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# **Coho and Steelhead Restoration Project**

## **Annual Section 10 Permit Data Report June 30, 1998 – July 1, 1999**



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**1998-99 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 1998-99 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 two years 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 December 1998 through February 1999 in the Lagunitas, Olema, and Redwood Creek watersheds. Occasional steelhead adults were observed and counted incidental to coho observations. Surveys on Redwood Creek occurred every 7-14 days depending upon weather conditions, with less frequent surveys

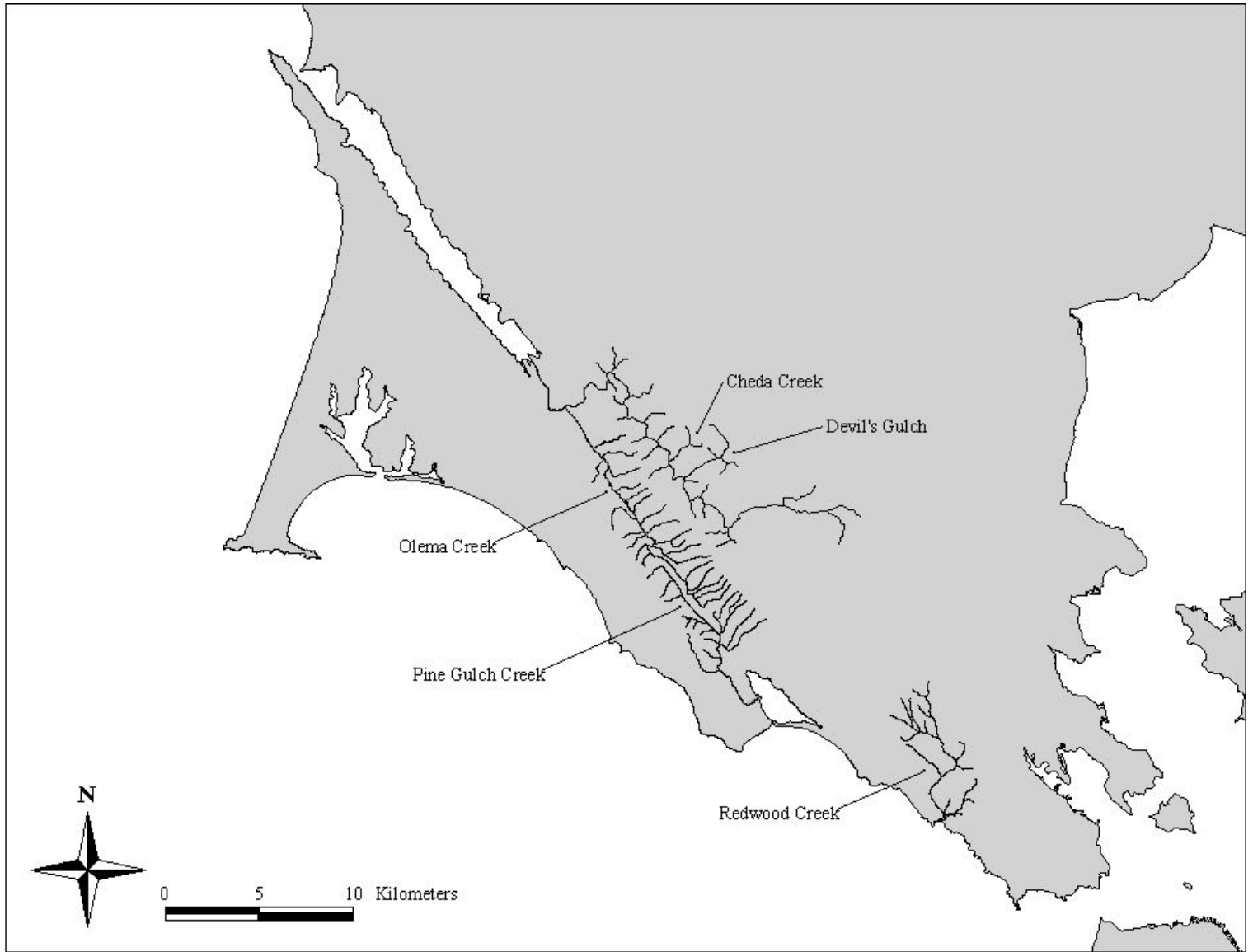


Figure1. Coho and Steelhead Restoration Project watersheds. Marin County, CA.

on other creeks. Surveys were conducted using trained volunteers and CSRP 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 juveniles were sampled from March-July 1999 using downstream migrant pipe traps. This year traps were installed on five creeks: Quarry Gulch, Giacomini, and Blueline Creeks (Olema Creek tributaries); Bear Valley Creek (Lagunitas Creek tributary); and Pine Gulch. Pipe traps 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. Flow is directed into a series of 6.2 m long, 20 cm diameter PVC pipes. The smolt traps are specially designed to minimize impingement under high flows and in-trap predation on young-of-the-year fish. To decrease water velocity, the pipes empty onto slanted, perforated metal ramps. The ramps are connected to 125 x 74 x 50 cm live boxes constructed of wood and 3 mm metal mesh screen. The live boxes contain baffles to further slow velocity. Rocks, vegetation, and mesh divider screens were added to the live boxes to provide cover and refugia for fry. In addition, the weirs contain notches that allow adult steelhead to migrate upstream unimpeded.

The traps were 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 fish were recorded. Stream temperature and stage were recorded once daily from a staff gage. 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 predetermined sites no more than 200 m above the trap sites. Mark combinations were alternated weekly. All recaptured smolts, adults, parr, and fry were released immediately after measurement in low velocity areas below the traps. Anesthetized fish were allowed to recover fully in an aerated "recovery bucket" before release.

Quarry Gulch accounted for the bulk of the coho captured during spring 1999 trapping efforts. Steelhead fry were captured in large numbers in the Giacomini trap, and made up most of the overall salmonid captures as well as the majority of mortalities. Several adult steelhead found their way into the Blueline trap; all were immediately released downstream unharmed. Vandalism to the Pine Gulch trap caused some mortalities, so the trap was moved to a location on the creek not subject to interference.

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 smolts 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 combined steelhead/coho mortality levels were 1.9%, with no individual trap except Pine Gulch exceeding 2.9%

#### Snorkel Surveys

To assess population levels and characteristics of juvenile coho and steelhead, snorkel surveys were conducted in Redwood Creek and Devil's Gulch during August and September 1998. Visual surveys typically involved 1 to 2 snorkelers in the water at a given time. Some of the surveys involved calibration using multiple snorkel passes. Standard dive lights were used to search undercut banks and woody debris for fish. Species identification, number, and size class information was recorded. 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.

#### Electrofishing

From August through October 1998, multiple pass depletion electrofishing was conducted on Redwood, Olema, and Pine Gulch Creeks, usually in conjunction with snorkel surveys to establish a Hankin-Reeves index. Sampling on Redwood Creek also involved a mark-recapture study, which was continued during June 1999. 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. Park biologists used a state of the art programmable waveform backpack electrofisher (Smith-Root Model 12 B-POW). Fish were captured using either pulsed or straight direct current with the minimum voltage, pulse width, and frequency necessary for immobilization. A log was kept of all settings, pertinent environmental conditions, and fish response. 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. 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. For the Redwood Creek mark-recapture study, most of the fish were injected with fluorescent elastomer for later identification. 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 avoid predation.

Table 1. Streams and sampling activities conducted by the National Park Service CSRP during 1998-99.

Watershed	County	Stream	Activities
Coast Creek	Marin	Coast Creek	Electrofishing Survey
Lagunitas	Marin	Devil's Gulch	Spawner Survey, Hankin-Reeves Survey
		Cheda Creek	Spawner Survey
		Bear Valley Creek	Smolt Trapping
		Horse Trail Creek	Electrofishing Survey
Lagunitas - Olema	Marin	Olema Creek (mainstem)	Spawner Survey, Electrofishing Survey
		Blueline Creek	Spawner Survey, Smolt Trapping, Electrofishing
		Quarry Gulch	Smolt Trapping
		Giacomini Creek	Smolt Trapping
Redwood	Marin	Redwood Creek (mainstem)	Spawner Survey, Snorkel/Electrofishing
		Kent Creek	Spawner Survey
		Fern Creek	Spawner Survey
Pine Gulch	Marin	Pine Gulch (mainstem)	Smolt Trapping

Table 2. Allowable take versus annual take of ESA listed central California coast ESU coho salmon by age class 7/98-6/99. Permit #1046

Type of Take	Age Class					
	Juvenile		Adult		Carcass	
	Allowable	Actual	Allowable	Actual	Allowable	Actual
Observe/Harass	44,400	2,137	1,800	152		
Capture/Handle	5,250	699			200	31
Capture/Handle/Mark	2,625	232				
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; 7/98-6/99.

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
8/22/98-10/7/98	Hankin-Reeves	Devil's Gulch (Lag.)		129		1170		59		1233						4
11/5/98	Electrofishing	Olema mainstem						117		401						
11/12/98-11/16/98	Electrofishing	Coast Creek*								268						
11/19/98	Electrofishing	Blueline Creek (Olema)						43		54						
12/8/98-1/30/99	Spawner Surveys (9)	Olema mainstem	56				14*									
1/19/99-1/25/99	Spawner Surveys (2)	Blueline Creek (Olema)	13				0									
12/5/98-2/3/98	Spawner Surveys (6)	Devil's Gulch (Lag.)	37				6*									
12/10/98-1/21/98	Spawner Surveys (2)	Cheda Creek (Lag.)	0				0									
3/12/99-7/1/99	Smolt Trapping	Blueline Creek (Olema)							6	244		39				1
3/18/99-5/24/99	Smolt Trapping	Giacomini Creek (Olema)						4		3785	2	62				64
3/31/99-5/25/99	Smolt Trapping	Quarry Gulch (Olema)						49		92	18	44		1		5
4/1/99-5/24/99	Smolt Trapping	Bear Valley Creek (Lag.)								32		13				1
4/22/99	Electrofishing	Horse Trail Creek (Lag.)								6						
Totals			106	129	0	1170	20*	272	6	6115	20	158	0	1	0	75

\*adjacent watershed

\*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; 7/98-6/99.

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
8/6/98-9/11/98	Hankin-Reeves/ Mark-Recapture	Redwood mainstem		2008		4563		224		384	98	708				4
10/20/98-10/28/98	Electrofishing/ Mark-Recapture	Redwood mainstem					200		609							2
12/5/98-2/24/99	Spawner Surveys (11)	Redwood mainstem	58				11*									
1/22/99-1/29/99	Spawner Surveys (6)	Kent Creek	1				0									
12/5/98-2/24/98	Spawner Surveys (5)	Fern Creek	0				0									
6/21/99-6/30/99	Electrofishing/ Mark-Recapture	Redwood mainstem						3		376	114	614		2		5
Totals			59	2008	0	4563	11*	427	0	1369	212	1322	0	2	0	11

\*carcasses

Table 5. 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; 7/98-6/99.

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
4/16/99-5/24/99	Smolt Trapping	Pine Gulch mainstem								109		45				16
Totals			0	0	0	0	0	0	0	109	0	45	0	0	0	16

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# **Coho and Steelhead Restoration Project**

## **Annual Section 10 Permit Electrofishing Log June 30, 1998 – July 1, 1999**



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***Coast Creek***

Unit Number 1

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
11/12/1998	SC			0.5	9.7	331.6		GOOD
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
<b>Time</b>		214	200					
<b>Setting</b>		P16	P16					
<b>Volts</b>		100	100					
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Coast Creek***

Unit Number 2

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
11/12/1998	SC			0.75	8.9	310		
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
<b>Time</b>		514	427	402				
<b>Setting</b>		P16	P16	P16				
<b>Volts</b>		100	100	100				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Coast Creek***

Unit Number 3

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
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11/12/1998	R							
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	Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
Time	389	400			
Setting	P16	P16			
Volts	100	100			
Pulse Frequency (Hz)					
Pulse Width (ms)					

***Coast Creek***

Unit Number 4

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
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11/12/1998	SC							
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	Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
Time	405	292			
Setting	P16	P16			
Volts	100	100			
Pulse Frequency (Hz)					
Pulse Width (ms)					



***Coast Creek***

Unit Number 5

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
11/12/1998	FW							
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
<b>Time</b>		527	489					
<b>Setting</b>		P16	P16					
<b>Volts</b>		100	100					
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Coast Creek***

Unit Number 6

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
11/16/1998	SC							
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
<b>Time</b>		620	504					
<b>Setting</b>		P16	P16					
<b>Volts</b>		100	100					
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Devil's Gulch***

Unit Number 4

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/28/1998	SC	LG-08-0	0	1		273.6		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		314	232	233				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100	100				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Devil's Gulch***

Unit Number 20

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/28/1998	SC	LG-08-1	1					
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		157	166	108				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100	100	100				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Devil's Gulch***

Unit Number 31

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/28/1998	MC	LG-08-1	1	0.75		273.6		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		1044	675					
<b>Setting</b>		p16	p16					
<b>Volts</b>		100/200	100/200					
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Devil's Gulch***

Unit Number 64

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/29/1998	SC	LG-08-6	6	2.5				two injuries shallow water many fish
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		599	417	288				
<b>Setting</b>		P16	P16	P16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Devil's Gulch***

Unit Number 79

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/29/1998	SC	LG-08-9	9	2.5				one sh yoy mortality shallow water cobbles hard to net fish
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		558	459	328				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Devil's Gulch***

Unit Number 97

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/30/1998	SC	LG-08-11	11	2.5	13.3	207.5		One mortality, one injury shallow water
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		837	715	569				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								





***Devil's Gulch***

Unit Number 111

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/30/1998	MC	LG-08-12	12					four burned fish
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
<b>Time</b>								
<b>Setting</b>		p16						
<b>Volts</b>		100/200	200					
<b>Pulse Frequency (Hz)</b>		30	30	30				
<b>Pulse Width (ms)</b>								

***Devil's Gulch***

Unit Number 127

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/30/1998	MC	LG-08-14	14					One injury
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
<b>Time</b>		383	422	360				
<b>Setting</b>		p2	p2	p2				
<b>Volts</b>								
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Devil's Gulch***

Unit Number 47

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/1/1998	SC	LG-08-4	4		13.4	271		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		870	356	419				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Devil's Gulch***

Unit Number 144

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/1/1998	SC	LG-08-16	16		13.2	294		One mortality, two injuries
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		771	716	606				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Devil's Gulch***

Unit Number 160

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/1/1998	SC	LG-08-18	18					
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		489	459	394				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Devil's Gulch***

Unit Number 176

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/5/1998	SC	LG-08-19	19		10.7	288.9		good
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		311	271	242				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100	100	100				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Devil's Gulch***

Unit Number 197

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/1/1998	SC	LG-08-22	22		10.7	288.9		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		585	442	303				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Devil's Gulch***

Unit Number 212

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/5/1998	SC	LG-08-23	23					
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		212	186	163				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Devil's Gulch***

Unit Number 229

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/6/1998	SC	LG-08-25	25		11.6			
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		595	445	454				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Devil's Gulch***

Unit Number 235

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/7/1998	SC	LG-08-25	25					
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		307	276	256				
<b>Setting</b>								
<b>Volts</b>								
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Devil's Gulch***

Unit Number 241

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/5/1998	MC	LG-08-26	26		13	289.2		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		164	162	151				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Devil's Gulch***

Unit Number 271

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/6/1998	SC	LG-08-28	28					
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		472	460	311				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Devil's Gulch***

Unit Number 280

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/7/1998	SC	LG-08-29	29		11.4			
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		184	211	215				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Devil's Gulch***

Unit Number 291

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/7/1998	SC	LG-08-30	30					
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		413	393	314				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



### *Olema Creek*

Unit Number

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
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11/15/1998

Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
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Time  
 Setting  
 Volts  
 Pulse Frequency (Hz)  
 Pulse Width (ms)

### *Redwood Creek*

Unit Number 24

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
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8/20/1998 SC

Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
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Time  
 Setting  
 Volts  
 Pulse Frequency (Hz)  
 Pulse Width (ms)

1051	1042			
p16	p16			
200	200			





***Redwood Creek***

Unit Number 27

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/18/1998	SC							No mortalities quick recovery

	Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
Time	569	788	588		
Setting	p16	p16	a1-e4		
Volts	200	200	300		
Pulse Frequency (Hz)					
Pulse Width (ms)					

***Redwood Creek***

Unit Number 35

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/18/1998	SC			1	15.1	189.5		

	Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
Time	570				
Setting	p16				
Volts	200				
Pulse Frequency (Hz)					
Pulse Width (ms)					



***Redwood Creek***

Unit Number 46

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/19/1998	SC				14.1	185		
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
Time		888	847					
Setting								
Volts								
Pulse Frequency (Hz)								
Pulse Width (ms)								

***Redwood Creek***

Unit Number 51

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/18/1998	SC				14.6	187		good
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
Time		1043	792	744				
Setting		p16	p16	p16				
Volts		200/100	200	100/200				
Pulse Frequency (Hz)								
Pulse Width (ms)								



***Redwood Creek***

Unit Number 58

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/24/1998	SC				14	183		No morts quick recovery

	Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
Time	1317	1274	755		
Setting	p16	p16			
Volts	200	200			
Pulse Frequency (Hz)					
Pulse Width (ms)					

***Redwood Creek***

Unit Number 64

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/24/1998	SC				14.8	187.1		One sh yoy mortality, turbid water, fish was missed

	Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
Time	779	649	530		
Setting	p16	p16	p16		
Volts	100/200	100/200	100/200		
Pulse Frequency (Hz)					
Pulse Width (ms)					



***Redwood Creek***

Unit Number 70

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/25/1998	SC							one injury no morts
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		954	899	685				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 76

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/25/1998	SC			0.9				
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		711	692					
<b>Setting</b>		p16	p16					
<b>Volts</b>		200	200					
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 80

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/26/1998	SC							complex wood, low catchability for coho 6-7 coho observed after pass 2,
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
<b>Time</b>		1369	1350					
<b>Setting</b>			p16/e3					
<b>Volts</b>		100/200/100/200/300						
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 103

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/26/1998	MC				14.9	188.1		
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
<b>Time</b>		864	921	689				
<b>Setting</b>		p16						
<b>Volts</b>		200						
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 121

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/27/1998	MC							
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time Setting</b>		694	710	662	525			
<b>Volts</b>		100/200	100/200	100/200	100/200			
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 123

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/27/1998	SC							
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time Setting</b>		826	741	618				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 126

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/31/1998	SC				15	189		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		663	653	351				
<b>Setting</b>								
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 131

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
8/31/1998	SC				15	187		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		1252	1161	1000				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 10

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/8/1998	SC							
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		700	665	632				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 15

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/8/1998	MC							
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		694	662	681				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								





***Redwood Creek***

Unit Number 38

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/8/1998	SC							
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		732	311	360				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 47

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/9/1998	SC				13.4	228.9		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		437	431	306				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 61

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/9/1998	SC				13.4	228		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		332	332					
<b>Setting</b>		p16	p16					
<b>Volts</b>		100/200	100/200					
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 81

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/9/1998	PL				14.4	184.5		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		1099	853	881				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 91

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/9/1998	MC					186.4		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		428	384	187				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 111

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/11/1998	SC					13.5		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		473	421	390	379			
<b>Setting</b>		p16	p16	p16	p16			
<b>Volts</b>		100/200	100/200	100/200	100/200			
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 128

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/11/1998	SC							
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
Time		478	392	227				
Setting		p16		p16				
Volts		200		200				
Pulse Frequency (Hz)								
Pulse Width (ms)								

***Redwood Creek***

Unit Number 138

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/11/1998	SC							
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
Time		805	611	487				
Setting			p16	p16				
Volts		200	200	200				
Pulse Frequency (Hz)								
Pulse Width (ms)								



### *Redwood Creek*

Unit Number 178

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/1/1998	SC			0.875				tried several settings fish moved, difficult to capture, no mortalities or
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		250	207	177				
<b>Setting</b>		p16/h1/g1	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

### *Redwood Creek*

Unit Number 213

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/1/1998	SC				15.3	183.1		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		966	804	422				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



### *Redwood Creek*

Unit Number 258

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/2/1998	SC				14.3	181		
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		400	450	400				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

### *Redwood Creek*

Unit Number 282

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/2/1998	SC							one steelhead received burn
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		1087	1100	800				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



### *Redwood Creek*

Unit Number 320

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
9/2/1998	SC				15			
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		455	372	318				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

### *Redwood Creek*

Unit Number 24

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/20/1998	SC				12.5	189		One burned sh yoy mort.
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		961	881	780				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 27

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/20/1998	SC			0.3				
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
Time		1200	900					
Setting		p16	p16					
Volts		100/200	100/200					
Pulse Frequency (Hz)								
Pulse Width (ms)								

***Redwood Creek***

Unit Number 28

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/20/1998	SC							
		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5		
Time								
Setting								
Volts								
Pulse Frequency (Hz)								
Pulse Width (ms)								





***Redwood Creek***

Unit Number 35

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/21/1998	SC			0.3				
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		439	431	401				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 46

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/21/1998	SC							
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		1067	1261	759				
<b>Setting</b>		p16						
<b>Volts</b>		200						
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



### *Redwood Creek*

Unit Number 51

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/23/1998	SC							One sh yoy with electrofishing burn.
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		930	628	591	419			
<b>Setting</b>		p16	p16	p16	p16			
<b>Volts</b>		200	200	200	200			
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

### *Redwood Creek*

Unit Number 58

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/23/1998	SC							No injuries
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		1398	1034					
<b>Setting</b>		p16	p16					
<b>Volts</b>		200	100/200					
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 64

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
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10/26/1998	SC							
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	Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
Time	1056	860	792		
Setting	p16	p16	p16		
Volts	100/200	100/200	100/200		
Pulse Frequency (Hz)					
Pulse Width (ms)					

***Redwood Creek***

Unit Number 70

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
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10/22/1998	SC							
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	Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
Time	1181	841			
Setting					
Volts					
Pulse Frequency (Hz)					
Pulse Width (ms)					



***Redwood Creek***

Unit Number 74

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
------	-----------	--------------	---------	----------	------	-------------	------------	-------------------------------------

10/22/1998	SC							
------------	----	--	--	--	--	--	--	--

Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
--------	--------	--------	--------	--------

Time  
 Setting  
 Volts  
 Pulse Frequency (Hz)  
 Pulse Width (ms)

***Redwood Creek***

Unit Number 76

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
------	-----------	--------------	---------	----------	------	-------------	------------	-------------------------------------

10/22/1998	SC							
------------	----	--	--	--	--	--	--	--

Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
--------	--------	--------	--------	--------

Time  
 Setting  
 Volts  
 Pulse Frequency (Hz)  
 Pulse Width (ms)

963	683	513		
-----	-----	-----	--	--



***Redwood Creek***

Unit Number 78

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
------	-----------	--------------	---------	----------	------	-------------	------------	-------------------------------------

10/22/1998	FW							
------------	----	--	--	--	--	--	--	--

Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
--------	--------	--------	--------	--------

Time  
 Setting  
 Volts  
 Pulse Frequency (Hz)  
 Pulse Width (ms)

***Redwood Creek***

Unit Number 80

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
------	-----------	--------------	---------	----------	------	-------------	------------	-------------------------------------

10/26/1998	SC							
------------	----	--	--	--	--	--	--	--

Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
--------	--------	--------	--------	--------

Time  
 Setting  
 Volts  
 Pulse Frequency (Hz)  
 Pulse Width (ms)

1512	1115	844		
200	200	200		



***Redwood Creek***

Unit Number 103

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/27/1998	SC							
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		992	1156	793				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 121

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/27/1998	MC							
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		836	882	579				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 123

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/27/1998	SC							
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		989	805	636				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 126

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
10/28/1998	SC							
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		581	501	335				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 131

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
------	-----------	--------------	---------	----------	------	-------------	------------	-------------------------------------

10/28/1998	SC							
------------	----	--	--	--	--	--	--	--

	Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
Time	1209	911	692	701	
Setting	p16	p16	p16	p16	
Volts	200	200	200	200	
Pulse Frequency (Hz)					
Pulse Width (ms)					

***Redwood Creek***

Unit Number 4

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
------	-----------	--------------	---------	----------	------	-------------	------------	-------------------------------------

6/22/1999	SC	RW-01-			12.9			
-----------	----	--------	--	--	------	--	--	--

	Pass 1	Pass 2	Pass 3	Pass 4	Pass 5
Time	955	786	735		
Setting	30Hz DC	30Hz DC	30Hz DC		
Volts	200	200	200		
Pulse Frequency (Hz)					
Pulse Width (ms)					





***Redwood Creek***

Unit Number 6

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/22/1999	SC	RW-01-						
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		750	609	581				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 11

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/23/1999	SC	RW-01-			13			
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		1481	981	949				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	100/200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 15

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/22/1999	SC	RW-01-						
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		694	485	454				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 18

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conducti vit	Visibility	Fish Response/Fishing Effectiveness
6/23/1999	SC	RW-01-8	8		13.4			
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		886	832	741				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 24

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/24/1999	SC	RW-01-8	8		12.5			
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		828	827	838				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 30

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/24/1999	SC	RW-01-10	10		13.2			
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		791	909	1041				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 32

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/28/1999	SC	RW-01-11	11		13.8			
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		1028	889	927				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 42

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/28/1999	SC	RW-01-12	12		13.8			
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		967	984	1043				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 48

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/29/1999	SC	RW-01-			13.5			
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		1199	1085	962	147			
<b>Setting</b>		p16	p16	p16	200			
<b>Volts</b>		200	200	200	p16			
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 53

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/29/1999	SC	RW-01-			14.1			
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		837	888	962	996			
<b>Setting</b>		p16	p16	p16	200			
<b>Volts</b>		200	200	200	p16			
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 58

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/30/1999	SC	RW-01-16	16					
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		1058	1099	1000				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		100/200	100/200	100/200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 60

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/30/1999	SC	RW-01-16	16					
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		580	618	507				
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								



***Redwood Creek***

Unit Number 65

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/21/1999	SC	RW-01-17	17					
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		1315	1259					
<b>Setting</b>		p16	p16	p16				
<b>Volts</b>		200	200	200				
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								

***Redwood Creek***

Unit Number 69

Date	Unit Type	Section Code	Section	Est Flow	Temp	Conductivit	Visibility	Fish Response/Fishing Effectiveness
6/21/1999	SC	RW-01-18	18					
		<b>Pass 1</b>	<b>Pass 2</b>	<b>Pass 3</b>	<b>Pass 4</b>	<b>Pass 5</b>		
<b>Time</b>		964	986					
<b>Setting</b>		p16	p16					
<b>Volts</b>		200	200					
<b>Pulse Frequency (Hz)</b>								
<b>Pulse Width (ms)</b>								