marin	Pine Gulch (mainstem)	Snorkel Survey

Table 2. Annual allowable versus actual take of ESA listed central California coast ESU coho salmon by age class 7/99-6/00. Permit #1046

Type of Take	Age Class					
	Juvenile		Adult		Carcass	
	Allowable	Actual	Allowable	Actual	Allowable	Actual
Observe/Harass	44,400	933	1,800	50		
Capture/Handle	5,250	1546			200	11
Capture/Handle/Mark	2,625	0				
Indirect Mortality	236	3				

Table 3. National Park Service CSRP annual take of coho salmon and steelhead trout by stream, sampling activity, and age class on the Lagunitas / Olema Creek Watershed; 7/99-6/00.

Date	Activity	Location	Observe/harass				Capture/handle				Capture/handle/mark		Indirect mortality			
			Coho		Steelhead		Coho		Steelhead		Coho	Steelhead	Coho		Steelhead	
			adult	juve	adult	juve	adult	juve	adult	juve	juve	juve	adult	juve	adult	juve
7/15/99-8/9/99	Electrofishing	Olema mainstem						216		1595				2		10
8/19/99-9/1/99	Hankin-Reeves	Upper Olema mainstem		933		1130		902		2272				1		3
10/26/99-10/28/99	Electrofishing	Upper Olema mainstem						257		302				0		2
12/2/99-2/1/00	Spawner Surveys (2)	Olema mainstem	2		1		9									
1/20/00-2/1/00	Spawner Surveys (3)	Blueline Creek (Olema)	*23				0									
1/26/00	Spawner Survey	Giacomini Creek (Olema)	0				0									
2/1/00	Spawner Survey	Boundary Gulch (Olema)	0				0									
1/12/00-1/21/00	Spawner Surveys (2)	Devils Gulch (Lagunitas)	10				1									
2/1/00	Spawner Survey	Cheda Creek (Lagunitas)	0				0									
3/29/00-6/26/00	Smolt Trapping	Blueline Creek (Olema)						14	1	6564	0	1		0		102
4/12/00-6/21/00	Electrofishing Surveys (3)	Olema Creek intermittent tributaries						11		373				0		4
Totals			35	933	1	1130	*10	1400	1	11106	0	1		3		121

*5 were probably repeat sightings, so 18 fish total

*carcasses

Table 4. National Park Service CSRP annual take of coho salmon and steelhead trout by stream, sampling activity, and age class on the Redwood Creek Watershed; 7/99-6/00.

Date	Activity	Location	Observe/harass				Capture/handle				Capture/handle/mark		Indirect mortality			
			Coho		Steelhead		Coho		Steelhead		Coho	Steelhead	Coho		Steelhead	
			adult	juve	adult	juve	adult	juve	adult	juve	juve	juve	adult	juve	adult	juve
10/4/99-10/7/99	Electrofishing/ Mark-Recapture	Redwood mainstem						146		559					1	3
10/8/99	Snorkel/ Electrofishing	Big Lagoon		0		16		0		19						
11/24/99-2/18/00	Spawner Surveys (6)	Redwood mainstem	15		5		1									
1/28/00-2/18/00	Spawner Surveys (2)	Fern Creek	0		1		0									
Totals			15	0	6	16	*1	146		578					1	3

*carcass

Table 5. National Park Service CSRP annual take of coho salmon and steelhead trout by stream, sampling activity, and age class on the Pine Gulch Watershed; 7/99-6/00.

Date	Activity	Location	Observe/harass				Capture/handle				Capture/handle/mark		Indirect mortality			
			Coho		Steelhead		Coho		Steelhead		Coho	Steelhead	Coho		Steelhead	
			adult	juve	adult	juve	adult	juve	adult	juve	juve	juve	adult	juve	adult	juve
4/27/00-5/11/00	Snorkel Survey	Pine Gulch mainstem		0		*4500										
Totals				0		4500										

*rough estimate

Appendix A

Coho and Steelhead Restoration Project Annual Section 10 Permit Report

July 1, 1999 – June 30, 2000

Electrofishing Log





CSRP Electrofishing Log

7/1/99-6/30/00

Stream Name Blueline Creek

Section Name intermittent section

Index Section Number

Section Description: Stream km 0.5-0.8 (denuded section above and below cattle crossing)

Stream Name	Blueline Creek	Unit Number		Temp °C
Electrofishing Date	6/5/2000	Unit Type		Conductivity (µS/cm)
General Comments	Olema Creek tributary-sampled intermittent part of creek to determine numbers of potentially stranded fish			

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	4788	p16	200	0	205	2	CO 0
Pass 2							SH YOY 2
Pass 3							SH 1+ 0
Pass 4							

Stream Name	Blueline Creek	Unit Number	1	Temp °C
Electrofishing Date	6/21/2000	Unit Type	SC	Conductivity (µS/cm)
General Comments	Olema Creek tributary-sampled intermittent part of creek to determine numbers of potentially stranded fish			

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	200	p16	200	1	16	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name	Blueline Creek	Unit Number	2-3	Temp °C
Electrofishing Date	6/21/2000	Unit Type	SC	Conductivity (µS/cm)
General Comments	Olema Creek tributary-sampled intermittent part of creek to determine numbers of potentially stranded fish			

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	411	p16	200	0	85	1	CO 0
Pass 2							SH YOY 1
Pass 3							SH 1+ 0
Pass 4							



CSRP Electrofishing Log

7/1/99-6/30/00

Stream Name Boundary Gulch

Section Name lower

Index Section Number

Section Description:Between mouth and Hwy 1 culvert

Stream Name	Boundary Gulch	Unit Number		Temp °C
Electrofishing Date	4/12/2000	Unit Type		Conductivity (µS/cm)
General Comments	Olema Creek tributary-sampled intermittent part of creek to determine numbers of potentially stranded fish			

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1		p16	200	0	0	12	CO	0
Pass 2							SH YOY	0
Pass 3							SH 1+	0
Pass 4								

Stream Name Giacomini Creek

Section Name culvert pool

Index Section Number

Section Description:Approx. stream km 0.1 (pool at outlet of Hwy 1 culvert)

Stream Name	Giacomini Creek	Unit Number		Temp °C
Electrofishing Date	6/21/2000	Unit Type	PLP	Conductivity (µS/cm)
General Comments	Olema Creek tributary-sampled intermittent part of creek to determine numbers of potentially stranded fish			

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	536	p16	200	1	41	11	CO	0
Pass 2							SH YOY	1
Pass 3							SH 1+	0
Pass 4								





CSRП Electrofishing Log

7/1/99-6/30/00

Stream Name Olema Creek

Section Name Vedanta

Index Section Number 2

Section Description:Stream km 3.7

Stream Name	Olema Creek	Unit Number	1	Temp °C
Electrofishing Date	7/26/1999	Unit Type	CRP	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	466	P16	200	4	45	5	CO 0
Pass 2	441	P16	200	2	16	3	SH YOY 0
Pass 3	442	P16	200	0	4	0	SH 1+ 0

Pass 4

Stream Name	Olema Creek	Unit Number	2	Temp °C
Electrofishing Date	7/26/1999	Unit Type	LGR	Conductivity (µS/cm)

General Comments Split riffle. Left bank = 17.0 meters, right bank = 13.5 meters

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	251	P16	200	0	8	0	CO 0
Pass 2	163	P16	200	0	5	0	SH YOY 0
Pass 3	181	P16	200	0	1	0	SH 1+ 0

Pass 4

Stream Name	Olema Creek	Unit Number	3	Temp °C
Electrofishing Date	7/26/1999	Unit Type	CRP	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	1064	P16	200	5	55	3	CO 0
Pass 2	666	P16	200	1	8	0	SH YOY 1
Pass 3	315	P16	200	0	1	0	SH 1+ 0

Pass 4



CSRP Electrofishing Log

7/1/99-6/30/00

Stream Name Olema Creek **Unit Number** 4 **Temp °C**

Electrofishing Date 7/26/1999 **Unit Type** LSR **Conductivity (µS/cm)**

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	999	P16	200	12	58	7	CO 0
Pass 2	949	P16	200	1	20	0	SH YOY 0
Pass 3	974	P16	200	0	1	0	SH 1+ 0

Pass 4

Section Name Five Brooks **Index Section Number** 7

Section Description:Stream km 10.8

Stream Name Olema Creek **Unit Number** **Temp °C** 15

Electrofishing Date 7/21/1999 **Unit Type** **Conductivity (µS/cm)** 226.2/279.6

General Comments Entire section consisting of 10 habitat units (PLP LGR GLD LGR LSR LGR LSR LGR PLP CRP) was electrofished as one unit

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	1445	P16	200	29	89	12	CO 0
Pass 2	1578	P16	200	26	81	5	SH YOY 0
Pass 3	1281	P16	200	7	22	0	SH 1+ 0

Pass 4

Section Name Horse Camp **Index Section Number** 6

Section Description:Stream km 9.4

Stream Name Olema Creek **Unit Number** 1 **Temp °C**

Electrofishing Date 7/29/1999 **Unit Type** LSR **Conductivity (µS/cm)**

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	818	P16	200	17	46	15	CO 0
Pass 2	992	P16	200	2	5	2	SH YOY 1
Pass 3	710	P16	200	2	12	1	SH 1+ 0

Pass 4



CSRП Electrofishing Log

7/1/99-6/30/00

Stream Name Olema Creek **Unit Number** 2 **Temp °C**
Electrofishing Date 7/29/1999 **Unit Type** LSR **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	909	P16	200	12	45	9	CO 1
Pass 2	606	P16	200	0	10	0	SH YOY 0
Pass 3	430	P16	200	0	1	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 3 **Temp °C**
Electrofishing Date 7/29/1999 **Unit Type** LGR **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	70	P16	100	0	0	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 4 **Temp °C**
Electrofishing Date 7/29/1999 **Unit Type** LSR **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	439	P16	200	10	22	4	CO 0
Pass 2	410	P16	200	7	12	0	SH YOY 0
Pass 3		P16	200	1	6	0	SH 1+ 0
Pass 4							



CSRP Electrofishing Log

7/1/99-6/30/00

Section Name Lower Stewarts Pasture

Index Section Number 1

Section Description:Stream km 1.2

Stream Name	Olema Creek	Unit Number	1	Temp °C
Electrofishing Date	8/9/1999	Unit Type	LSR	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	458	P16	200	0	15	4	CO 0
Pass 2	385	P16	200	0	2	0	SH YOY 0
Pass 3	311	P16	200	0	2	0	SH 1+ 0

Pass 4

Stream Name	Olema Creek	Unit Number	2	Temp °C
Electrofishing Date	8/9/1999	Unit Type	LSL	Conductivity (µS/cm)

General Comments Unit 2 has one large log across creek w/ debris jam

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	389	P16	200	0	8	4	CO 0
Pass 2	258	P16	200	0	1	0	SH YOY 0
Pass 3	219	P16	200	0	0	0	SH 1+ 0

Pass 4

Stream Name	Olema Creek	Unit Number	3	Temp °C
Electrofishing Date	8/9/1999	Unit Type	LGR	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	158	P16	100	0	2	1	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0

Pass 4



CSRП Electrofishing Log

7/1/99-6/30/00

Stream Name Olema Creek **Unit Number** 4 **Temp °C**
Electrofishing Date 8/9/1999 **Unit Type** LSR **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	442	P16	200	2	13	3	CO 0
Pass 2	485	P16	200	0	3	0	SH YOY 0
Pass 3	370	P16	200	0	2	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 5 **Temp °C**
Electrofishing Date 8/9/1999 **Unit Type** LSR **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	574	P16	200	2	14	3	CO 0
Pass 2	562	P16	200	0	2	2	SH YOY 0
Pass 3	500	P16	200	0	1	0	SH 1+ 0

Pass 4

Section Name Quarry Gulch/Upper Stewart's Pasture **Index Section Number** 3
Section Description: Stream km 4.9

Stream Name Olema Creek **Unit Number** 1 **Temp °C**
Electrofishing Date 8/5/1999 **Unit Type** LSR **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	499	P16	200	11	63	9	CO 0
Pass 2	501	P16	200	0	24	1	SH YOY 1
Pass 3		P16	200	1	4	1	SH 1+ 0

Pass 4



CSRP Electrofishing Log

7/1/99-6/30/00

Stream Name Olema Creek **Unit Number** 2 **Temp °C**
Electrofishing Date 8/5/1999 **Unit Type** GLD **Conductivity (µS/cm)**
General Comments 100+ baby stickleback

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	165	P16	200	0	5	1	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 3 **Temp °C**
Electrofishing Date 8/5/1999 **Unit Type** LSR **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	324	P16	200	0	32	1	CO 0
Pass 2	242	P16	200	0	4	0	SH YOY 0
Pass 3	158	P16	200	0	1	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 4 **Temp °C**
Electrofishing Date 8/5/1999 **Unit Type** LGR **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	74	P16	100	0	1	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRP Electrofishing Log

7/1/99-6/30/00

Stream Name Olema Creek **Unit Number** 5 **Temp °C**
Electrofishing Date 8/5/1999 **Unit Type** LSR **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	760	P16	200	9	51	13	CO 0
Pass 2	672	P16	200	0	13	2	SH YOY 0
Pass 3	441	P16	200	1	2	0	SH 1+ 0

Pass 4

Section Name Shook's House **Index Section Number** 5
Section Description:Stream km 7.6

Stream Name Olema Creek **Unit Number** **Temp °C**
Electrofishing Date 7/15/1999 **Unit Type** **Conductivity (µS/cm)**
General Comments Entire section consisting of 7 habitat units (LSR LGR MCP LGR LSL LSR LSBk) was electrofished as one unit

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	2438	P16	200	9	114	39	CO 1
Pass 2	1942	P16	200	5	66	3	SH YOY 2
Pass 3	1462	P16	200	1	40	4	SH 1+ 0

Pass 4

Section Name Truttman **Index Section Number** 4
Section Description:Stream km 6.2

Stream Name Olema Creek **Unit Number** 1 **Temp °C**
Electrofishing Date 7/27/1999 **Unit Type** LSBk **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	1191	P16	200	14	118	11	CO 0
Pass 2	674	P16	200	3	15	2	SH YOY 1
Pass 3	481	P16	200	0	22	0	SH 1+ 0

Pass 4



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Stream Name Olema Creek Unit Number 2 Temp °C
 Electrofishing Date 7/27/1999 Unit Type LGR Conductivity (µS/cm)
 General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	199	P16	100	0	9	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek Unit Number 3 Temp °C
 Electrofishing Date 7/27/1999 Unit Type CRP Conductivity (µS/cm)
 General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	1073	P16	200	7	49	14	CO 0
Pass 2	987	P16	200	1	12	3	SH YOY 0
Pass 3	760	P16	200	0	18	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek Unit Number 4 Temp °C
 Electrofishing Date 7/27/1999 Unit Type HGR Conductivity (µS/cm)
 General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	351	P16	100	0	14	1	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 5 **Temp °C**
Electrofishing Date 7/27/1999 **Unit Type** LSBk **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	887	P16	200	9	57	6	CO 0
Pass 2	719	P16	200	2	22	2	SH YOY 1
Pass 3	406	P16	200	0	5	0	SH 1+ 0

Pass 4

Section Name Upper Olema **Index Section Number**
Section Description: Stream km 11.8-15.0--intermittent stream reach for juvenile survival study

Stream Name Olema Creek **Unit Number** 1 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	303	P16	200	8	21	2	CO 0
Pass 2	328	P16	200	6	12	0	SH YOY 0
Pass 3	266	P16	200	1	5	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 12 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** FW **Conductivity (µS/cm)**

General Comments Pass 2 and 3 split from 2 and 3 total time = 442. Tributary on left bank contributing significant flow to mainstem.

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	245	P16	200	0	21	0	CO 0
Pass 2	221	P16	200	0	9	0	SH YOY 0
Pass 3	221	P16	200	0	2	0	SH 1+ 0

Pass 4



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Stream Name Olema Creek **Unit Number** 14 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	282	P16	200	3	16	0	CO 0
Pass 2	232	P16	200	0	3	0	SH YOY 0
Pass 3	210	P16	200	0	0	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 17 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments Lateral scour pool log enhanced

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	235	P16	200	0	12	1	CO 0
Pass 2	135	P16	200	2	2	0	SH YOY 0
Pass 3	108	P16	200	0	3	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 20 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	170	P16	200	0	9	0	CO 0
Pass 2	128	P16	200	0	2	0	SH YOY 0
Pass 3							SH 1+ 0

Pass 4



CSRFP Electrofishing Log

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Stream Name Olema Creek **Unit Number** 21 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** MC **Conductivity (µS/cm)**
General Comments Lots of algae

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	180	P16	200	10	11	0	CO 0
Pass 2	180	P16	200	0	7	1	SH YOY 0
Pass 3	139	P16	200	0	1	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 23 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments Some small STK present but no salmonids captured by electrofishing

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	62	P16	200	0	0	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 29 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments Laterat Scour pool root wad enhanced with good undercut

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	218	P16	200	7	10	1	CO 0
Pass 2	177	P16	200	0	2	0	SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 37 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments Right bank side unit.

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	62	P16	200	0	0	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 38 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments Pass 3 Time unknown but speculated at about 400

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	418	P16	200	33	9	2	CO 0
Pass 2	405	P16	200	3	4	2	SH YOY 0
Pass 3	400	P16	200	2	1	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 45 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments Very likely to be a year round pool

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	437	P16	200	26	5	3	CO 0
Pass 2	358	P16	200	4	2	0	SH YOY 0
Pass 3	224	P16	200	0	1	0	SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek Unit Number 46 Temp °C
 Electrofishing Date 8/24/1999 Unit Type SC Conductivity (µS/cm)
 General Comments

Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	P16	200	2	4	1	CO 0
Pass 2						SH YOY 0
Pass 3						SH 1+ 0
Pass 4						

Stream Name Olema Creek Unit Number 50 Temp °C
 Electrofishing Date 8/24/1999 Unit Type SC Conductivity (µS/cm)
 General Comments flagged

Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	148	P16	200	3	2	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek Unit Number 6 Temp °C
 Electrofishing Date 8/24/1999 Unit Type PL Conductivity (µS/cm)
 General Comments

Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	101	P16	200	6	6	0	CO 0
Pass 2	82	P16	200	1	1	0	SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 9 **Temp °C**
Electrofishing Date 8/24/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	448	P16	200	19	67	8	CO 0
Pass 2	345	P16	200	4	22	0	SH YOY 0
Pass 3	270	P16	200	2	4	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 116 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**

General Comments 2 CO electrofishing injuries. Only one pass due to electrofishing injuries/electrofishing conditions.

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1		P16	200	28	16	3	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 120 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	163	P16	200	2	3	2	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0

Pass 4



CSRP Electrofishing Log

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Stream Name Olema Creek **Unit Number** 123 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	341	P16	200	33	9	0	CO 0
Pass 2	196	P16	200	3	2	0	SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 127 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments Fine grey sediment.

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1		P16	200	3	2	2	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 128 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SP **Conductivity (µS/cm)**
General Comments Too murky too snorkel

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1		P16	200	2	2	2	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 129 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1		P16	200	0	6	1	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 131 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments too murky to snorkel

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	204	P16	200	28	51	13	CO 0
Pass 2	100	P16	200	0	5	1	SH YOY 1
Pass 3	101	P16	200	1	3	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 135 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SP **Conductivity (µS/cm)**
General Comments side unit

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1		P16	200	0	8	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 58 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments flagged

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	182	P16	200	3	11	0	CO	0
Pass 2	149	P16	200	1	3	0	SH YOY	0
Pass 3	126	P16	200	1	3	0	SH 1+	0
Pass 4								

Stream Name Olema Creek **Unit Number** 59 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments snorkel count difficult, big undercut

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	260	P16	200	12	2	5	CO	0
Pass 2	222	P16	200	0	2	0	SH YOY	0
Pass 3	206	P16	200	4	0	0	SH 1+	0
Pass 4								

Stream Name Olema Creek **Unit Number** 60 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** R **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	174	P16	200	0	3	0	CO	0
Pass 2							SH YOY	0
Pass 3							SH 1+	0
Pass 4								



CSRFP Electrofishing Log

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Stream Name Olema Creek **Unit Number** 61 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** MC **Conductivity (µS/cm)**
General Comments 2 shyoy burnt

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	218	P16	200	10	7	0	CO 0
Pass 2	238	P16	200	1	7	0	SH YOY 0
Pass 3	244	P16	200	1	0	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 67 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** BW **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	50	P16	200	0	4	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 68 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	195	P16	200	9	54	0	CO 0
Pass 2	163	P16	200	1	9	1	SH YOY 1
Pass 3	125	P16	200	0	1	0	SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 72 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	212	P16	200	27	18	2	CO 0
Pass 2	129	P16	200	2	1	0	SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 74 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	68	P16	200	2	1	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 85 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1		P16	200	4	16	1	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRFP Electrofishing Log

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Stream Name Olema Creek **Unit Number** 87 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	P16	200	0	1	0	CO 0
Pass 2						SH YOY 0
Pass 3						SH 1+ 0
Pass 4						

Stream Name Olema Creek **Unit Number** 89 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments I pass only no fish

Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	P16	200	0	0	0	CO 0
Pass 2						SH YOY 0
Pass 3						SH 1+ 0
Pass 4						

Stream Name Olema Creek **Unit Number** 91 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	P16	200	0	6	0	CO 0
Pass 2						SH YOY 0
Pass 3						SH 1+ 0
Pass 4						



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 92 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	520	P16	200	18	14	0	CO	0
Pass 2	334	P16	200	4	6	0	SH YOY	0
Pass 3	202	P16	200	0	2	0	SH 1+	0
Pass 4								

Stream Name Olema Creek **Unit Number** 94 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** PW **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	454	P16	200	3	13	2	CO	0
Pass 2							SH YOY	0
Pass 3							SH 1+	0
Pass 4								

Stream Name Olema Creek **Unit Number** 99 **Temp °C**
Electrofishing Date 8/25/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	285	P16	200	9	4	2	CO	0
Pass 2	251	P16	200	1	1	0	SH YOY	0
Pass 3							SH 1+	0
Pass 4								



CSRП Electrofishing Log

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Stream Name Olema Creek Unit Number 139 Temp °C
 Electrofishing Date 8/26/1999 Unit Type SC Conductivity (µS/cm)
 General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	31	P16	200	0	1	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek Unit Number 141 Temp °C
 Electrofishing Date 8/26/1999 Unit Type SC Conductivity (µS/cm)
 General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	98	P16	200	19	28	6	CO 0
Pass 2	87	P16	200	0	9	0	SH YOY 0
Pass 3	77	P16	200	1	4	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek Unit Number 149 Temp °C
 Electrofishing Date 8/26/1999 Unit Type SC Conductivity (µS/cm)
 General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	129	P16	200	6	36	1	CO 0
Pass 2	115	P16	200	0	14	1	SH YOY 0
Pass 3	120	P16	200	0	8	0	SH 1+ 0
Pass 4							



CSRП Electrofishing Log

7/1/99-6/30/00

Stream Name Olema Creek **Unit Number** 151 **Temp °C**
Electrofishing Date 8/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	221	P16	200	13	17	3	CO 0
Pass 2	188	P16	200	4	2	0	SH YOY 0
Pass 3	129	P16	200	1	1	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 153 **Temp °C**
Electrofishing Date 8/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	218	P16	200	1	44	0	CO 0
Pass 2							SH YOY 1
Pass 3							SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 162 **Temp °C**
Electrofishing Date 8/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	379	P16	200	12	22	10	CO 0
Pass 2	295	P16	200	3	4	5	SH YOY 0
Pass 3	257	P16	200	1	5	0	SH 1+ 0

Pass 4



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Stream Name	Olema Creek	Unit Number	163	Temp °C
Electrofishing Date	8/26/1999	Unit Type	R	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	138	P16	200	2	12	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name	Olema Creek	Unit Number	164	Temp °C
Electrofishing Date	8/26/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	175	P16	200	15	18	2	CO 0
Pass 2	115	P16	200	0	3	0	SH YOY 0
Pass 3	113	P16	200	1	2	0	SH 1+ 0
Pass 4							

Stream Name	Olema Creek	Unit Number	166	Temp °C
Electrofishing Date	8/26/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	413	P16	200	1	31	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 177 **Temp °C**
Electrofishing Date 8/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	207	P16	200	1	9	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 171 **Temp °C**
Electrofishing Date 8/30/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	239	P16	200	6	26	8	CO 0
Pass 2	185	P16	200	1	4	0	SH YOY 0
Pass 3	135	P16	200	0	3	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 180 **Temp °C**
Electrofishing Date 8/30/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	285	P16	200	13	20	4	CO 0
Pass 2	203	P16	200	6	12	0	SH YOY 0
Pass 3	175	P16	200	1	4	1	SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name	Olema Creek	Unit Number	184	Temp °C
Electrofishing Date	8/30/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	347	P16	200	2	42	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name	Olema Creek	Unit Number	186	Temp °C
Electrofishing Date	8/30/1999	Unit Type	MC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	166	P16	200	0	8	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name	Olema Creek	Unit Number	190	Temp °C
Electrofishing Date	8/30/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments NOT ACTUALLY ELECTROFISHED USED DIP NET TO CATCH 2 SHYOY BUT ENTERED AS ELECTROFISHED YES TO FACILITATE LATER DATA QUERIES

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1				0	2	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name	Olema Creek	Unit Number	192	Temp °C
Electrofishing Date	8/30/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	180	P16	200	4	18	1	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name	Olema Creek	Unit Number	194	Temp °C
Electrofishing Date	8/30/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments D.O. 6.04 mg/l 67.5% O2, Temp 20.5 C, conductivity 238.6

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	415	P16	200	10	67	1	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name	Olema Creek	Unit Number	196	Temp °C
Electrofishing Date	8/30/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	380	P16	200	56	105	8	CO 0
Pass 2	329	P16	200	2	51	0	SH YOY 0
Pass 3	326	P16	200	0	17	0	SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 203 **Temp °C**
Electrofishing Date 8/30/1999 **Unit Type** MC **Conductivity (µS/cm)**
General Comments shallow no structure

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	251	P16	200	4	36	0	CO 0
Pass 2	218	P16	200	1	10	0	SH YOY 0
Pass 3	200	P16	200	0	6	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 209 **Temp °C**
Electrofishing Date 8/30/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments left bank unit

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	167	P16	200	1	18	1	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 210 **Temp °C**
Electrofishing Date 8/30/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments left bank unit

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	69	P16	200	0	9	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRFP Electrofishing Log

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Stream Name	Olema Creek	Unit Number	199.5	Temp °C
Electrofishing Date	8/31/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	721	P16	200	6	101	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name	Olema Creek	Unit Number	201	Temp °C
Electrofishing Date	8/31/1999	Unit Type	FW	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	228	P16	200	5	18	0	CO 1
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name	Olema Creek	Unit Number	212	Temp °C
Electrofishing Date	8/31/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	191	P16	200	2	20	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 215 **Temp °C**
Electrofishing Date 8/31/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	398	P16	200	31	54	10	CO 0
Pass 2	329	P16	200	14	21	0	SH YOY 0
Pass 3	233	P16	200	4	13	1	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 228 **Temp °C**
Electrofishing Date 8/31/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	180	P16	200	24	19	1	CO 0
Pass 2	159	P16	200	3	8	0	SH YOY 0
Pass 3	173	P16	200	0	3	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 230 **Temp °C**
Electrofishing Date 8/31/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments No inflow, shallow

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	170	P16	200	3	13	1	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0

Pass 4



CSRП Electrofishing Log

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Stream Name Olema Creek Unit Number 234 Temp °C
 Electrofishing Date 8/31/1999 Unit Type SC Conductivity (µS/cm)
 General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	211	P16	200	9	21	2	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek Unit Number 239 Temp °C
 Electrofishing Date 8/31/1999 Unit Type SC Conductivity (µS/cm)
 General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	309	P16	200	35	70	3	CO 0
Pass 2	212	P16	200	13	29	1	SH YOY 0
Pass 3	107	P16	200	0	12	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek Unit Number 246 Temp °C
 Electrofishing Date 8/31/1999 Unit Type SC Conductivity (µS/cm)
 General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	288	P16	200	3	20	1	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRFP Electrofishing Log

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Stream Name Olema Creek **Unit Number** 255 **Temp °C**
Electrofishing Date 8/31/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	169	P16	200	2	20	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 263 **Temp °C**
Electrofishing Date 8/31/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	143	P16	200	3	21	2	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 265 **Temp °C**
Electrofishing Date 8/31/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments too many fish for good snorkel count

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	368	P16	200	50	44	7	CO 0
Pass 2	253	P16	200	15	11	1	SH YOY 0
Pass 3	187	P16	200	2	5	1	SH 1+ 0
Pass 4							



CSRFP Electrofishing Log

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Stream Name	Olema Creek	Unit Number	267	Temp °C
Electrofishing Date	8/31/1999	Unit Type	R	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	101	P16	200	0	7	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name	Olema Creek	Unit Number	270	Temp °C
Electrofishing Date	8/31/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	299	P16	200	9	25	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name	Olema Creek	Unit Number	271	Temp °C
Electrofishing Date	8/31/1999	Unit Type	R	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	72	P16	200	0	9	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRP Electrofishing Log

7/1/99-6/30/00

Stream Name Olema Creek **Unit Number** 277 **Temp °C**
Electrofishing Date 8/31/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments at base of big slide; 2 shyoy and 1 co injured

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	423	P16	200	21	56	2	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 278 **Temp °C**
Electrofishing Date 8/31/1999 **Unit Type** SP **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	426	P16	200	18	32	6	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 282 **Temp °C**
Electrofishing Date 8/31/1999 **Unit Type** SP **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1		P16	200	1	12	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRП Electrofishing Log

7/1/99-6/30/00

Stream Name Olema Creek **Unit Number** 283 **Temp °C**
Electrofishing Date 9/1/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	347	P16	200	17	16	19	CO 0
Pass 2	358	P16	200	4	15	7	SH YOY 0
Pass 3	305	P16	200	0	5	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 285 **Temp °C**
Electrofishing Date 9/1/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	531	P16	200	41	38	8	CO 0
Pass 2		p16	200	9	20	0	SH YOY 0
Pass 3		p16	200	5	9	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 293 **Temp °C**
Electrofishing Date 9/1/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	137	P16	200	2	5	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0

Pass 4



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 295 **Temp °C**
Electrofishing Date 9/1/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	62	P16	200	4	8	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 297 **Temp °C**
Electrofishing Date 9/1/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	127	P16	200	5	9	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 1 **Temp °C**
Electrofishing Date 10/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments shallow but well shaded

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	257	P16	200	3	27	1	CO 0
Pass 2	177	P16	200	1	4	0	SH YOY 0
Pass 3	147	P16	200	1	1	0	SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 15 **Temp °C**
Electrofishing Date 10/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments 2 passes only

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	215	P16	200	3	8	2	CO 0
Pass 2	185	P16	200	0	0	0	SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 27 **Temp °C**
Electrofishing Date 10/26/1999 **Unit Type** R **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	219	P16	200	2	4	1	CO 0
Pass 2	152	P16	200	0	0	1	SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 34 **Temp °C**
Electrofishing Date 10/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	373	P16	200	16	4	5	CO 0
Pass 2	453	P16	200	3	1	0	SH YOY 0
Pass 3	267	P16	200	0	0	0	SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 41 **Temp °C**
Electrofishing Date 10/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments pool status good

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	111	P16	200	5	0	1	CO 0
Pass 2	207	P16	200	1	0	0	SH YOY 0
Pass 3	109	P16	200	0	0	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 53 **Temp °C**
Electrofishing Date 10/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments pool status good

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	480	P16	200	16	6	1	CO 0
Pass 2	499	P16	200	4	1	0	SH YOY 0
Pass 3	308	P16	200	2	0	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 59 **Temp °C**
Electrofishing Date 10/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments trickle outflow and inflow

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	271	P16	200	7	4	2	CO 0
Pass 2	208	P16	200	2	1	0	SH YOY 0
Pass 3	210	P16	200	3	1	1	SH 1+ 0

Pass 4



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 7 **Temp °C**
Electrofishing Date 10/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments shallow but shaded, one pass only

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	116	P16	200	1	0	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 92 **Temp °C**
Electrofishing Date 10/26/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	376	P16	200	8	7	0	CO 0
Pass 2	354	P16	200	1	2	0	SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 107 **Temp °C**
Electrofishing Date 10/27/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	254	P16	200	9	6	2	CO 0
Pass 2	307	P16	200	9	0	0	SH YOY 0
Pass 3	191	P16	200	1	0	0	SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 137 **Temp °C**
Electrofishing Date 10/27/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	214	P16	200	12	10	4	CO 0
Pass 2	325	P16	200	3	1	0	SH YOY 0
Pass 3	267	P16	200	1	0	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 162 **Temp °C**
Electrofishing Date 10/27/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	290	P16	200	9	1	9	CO 0
Pass 2	282	P16	200	1	0	3	SH YOY 0
Pass 3	234	P16	200	0	0	0	SH 1+ 0

Pass 4

Stream Name Olema Creek **Unit Number** 178 **Temp °C**
Electrofishing Date 10/27/1999 **Unit Type** MC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	119	P16	200	0	5	0	CO 0
Pass 2	105	P16	200	0	1	0	SH YOY 0
Pass 3							SH 1+ 0

Pass 4



CSRP Electrofishing Log

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Stream Name Olema Creek **Unit Number** 196 **Temp °C**
Electrofishing Date 10/27/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	160	P16	200	0	14	0	CO 0
Pass 2	134	P16	200	0	5	0	SH YOY 0
Pass 3	97	P16	200	0	0	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 205 **Temp °C**
Electrofishing Date 10/27/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	303	P16	200	5	35	2	CO 0
Pass 2	339	P16	200	2	7	0	SH YOY 0
Pass 3	254	P16	200	1	0	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 214 **Temp °C**
Electrofishing Date 10/27/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	43	P16	200	0	1	0	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Olema Creek **Unit Number** 220 **Temp °C**
Electrofishing Date 10/27/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	71	P16	200	3	7	0	CO 0
Pass 2	53	P16	200	0	1	0	SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 249 **Temp °C**
Electrofishing Date 10/28/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	175	P16	200	14	12	3	CO 0
Pass 2	185	P16	200	6	2	0	SH YOY 0
Pass 3	119	P16	200	1	1	0	SH 1+ 0
Pass 4							

Stream Name Olema Creek **Unit Number** 257 **Temp °C**
Electrofishing Date 10/28/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments 3 pacific giant salamander larvae 80, 95, 95 mm total length

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	285	P16	200	11	9	4	CO 0
Pass 2	342	P16	200	0	4	0	SH YOY 0
Pass 3	346	P16	200	2	1	0	SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name	Olema Creek	Unit Number	272	Temp °C
Electrofishing Date	10/28/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	299	P16	200	11	0	0	CO 0
Pass 2	209	P16	200	1	0	0	SH YOY 0
Pass 3	160	P16	200	0	1	0	SH 1+ 0

Pass 4

Stream Name	Olema Creek	Unit Number	283	Temp °C
Electrofishing Date	10/28/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	316	P16	200	11	6	14	CO 0
Pass 2	218	P16	200	5	0	6	SH YOY 0
Pass 3	200	P16	200	0	0	0	SH 1+ 0

Pass 4

Stream Name	Olema Creek	Unit Number	289	Temp °C
Electrofishing Date	10/28/1999	Unit Type	SC	Conductivity (µS/cm)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	344	P16	200	10	0	14	CO 0
Pass 2	356	P16	200	1	0	0	SH YOY 0
Pass 3							SH 1+ 0

Pass 4



CSRFP Electrofishing Log

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Stream Name	Olema Creek	Unit Number	303	Temp °C
Electrofishing Date	10/28/1999	Unit Type	SC	Conductivity (µS/cm)
General Comments				

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	332	P16	200	45	1	22	CO	0
Pass 2	226	P16	200	1	0	2	SH YOY	0
Pass 3	143	P16	200	0	0	0	SH 1+	2
Pass 4								



CSRП Electrofishing Log

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Stream Name Redwood Creek

Section Name Big Lagoon

Index Section Number

Section Description:Stream km 0-0.2 (mouth to Pacific Way bridge)

Stream Name Redwood Creek **Unit Number** 1 **Temp °C** 14.9
Electrofishing Date 10/8/1999 **Unit Type** MC **Conductivity (µS/cm)** 318.2 (specific)
General Comments Dissolved oxygen = 8.40 mg/l

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1				0	0	2	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Stream Name Redwood Creek **Unit Number** 2 **Temp °C** 18.2
Electrofishing Date 10/8/1999 **Unit Type** MC **Conductivity (µS/cm)** 282.8 (specific)
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1				0	0	17	CO 0
Pass 2							SH YOY 0
Pass 3							SH 1+ 0
Pass 4							

Section Name Lower Redwood

Index Section Number

Section Description:Stream km 0.4-3.2 (Hwy 1 bridge to first Muir Woods Rd bridge)--juvenile growth/survival study

Stream Name Redwood Creek **Unit Number** 65 **Temp °C**
Electrofishing Date 6/21/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	1315	p16	200	6	43	8	CO 0
Pass 2	1259	p16	200	1	25	2	SH YOY 2
Pass 3		p16	200	2	16	2	SH 1+ 0
Pass 4							



CSRP Electrofishing Log

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Stream Name Redwood Creek **Unit Number** 69 **Temp °C**

Electrofishing Date 6/21/1999 **Unit Type** SC **Conductivity (µS/cm)**

General Comments Lateral scour root wad enhanced with undercut ; one electrofishing mortality shyoy and one electrofishing injury shyoy

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	964	p16	200	1	15	3	CO 0
Pass 2	986	p16	200	0	14	0	SH YOY 1
Pass 3		p16	200	0	7	0	SH 1+ 0
Pass 4							

Stream Name Redwood Creek **Unit Number** 15 **Temp °C**

Electrofishing Date 6/22/1999 **Unit Type** SC **Conductivity (µS/cm)**

General Comments Wood debris, overhangng brush, and lateral scour/undercut ; good fishing effectiveness and fish response at these settings

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	694	p16	200	5	75	3	CO 0
Pass 2	485	p16	200	1	13	0	SH YOY 0
Pass 3	454	p16	200	0	11	0	SH 1+ 0
Pass 4							

Stream Name Redwood Creek **Unit Number** 4 **Temp °C** 12.9

Electrofishing Date 6/22/1999 **Unit Type** SC **Conductivity (µS/cm)** 173.8-225.8

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	955	30Hz DC	200	4	15	8	CO 0
Pass 2	786	30Hz DC	200	2	3	2	SH YOY 0
Pass 3	735	30Hz DC	200	0	3	0	SH 1+ 0
Pass 4							



CSRP Electrofishing Log

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Stream Name Redwood Creek **Unit Number** 6 **Temp °C**

Electrofishing Date 6/22/1999 **Unit Type** SC **Conductivity (µS/cm)** 174-229

General Comments Coho mortality due to electrofishing

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	750	p16	200	5	15	5	CO	1
Pass 2	609	p16	200	0	8	1	SH YOY	0
Pass 3	581	p16	200	0	4	0	SH 1+	0

Pass 4

Stream Name Redwood Creek **Unit Number** 11 **Temp °C** 13

Electrofishing Date 6/23/1999 **Unit Type** SC **Conductivity (µS/cm)** 166.7-216.1

General Comments Pass 2 electrofishing effectiveness poor due to low battery which necessitated 100 volt setting for 1/3 of pool.

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	1481	p16	200	11	38	4	CO	0
Pass 2	981	p16	100/200	0	3	2	SH YOY	0
Pass 3	949	p16	200	0	11	1	SH 1+	0

Pass 4

Stream Name Redwood Creek **Unit Number** 18 **Temp °C** 13.4

Electrofishing Date 6/23/1999 **Unit Type** SC **Conductivity (µS/cm)** 173.9-223.6

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	886	p16	200	3	28	11	CO	0
Pass 2	832	p16	200	0	21	1	SH YOY	0
Pass 3	741	p16	200	1	16	0	SH 1+	0

Pass 4



CSRP Electrofishing Log

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Stream Name Redwood Creek **Unit Number** 24 **Temp °C** 12.5
Electrofishing Date 6/24/1999 **Unit Type** SC **Conductivity (µS/cm)** 223.2-159.0
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	828	p16	200	4	33	8	CO 0
Pass 2	827	p16	200	0	13	2	SH YOY 0
Pass 3	838	p16	200	0	5	0	SH 1+ 0

Pass 4

Stream Name Redwood Creek **Unit Number** 30 **Temp °C** 13.2
Electrofishing Date 6/24/1999 **Unit Type** SC **Conductivity (µS/cm)** 223.8-172.6
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	791	p16	200	9	49	7	CO 0
Pass 2	909	p16	200	0	21	0	SH YOY 1
Pass 3	1041	p16	200	2	23	0	SH 1+ 0

Pass 4

Stream Name Redwood Creek **Unit Number** 32 **Temp °C** 13.8
Electrofishing Date 6/28/1999 **Unit Type** SC **Conductivity (µS/cm)** 175.8-224.5
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	1028	p16	200	7	25	8	CO 0
Pass 2	889	p16	200	1	8	2	SH YOY 0
Pass 3	927	p16	200	1	3	1	SH 1+ 0

Pass 4



CSRP Electrofishing Log

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Stream Name Redwood Creek **Unit Number** 42 **Temp °C** 13.8
Electrofishing Date 6/28/1999 **Unit Type** SC **Conductivity (µS/cm)** 175.8-224.5

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	967	p16	200	6	60	4	CO 0
Pass 2	984	p16	200	1	22	2	SH YOY 0
Pass 3	1043	p16	200	4	23	0	SH 1+ 0

Pass 4

Stream Name Redwood Creek **Unit Number** 48 **Temp °C** 13.5
Electrofishing Date 6/29/1999 **Unit Type** SC **Conductivity (µS/cm)** 227.2-177.4

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	1199	p16	200	10	26	1	CO 0
Pass 2	1085	p16	200	0	13	1	SH YOY 0
Pass 3	962	p16	200	2	8	1	SH 1+ 0
			200				
Pass 4	147	p16	200				

Stream Name Redwood Creek **Unit Number** 53 **Temp °C** 14.1
Electrofishing Date 6/29/1999 **Unit Type** SC **Conductivity (µS/cm)** 225.8, (179.0)

General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	837	p16	200	8	50	7	CO 0
Pass 2	888	p16	200	3	18	1	SH YOY 0
Pass 3	962	p16	200	0	24	1	SH 1+ 0
			200				
Pass 4	996	p16	200				



CSRFP Electrofishing Log

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Stream Name Redwood Creek **Unit Number** 58 **Temp °C**
Electrofishing Date 6/30/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	1058	p16	100/200	6	18	1	CO 0
Pass 2	1099	p16	100/200	4	9	1	SH YOY 1
Pass 3	1000	p16	100/200	2	3	0	SH 1+ 0

Pass 4

Stream Name Redwood Creek **Unit Number** 60 **Temp °C**
Electrofishing Date 6/30/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	580	p16	200	7	34	2	CO 1
Pass 2	618	p16	200	0	4	3	SH YOY 0
Pass 3	507	p16	200	0	8	0	SH 1+ 0

Pass 4

Stream Name Redwood Creek **Unit Number** 11 **Temp °C**
Electrofishing Date 10/4/1999 **Unit Type** **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	1074	p16	200	15	13	6	CO 0
Pass 2	930	p16	200	1	4	4	SH YOY 0
Pass 3	824	p16	200	0	1	0	SH 1+ 0

Pass 4



CSRFP Electrofishing Log

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Stream Name Redwood Creek **Unit Number** 4 **Temp °C**
Electrofishing Date 10/4/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	467	p16	200	3	7	3	CO 0
Pass 2	563	p16	200	4	2	1	SH YOY 0
Pass 3	566	p16	200	0	0	1	SH 1+ 0

Pass 4

Stream Name Redwood Creek **Unit Number** 4.5 **Temp °C** 15.3
Electrofishing Date 10/4/1999 **Unit Type** SC **Conductivity (µS/cm)**

General Comments lower end of unit 4, not shocked 6/99, sampled now in case marked fish from upper end might have moved down

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1		p16	200/100	6	7	1	CO 0
Pass 2	549	p16	200/100	1	2	2	SH YOY 0
Pass 3		p16	200				SH 1+ 0

Pass 4

Stream Name Redwood Creek **Unit Number** 6 **Temp °C**
Electrofishing Date 10/4/1999 **Unit Type** SC **Conductivity (µS/cm)**

General Comments 2 shyoy injured-efishing burns

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	512	p16	200	5	17	3	CO 0
Pass 2		p16	200	0	0	0	SH YOY 0
Pass 3		p16	200				SH 1+ 0

Pass 4



CSRП Electrofishing Log

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Stream Name Redwood Creek **Unit Number** 15 **Temp °C**
Electrofishing Date 10/5/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments 2 injured sh yoy (efishing burns)

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	422	p16	200	3	36	2	CO 0
Pass 2	390	p16	200	0	9	1	SH YOY 0
Pass 3	303	p16	200	0	4	0	SH 1+ 0
Pass 4							

Stream Name Redwood Creek **Unit Number** 18 **Temp °C**
Electrofishing Date 10/5/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments 1 sh yoy injury & 1 mort (efishing burns)

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	534	p16	200	6	34	4	CO 0
Pass 2	473	p16	200	0	2	2	SH YOY 1
Pass 3	420	p16	200	2	2	0	SH 1+ 0
Pass 4							

Stream Name Redwood Creek **Unit Number** 24 **Temp °C**
Electrofishing Date 10/5/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1		p16	200	4	28	5	CO 0
Pass 2	513	p16	200	1	12	1	SH YOY 0
Pass 3	581	p16	200	1	4	0	SH 1+ 0
Pass 4							



CSRП Electrofishing Log

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Stream Name Redwood Creek **Unit Number** 30 **Temp °C**
Electrofishing Date 10/5/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments 1 sh yoy injury (efishing burn)

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	658	p16	200	13	49	5	CO 0
Pass 2	684	p16	200	2	17	0	SH YOY 0
Pass 3	684	p16	200	0	4	0	SH 1+ 0

Pass 4

Stream Name Redwood Creek **Unit Number** 32 **Temp °C**
Electrofishing Date 10/6/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	617	p16	200	6	12	3	CO 0
Pass 2	685	p16	200	0	5	3	SH YOY 0
Pass 3	534	p16	200	0	2	0	SH 1+ 0

Pass 4

Stream Name Redwood Creek **Unit Number** 42 **Temp °C**
Electrofishing Date 10/6/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments 1 co & 1 shyoy mort, 1 shyoy injured (efishing burns)

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	649	p16	200	6	22	3	CO 1
Pass 2	762	p16	200	5	6	3	SH YOY 1
Pass 3		p16	200	2	4	1	SH 1+ 0

Pass 4



CSRП Electrofishing Log

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Stream Name Redwood Creek **Unit Number** 48 **Temp °C**
Electrofishing Date 10/6/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	828	p16	200	6	14	6	CO 0
Pass 2	692	p16	200	4	5	3	SH YOY 0
Pass 3	529	p16	200	0	1	1	SH 1+ 0

Pass 4

Stream Name Redwood Creek **Unit Number** 53 **Temp °C**
Electrofishing Date 10/6/1999 **Unit Type** SC **Conductivity (µS/cm)**
General Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	686	p16	200	4	27	4	CO 0
Pass 2	737	p16	200	5	9	1	SH YOY 0
Pass 3	743	p16	200	1	4	0	SH 1+ 0

Pass 4

Stream Name Redwood Creek **Unit Number** 58 **Temp °C** 13.2
Electrofishing Date 10/7/1999 **Unit Type** SC **Conductivity (µS/cm)** 192.4
General Comments Dissolved oxygen = 6.30 mg/l

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality
Pass 1	570	p16	200	9	11	0	CO 0
Pass 2	534	p16	200	2	4	1	SH YOY 0
Pass 3	488	p16	200	0	1	0	SH 1+ 0

Pass 4



CSRFP Electrofishing Log

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Stream Name Redwood Creek **Unit Number** 60 **Temp °C** 13.5
Electrofishing Date 10/7/1999 **Unit Type** SC **Conductivity (µS/cm)** 195.1
General Comments Dissolved oxygen = 5.85 mg/l

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	458	p16	200	9	20	3	CO	0
Pass 2	435	p16	200	2	3	3	SH YOY	1
Pass 3	473	p16	200	0	1	0	SH 1+	0
Pass 4								

Stream Name Redwood Creek **Unit Number** 65 **Temp °C** 13.7
Electrofishing Date 10/7/1999 **Unit Type** SC **Conductivity (µS/cm)** 194.4
General Comments Dissolved oxygen = 5.5 mg/l

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	811	p16	200	10	40	6	CO	0
Pass 2	808	p16	200	3	10	1	SH YOY	0
Pass 3	786	p16	200	1	2	0	SH 1+	0
Pass 4								

Stream Name Redwood Creek **Unit Number** 69 **Temp °C** 14
Electrofishing Date 10/7/1999 **Unit Type** SC **Conductivity (µS/cm)** 194.8
General Comments Dissolved oxygen = 5.65 mg/l

	Time	Setting	Volts	CO	SH YOY	SH 1+	Total Mortality	
Pass 1	514	p16	200	3	8	1	CO	0
Pass 2	441	p16	200	1	7	0	SH YOY	0
Pass 3	398	P16	200	0	2	0	SH 1+	0
Pass 4								