INTERIM REMEDIAL MEASURES REPORT

Sierra Pacific Industries
Arcata Division Sawmill
2593 New Navy Base Road
Arcata, California

June 10, 2003

MFG, Inc.
consulting scientists and engineers

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Prepared For:

SIERRA PACIFIC INDUSTRIES

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

MFG, Inc. has prepared this report on behalf of Sierra Pacific Industries (SPI) to document interim remedial measures that have been implemented and the resulting impact on storm water quality at the SPI Arcata Division Sawmill (the Site) in Arcata, California. The Site location is shown in Figure 1. The Site layout (Figure 2) shows storm water sampling locations, drainage ditches and the general flow of storm water across the Site.

MFG has reviewed and tabulated historical management measures and interim remedial activities that have been preformed at the Site. We have also reviewed and tabulated available historical storm water analysis data for chlorinated phenols, including pentachlorophenol (PCP) and tetrachlorophenol (TCP).

The Site background is provided in Section 2.0. Historical management measures are described in Section 3.0. Interim remedial measures are described in Section 4.0 and storm water observations are presented in Section 5.0. References are listed in Section 6.0.

2.0 BACKGROUND

2.1 Site Description

The Site is located on the Samoa Peninsula in Arcata, Humboldt County, California (Figure 1). The site consists of approximately 68 acres. It is bounded to the northwest by the old railroad grade, to the north and east by the Mad River Slough and to the south by New Navy Base Road and the town of Manila to the southwest. A Site plan depicting the layout of the sawmill, including the former green chain area and storm water outfalls, is included as Figure 2.

The sawmill was constructed in 1950 and has been an active mill from 1950 to the present day.

2.2 History of Chlorinated Phenols Use

A brief history of the use of chlorinated phenols, including pentachlorophenol (PCP) and tetrachlorophenol (TCP), was complied from interviews with SPI personnel and notes contained within the historical monthly storm water data collection forms that were completed by SPI personnel. PCP and TCP are components of anti-stain/anti-fungus solutions and had been used at the Site since the early 1960's. The anti-stain solutions were applied in an aboveground dip tank located on the former green chain (Figure 2). In 1985, SPI stopped purchasing anti-stain chemicals containing chlorinated phenols, as directed by the Regional Water Quality Control Board (RWQCB), and stopped using the original dip tank (Feature 49 in Figure 2) on the former green chain. SPI began a process of removing, containerizing and relocating the remaining anti-stain solution containing chlorinated phenols for recycling in the new dip tank facility (Feature 21 in Figure 2). The new dip tank facility was operational in 1985. A new anti-stain chemical that did not contain chlorinated phenols was used in the new dip tank. Due to the difficulty of disposing of the old anti-stain solutions containing chlorinated phenols, the remaining old solution was mixed into the new anti-stain solution in the new dip tank. The process of removal and recycling of the old anti-stain solution in the new dip tank proceeded until September of 1987, at which time the drip basin near the original dip tank was cleaned out, filled with sand and capped with 3-4 inches of concrete. The new dip tank has been cleaned twice since anti-stain solution containing chlorinated phenols has been used it.

3.0 HISTORICAL MANAGEMENT MEASURES (1983-2000)

Based on a review of the monthly storm water data collection forms completed by SPI personnel from 1983 through 2000 and interviews with SPI personnel, MFG has tabulated historical management measures implemented to eliminate chlorinated phenols, woody material, petroleum compounds and other materials from storm water discharges (Table 1). Significant historical management measures implemented to eliminate chlorinated phenols from storm water discharges included the removal of the dip tank from the former green chain and the concrete capping of the former green chain drip basin (1985-1987). Many of the historical management measures focused on elimination of woody and particulate material from the storm water discharge. These measures included moving woody material away from the edge of the Mad River Slough and reducing woody debris in the log yard and in other areas of the mill. In addition, exposed storm water ditches were cleaned out several times to remove woody and particulate material and material that may have been impacted by chlorinated phenols. To reduce petroleum impacts to storm water, a maintenance program was implemented in 1995 that results in the rapid identification and repair of any petroleum leaks from forklifts and other equipment. Additional historical management measures are included in Table 1.

4.0 INTERIM REMEDIAL MEASURES

The focus of the interim remedial efforts related to storm water has been the elimination of chlorinated phenols from storm water discharges. To compile the interim remedial measures, MFG interviewed SPI personnel and reviewed documents provided by SPI. The interim remedial measures are listed in Table 1 and some of the more significant measures are summarized below.

4.1 Interim Remedial Measures Completed (2000-2003)

With the goal of eliminating chlorinated phenols in the storm water discharges, significant efforts were made to eliminate the commingling of groundwater and storm water. Groundwater is very shallow (less than 1 foot below ground level in some locations) and both shallow groundwater and soil in the vicinity of the former green chain are impacted with chlorinated phenols (Environet, 2003). In addition, given the tendency for chlorinated phenols to adsorb to woody debris, significant efforts have been made to reduce woody material in the storm water discharges.

In 2000, interim remedial measures focused on the elimination of woody material, petroleum products and other non-storm water discharges. Activities designed to eliminate woody material discharge included mill-wide cleaning and removal of woody material as well as implementation of efforts to intercept and filter woody material at storm water inlets. Woody material interception techniques included placement of various screens, rock filled bags, hay bales and waddles. The potential for petroleum impact of storm water was reduced by the cleaning of areas where petroleum products are used and the placement of various petroleum products into areas with secondary containment. Numerous other efforts were made to eliminate non-storm water inputs into the storm water system including the identification and correction of water line leaks in the head rig computer room and fixing the leaks in condensate lines (Table 1).

In 2001, interim remedial measures intended to eliminate woody debris and petroleum discharges and to eliminate non-storm water sources of water continued. Several tasks were undertaken to reduce the commingling of shallow groundwater into storm water including the repair, lining and replacement of some of the existing culverts, and the installation of oil/water separators near the outfalls of ditches # 2, 3 and 4. Two oil/water separators were installed inline in ditch # 2 (Table 1). The open ditch that ran between the filing room and ditch # 4 was also converted to a culvert to eliminate debris from the former

green chain area from entering the ditch. Additional significant activities included the installation of oil/water separators on the steam cleaner discharge line and on the wash rack discharge line. Both discharge lines were routed to the sewer instead of being part of the storm water runoff.

In 2002 and 2003, additional surface cleaning was preformed to reduce the amount of woody material entering the storm water. The oil water separators located in drainage ditches #2, #3, and #4 were cleaned out several times. In addition, the first oil/water separator in ditch #2 was re-sealed and the culvert between the two oil/water separators in ditch # 2 was internally lined to eliminate infiltration of groundwater into the culvert and the resulting commingling with storm water. Additional interim remedial measures are listed in Table1.

In May of 2003, MFG collected samples of surface water puddles and associated sediment at the Site in an effort to identify sources of chlorinated phenols that had been detected in storm water, especially in ditch # 2. Water and sediment from various puddles around the mill were sampled and analyzed for chlorinated phenols following major rain events at end of April and the beginning of May. The results from this work are not yet complete; however preliminary observations and data indicate that soil and buried woody debris in the immediate vicinity of the former dip tank on the former green chain is a significant source area. A major surface cleaning effort was undertaken in the area of the former green chain to remove woody debris that accumulates during operation of the sawmill. Following the debris removal, plastic tarps were positioned over the former green chain to prevent rainwater infiltration and reduce runoff while further remedial measures were evaluated.

4.2 Interim Remedial Measures Planned

Interim remedial measures include the ongoing daily facility cleaning procedures and significant efforts to keep the filtration materials in-place to protect the outfalls from debris during runoff events. Planned interim remedial measures include the removal of woody debris and materials from the shoreline of the Mad River Slough. A limited excavation in the vicinity of the former dip tank on the former green chain will be preformed to remove soil and woody material that contain elevated concentrations of chlorinated phenols. In addition, a study is underway to evaluate the feasibility of modifying ditch # 4, which is currently partially an open, unlined ditch, to prevent commingling of groundwater and storm water and to better control and capture debris before reaching the storm water outfall.

5.0 STORM WATER CHEMICAL ANALYSIS DATA

Storm water observations and storm water quality monitoring were initiated at the mill in 1983. Mill staff recorded daily observations regarding rainfall and storm water flow from the various outfalls from 1983 through 2000. Monthly collection and analysis of water samples from the storm water outfalls were performed in the months with enough precipitation to generate storm water flow. From 2000 to the present, storm water sampling has been preformed for SPI by Pacific Northwest Environet Group, Inc. (Environet) and the data are submitted in annual reports. Based on review of the monthly storm water records and analytical results and the annual reports since 2000, MFG has compiled the available storm water chemical analysis data for chlorinated phenols (Table 2). We have also plotted the analytical results from individual storm water sampling locations on graphs to illustrate trends in the concentration of chlorinated phenols. These graphs are included as Figures 3 through 13. The recent analytical data from sampling locations (SLs) 1, 2, and 4 are plotted at two scales to better illustrate trends in the recent data. The graphs presented in Figure 3 through 13 illustrate marked improvement in storm water quality over the period monitored as a result of the management and remedial measures undertaken by SPI.

6.0 REFERENCES

Environet Consulting (Environet), 2003, *Results of the Remedial Investigation for Sierra Pacific Industries, Sierra Pacific Industries, Arcata Division Sawmills, Arcata, California,* January 30.

TABLE 1
SUMMARY OF MANAGEMENT AND INTERIM REMEDIAL MEASURES

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

		ANTICIPATED IMPROVEMENT								
DATE	**ACTIVITIES**	**SL-1**	**SL- 2**	**SL-3**	**SL-4**	**SL-5**	**SL-6**	**DD-7**	**DD-8**	**Vegetated Pond**
1984										
Jan	Plans for new dip tank system and building in progress		X		X					
Dec	Drainage ditches # 1 and # 4 cleaned	X			X					
1985										
June	Initiated process of recycling anti-stain solution from the old drip basin into the new dip tank	X	X		X					
Aug	Cleaned the area around the old green chain dip tank	X	X		X					
Sept	New dip tank fully operational	X	X		X					
Oct	Patched roof over former green chain		X		X					
Nov	Recycled 600 gallons of anti-stain from the old dip tank into the new dip tank	X	X		X					
1986										
Jan	Recycled additional anti-stain from the old drip basin into the new dip tank	X	X		X					
May	Removed old dip tank	X	X		X					
June	PCP containing anti-stain being phased out	X	X		X					
July	Bark pile reduced in size and moved away from the slough edge				X					
Nov	Cleaned ditches #1 and #4	X			X					
1987										
Feb	Recycled 600 gallons of anti-stain from the former drip basin into the new dip tank	X	X		X					
March	Cleaned ditch # 4, culvert plugged with sediment				X					
June	Diesel piping moved into containment						X	X		
July	Cleaned under former green chain	X	X		X					
Aug	Recycled anti-stain from the old drip basin into the new dip tank	X	X		X					
Sept	All old anti-stain recycled.	X	X		X					
Sept	Cleaned former green chain dip basin, filled with sand and capped with concrete	X	X		X					
Nov	Ditches #1 and #4 cleaned	X			X					

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DATE	**ACTIVITIES**	**SL-1**	**SL- 2**	**SL-3**	**SL-4**	**SL-5**	**SL-6**	**DD-7**	**DD-8**	**Vegetated Pond**
1988										
Dec	Ditches #1 and #4 cleaned	X			X					
1990										
Jan	Ditches #1 and #4 cleaned	X			X					
Jan	Constructed log/chain barrier to prevent bark from being pushed into the slough edge				X					
Jan	Implemented weekly sweeping of the log yard				X				X	
March	Culvert to ditch # 4 repaired				X					
March	Pushed bark pile away from the slough edge				X					
1991										
June	Utilized sorting machine to allow recycling of 20,000 yards of log yard waste				X				X	
Dec	Recycled log yard waste sold as compost				X				X	
1992										
March	Recycled log yard waste, sold as compost to Sun Valley Farms				X				X	
1993										
March	Recycled log yard waste, sold as compost to Sun Valley Farms				X				X	
June	Recycled log yard waste, sold as fuel to Fairhaven Power Plant				X				X	
1994										
June	Cleaned-up mud and bark from the log yard near the slough edge				X					
1995										
Jan	Implemented process to assure rapid repair or oil leaks from fork lifts and other equipment	X	X	X	X	X	X	X	X	X
June	Completed of black top surface in log yard				X				X	
1996										
June	Asphalt installed in truck shop and hyster repair areas						X	X		

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DATE	**ACTIVITIES**	**SL-1**	**SL- 2**	**SL-3**	**SL-4**	**SL-5**	**SL-6**	**DD-7**	**DD-8**	**Vegetated Pond**
1997										
July	Cleaned ditch # 4				X					
2000										
	Cleaned and removed wood debris from the entire mill site	X	X	X	X	X	X	X	X	X
	Moved ash box away from the slough edge and graveled the area		X							
	Cleaned bone yard pile near slough edge and graveled the area						X	X		
	Installed secondary containment for oil drums	X	X	X	X		X	X		
	Contained oil storage shed		X							
	Built new steam cleaner building						X	X		
	New kerosene tank and containment installed						X	X		
	Cleaned the area in front of debarker - screened, graveled, boomed			X						
	Removed mud from wash rack						X	X		
	Placed screens, rock bags, waddles, hay bales in low spots along slough edge	X	X	X	X					
	Placed waddles in low spots between log yard and ditch 4				X					
	Fixed water leaks in the head rig computer room				X					
	Fixed condensate line leaks	X								
	Placed hay bales, booms, waddles to protect all ditches	X	X	X	X	X	X	X	X	
	Cleaned fueling area and area around fuel tanks						X	X		
	Repaired machinery and equipment to stop oil leaks	X	X	X	X	X	X	X	X	X
Dec	Purchased sweeper to sweep log yard and plant	X	X	X	X	X	X	X	X	X
2001										
Jan/Feb	Installed K-Rails & waddles along ditch 4				X					
Jan/Feb	Converted open ditch into a culvert from filing room to ditch 4				X					
Jan/Feb	Hooked up boiler and feedwater tanks to sewer	X								
Jan/Feb	Installed stainless steal condensate return lines	X								
Jan/Feb	Purchased vacuum sweeper truck for daily mill cleaning	X	X	X	X	X	X	X	X	X

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Arcata, California

		ANTICIPATED IMPROVEMENT								
DATE	**ACTIVITIES**	**SL-1**	**SL- 2**	**SL-3**	**SL-4**	**SL-5**	**SL-6**	**DD-7**	**DD-8**	**Vegetated Pond**
Jan/Feb	Fixed leaking 6" water main				X					
Jan/Feb	Fixed leaking fire preventage water main				X					
Jan/Feb	Installed screens, rock bags, booms to protect ditched # 2, #3, and the vegetated pond		X	X	X					X
Jan/Feb	Cleaned and removed of woody debris from the log yard				X				X	X
Jan/Feb	Cleaned and removed debris from behind the new dip tank building						X	X		
Jan/Feb	Removed debris from the slough edge	X	X	X	X					
Jan/Feb	Graveled parking area for rolling stock						X	X		
Jan/Feb	Cleaned the planer parking lot				X					
Jan/Feb	Cleaned and removed debris from log yard				X				X	X
Jan/Feb	Installed Hartford loops onto boiler to recycle boiler water reducing non-storm water discharge	X								
Jan/Feb	Cleaned underneath mill buildings	X	X	X	X					
April	Cement-sealed inlet of culvert in ditch # 3			X						
April	Inserted 10-inch plastic culvert inside rusty culvert and sealed the inlet to ditch # 3			X						
April	Plugged Culvert in ditch # 3 for repair			X						
	Cleaned and removed wash rack debris						X	X		
	Cleaned and removed grindings under filing room				X					
	Hooked up boiler water softener to sewer	X								
	Hauled log yard debris off site								X	X
Aug	Installed oil/water separators in ditches 2,3,4		X	X	X					
Oct	Culvert replaced in ditch 3			X						
	Installed oil/water separator in the steam cleaner discharge line and connected it to the sewer						X	X		
	Installed oil/water separator in wash rack discharge line and connected it to the sewer						X	X		
	Dust collectors installed on all filing equipment				X					
	Cleaned-up entire mill site	X	X	X	X		X	X	X	

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DATE	**ACTIVITIES**	**SL-1**	**SL- 2**	**SL-3**	**SL-4**	**SL-5**	**SL-6**	**DD-7**	**DD-8**	**Vegetated Pond**
	Wash rack cleanup						X			
	Fuel area upgraded to reduce runoff						X	X	X	
	Installed additional K-Rails along slough edge	X	X	X	X					
2002										
	Installed Safety Kleen parts washing stations	X	X	X	X		X	X		
	Cleaned more wash rack debris	X					X			
	Cleaned oil/water separators in ditches 2,3 and 4		X	X	X					
	Cleaned new dip tank						X	X		
	Installed above ground storage tank for truck scale to contain storm water						X			
	Cleaned oil/water separators on ditches 2, 3 and 3		X	X	X					
2003										
	Installed surge tank at boiler to reuse boiler water	X								
Feb	Cleaned out oil/water separators 2 and 2A									
	Sealed walls of the oil/water separator 2A to reduce groundwater infiltration		X							
	Inserted plastic pipe liner into existing culvert pipe between the oil/water separators in ditch 2		X							
	Sealed secondary containment for above ground fuel tanks							X		
	Installed anti-backflow devices in ditches 2 and 3		X	X						
	Repaired dry shed roof	X								
	Removed debris from bone yard area behind the current dip tank							X		
	Implemented daily log yard and plant sweeping program	X	X	X	X	X	X	X	X	X
	Assigned four SPI employees to monitor and maintain storm water filtration devices	X	X	X	X	X	X	X	X	X
May	PCP source evaluation: surface puddle water and soil samples collected		X		X					
May	Thoroughly cleaned-up of the former green chain area		X		X					

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DATE	**ACTIVITIES**	**SL-1**	**SL- 2**	**SL-3**	**SL-4**	**SL-5**	**SL-6**	**DD-7**	**DD-8**	**Vegetated Pond**
May	Covered former green chain with tarps to prevent runoff and infiltration		X							
May	Cleaned out oil/water separators 2 and 2A		X							

Notes:
SL Storm water sampling location
DD Storm water drainage ditch
Storm water sampling location SL-1 was relocated in 2000 from a location near the outfall of ditch # 1 into the Mad River Slough to its present location.

TABLE 2

SUMMARY OF HISTORICAL STORM WATER CHEMICAL ANALYSES

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

DATE	SL-1		SL-2		SL-3		SL-4		SL-5		SL-6		VEGETATED POND		SPRINKLER SUPPLY WELL	
	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1983																
9/9/1983	0.58	0.66	--	--	--	--	17	114	--	--	--	--	--	--	--	--
10/24/1983	6.9	13.3	--	--	--	--	1.05	0.35	--	--	--	--	--	--	<0.05	<0.05
11/23/1983	94	79	--	--	--	--	47	33	--	--	--	--	--	--	--	--
12/15/1983	51	24	--	--	--	--	86	110	--	--	--	--	--	--	--	--
1984																
1/20/1984	8.7	7.1	--	--	--	--	1.1	0.84	--	--	--	--	--	--	--	--
2/16/1984	14	12	--	--	--	--	5.7	3.9	--	--	--	--	--	--	--	--
3/21/1984	74	68	--	--	--	--	55	125	--	--	--	--	--	--	--	--
4/16/1984	28	18	--	--	--	--	3.1	2.4	--	--	--	--	--	--	--	--
5/15/1984	2	15	--	--	--	--	0.51	17	--	--	--	--	--	--	--	--
6/18/1984	--	--	--	--	--	--	2	17.6	--	--	--	--	--	--	--	--
7/14/1984	--	--	--	--	--	--	2.1	14.4	--	--	--	--	--	--	--	--
8/15/1984	--	--	--	--	--	--	0.55	2.7	--	--	--	--	--	--	--	--
8/27/1984	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.2	<0.2
9/24/1984	--	--	--	--	--	--	0.7	3.7	--	--	--	--	--	--	--	--
11/1/1984	88	355	--	--	--	--	2.8	13	--	--	--	--	--	--	--	--
12/4/1984	51	65	--	--	--	--	51	61	--	--	--	--	--	--	--	--
1985																
1/14/1985	54	52	--	--	--	--	4	19	--	--	--	--	--	--	--	--
Duplicate	59	53	--	--	--	--	4	20	--	--	--	--	--	--	--	--
2/15/1985	20	--	--	--	--	--	249	604	--	--	--	--	--	--	--	--
Duplicate	--	--	--	--	--	--	242	486	--	--	--	--	--	--	--	--
3/8/1985	224	355	--	--	--	--	35	65	--	--	--	--	--	--	--	--
Duplicate	187	270	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 2

SUMMARY OF HISTORICAL STORM WATER CHEMICAL ANALYSES

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

DATE	SL-1		SL-2		SL-3		SL-4		SL-5		SL-6		VEGETATED POND		SPRINKLER SUPPLY WELL	
	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
4/10/1985	--	--	--	--	--	--	<1	<1	--	--	--	--	--	--	--	--
5/6/1985	--	--	--	--	--	--	4	16	--	--	--	--	--	--	--	--
7/3/1985	--	--	--	--	--	--	4	14	--	--	--	--	--	--	--	--
8/9/1985	--	--	--	--	--	--	2	4	--	--	--	--	--	--	--	--
9/3/1985	--	--	--	--	--	--	<1	3	--	--	--	--	--	--	--	--
10/31/1985	16	19	--	--	--	--	<1	<1	--	--	--	--	--	--	--	--
1986																
1/16/1986	24	29	--	--	--	--	18	33	--	--	--	--	--	--	--	--
2/6/1986	3	3	--	--	--	--	4	7	--	--	--	--	--	--	--	--
3/11/1986	12	12	--	--	--	--	46	50	--	--	--	--	--	--	--	--
3/14/1986	--	--	--	--	--	--	--	--	--	--	--	--	<1	<1	--	--
4/14/1986	6	4	--	--	--	--	8	11	--	--	--	--	--	--	--	--
9/26/1986	10	10	--	--	--	--	185	275	--	--	--	--	--	--	--	--
12/8/1986	5	3	--	--	--	--	1	5	--	--	--	--	--	--	--	--
1987																
2/13/1987	2	1	--	--	--	--	9	30	--	--	--	--	--	--	--	--
2/26/1987	6	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/13/1987	23	15	--	--	--	--	180	410	--	--	--	--	--	--	--	--
4/21/1987	--	--	--	--	--	--	<1	2	--	--	--	--	--	--	--	--
5/18/1987	--	--	--	--	--	--	<1	<1	--	--	--	--	--	--	--	--
6/10/1987	--	--	--	--	--	--	1	3	--	--	--	--	--	--	--	--
11/13/1987	9	11	--	--	--	--	7	24	--	--	--	--	--	--	--	--
12/1/1987	6	5	--	--	--	--	39	87	--	--	--	--	--	--	--	--
12/30/1987	23	10	--	--	--	--	5	4	--	--	--	--	--	--	--	--

TABLE 2

SUMMARY OF HISTORICAL STORM WATER CHEMICAL ANALYSES

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

DATE	SL-1		SL-2		SL-3		SL-4		SL-5		SL-6		VEGETATED POND		SPRINKLER SUPPLY WELL	
	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1988																
1/11/1988	37	66	--	--	--	--	11	2	--	--	--	--	--	--	--	--
2/19/1988	--	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1
5/12/1988	3	3	5	6	<1	1	3	8	--	--	--	--	--	--	--	--
11/15/1988	3	1	--	--	--	--	16	30	--	--	--	--	--	--	--	--
12/22/1988	3	1	--	--	--	--	2	4	--	--	--	--	--	--	--	--
1989																
3/13/1989	1	<1	--	--	--	--	1	5	--	--	--	--	--	--	--	--
4/24/1989	<1	<1	--	--	--	--	1	3	--	--	--	--	--	--	--	--
5/25/1989	1	<1	--	--	--	--	<1	2	--	--	--	--	--	--	--	--
11/27/1989	<1	<1	--	--	--	--	<1	<1	--	--	--	--	--	--	--	--
1990																
1/8/1990	1	<1	--	--	--	--	5	11	--	--	--	--	--	--	--	--
5/23/1990	<1	<1	--	--	--	--	<1	<1	--	--	--	--	<1	<1	<1	<1
11/27/1990	<1	<1	--	--	--	--	<1	<1	--	--	--	--	--	--	--	--
1991																
2/5/1991	<1	<1	--	--	--	--	<1	<1	--	--	--	--	--	--	--	--
3/6/1991	<1	<1	--	--	--	--	<1	1.6	--	--	--	--	--	--	--	--
11/21/1991	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/2/1991	--	--	--	--	--	--	<1	<1	--	--	--	--	--	--	--	--
1992																
2/12/1992	<1	<1	--	--	--	--	130	140	--	--	--	--	--	--	--	--
4/15/1992	<1	<1	--	--	--	--	<1	1.2	--	--	--	--	<1	<1	<1	<1
11/2/1992	3.8	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--

TABLE 2

SUMMARY OF HISTORICAL STORM WATER CHEMICAL ANALYSES

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

DATE	SL-1		SL-2		SL-3		SL-4		SL-5		SL-6		VEGETATED POND		SPRINKLER SUPPLY WELL	
	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1993																
1/7/1993	1.4	<1	--	--	--	--	19	20	--	--	--	--	--	--	--	--
6/1/1993	0.48	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--
12/13/1993	1.9	<1	<0.3	<1	--	--	--	--	--	--	--	--	--	--	--	--
1994																
1/25/1994	1.2	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--
2/18/1994	1.3	<1	--	--	--	--	27	15	--	--	--	--	--	--	--	--
3/31/1994	0.65	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--
11/11/1994	0.5	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--
12/28/1994	1.3	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--
1995																
1/31/1995	1.9	<1	--	--	--	--	2.9	1.4	--	--	--	--	--	--	--	--
2/31/1995	1.9	<1	--	--	--	--	2.9	1.4	--	--	--	--	--	--	--	--
4/7/1995	2.5	<1	160	62	<0.3	<1	20	13	--	--	--	--	<0.3	<1	<0.3	<1
12/1/1995	2.9	<1	--	--	--	--	13	7.9	--	--	--	--	--	--	--	--
1996																
1/16/1996	1.9	<1	--	--	--	--	38	24	--	--	--	--	--	--	--	--
3/1/1996	0.5	<1	--	--	--	--	1.6	<1	--	--	--	--	--	--	--	--
4/17/1996	<0.3	<1	15	7.9	--	--	12	6.9	--	--	--	--	<0.3	<1	<0.3	<1
5/15/1996	0.49	<1	--	--	--	--	18	10	--	--	--	--	--	--	--	--
10/22/96	0.61	<1	--	--	--	--	0.5	<1	--	--	--	--	--	--	--	--
11/18/1996	2.3	<1	--	--	--	--	0.56	<1	--	--	--	--	--	--	--	--
12/5/1996	0.73	<1	--	--	--	--	15	7.5	--	--	--	--	--	--	--	--

TABLE 2

SUMMARY OF HISTORICAL STORM WATER CHEMICAL ANALYSES

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

DATE	SL-1		SL-2		SL-3		SL-4		SL-5		SL-6		VEGETATED POND		SPRINKLER SUPPLY WELL	
	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1997																
2/27/1997	1.5	<1	--	--	--	--	1.2	<1	--	--	--	--	--	--	--	--
4/16/1997	0.99	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--
5/23/1997	0.43	<1	10	<1	--	--	<0.3	<1	--	--	--	--	<0.3	<1	<0.3	<1
9/17/1997	1.3	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--
10/9/1997	0.41	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--
1998																
1/5/1998	<0.3	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--
2/5/1998	<0.3	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--
4/10/1998	1.7	<1	13	2.5	--	--	<0.3	<1	--	--	--	--	<0.3	<1	<0.3	<1
4/13/1998	<0.3	<1	--	--	--	--	<0.3	<1	--	--	--	--	--	--	--	--
11/6/1998	2.2	<1	--	--	--	--	4.3	3.3	--	--	--	--	--	--	--	--
1999																
1/18/1999	0.69	<1	--	--	--	--	2	<1	--	--	--	--	--	--	--	--
2/8/1999	2.2	<1	--	--	--	--	9.2	3.3	--	--	--	--	--	--	--	--
4/5/1999	1.1	<1	--	--	--	--	0.34	<1	--	--	--	--	--	--	--	--
10/28/1999	<0.3	<1	--	--	--	--	0.44	<1	--	--	--	--	--	--	--	--
11/19/1999	2	<1	--	--	--	--	2.7	2.2	--	--	--	--	--	--	--	--
2000																
11/13/2000	0.99	<1.0	--	--	--	--	<0.3	<1.0	--	--	--	--	--	--	--	--
2001																
2/9/2001	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	--	--
10/30/2001	<1.0	<1.0	1.2	1.2	<1.0	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	--	--	--	--
11/16/2001	--	--	--	--	--	--	--	--	<1.0	<1.0	--	--	--	--	--	--

TABLE 2

SUMMARY OF HISTORICAL STORM WATER CHEMICAL ANALYSES

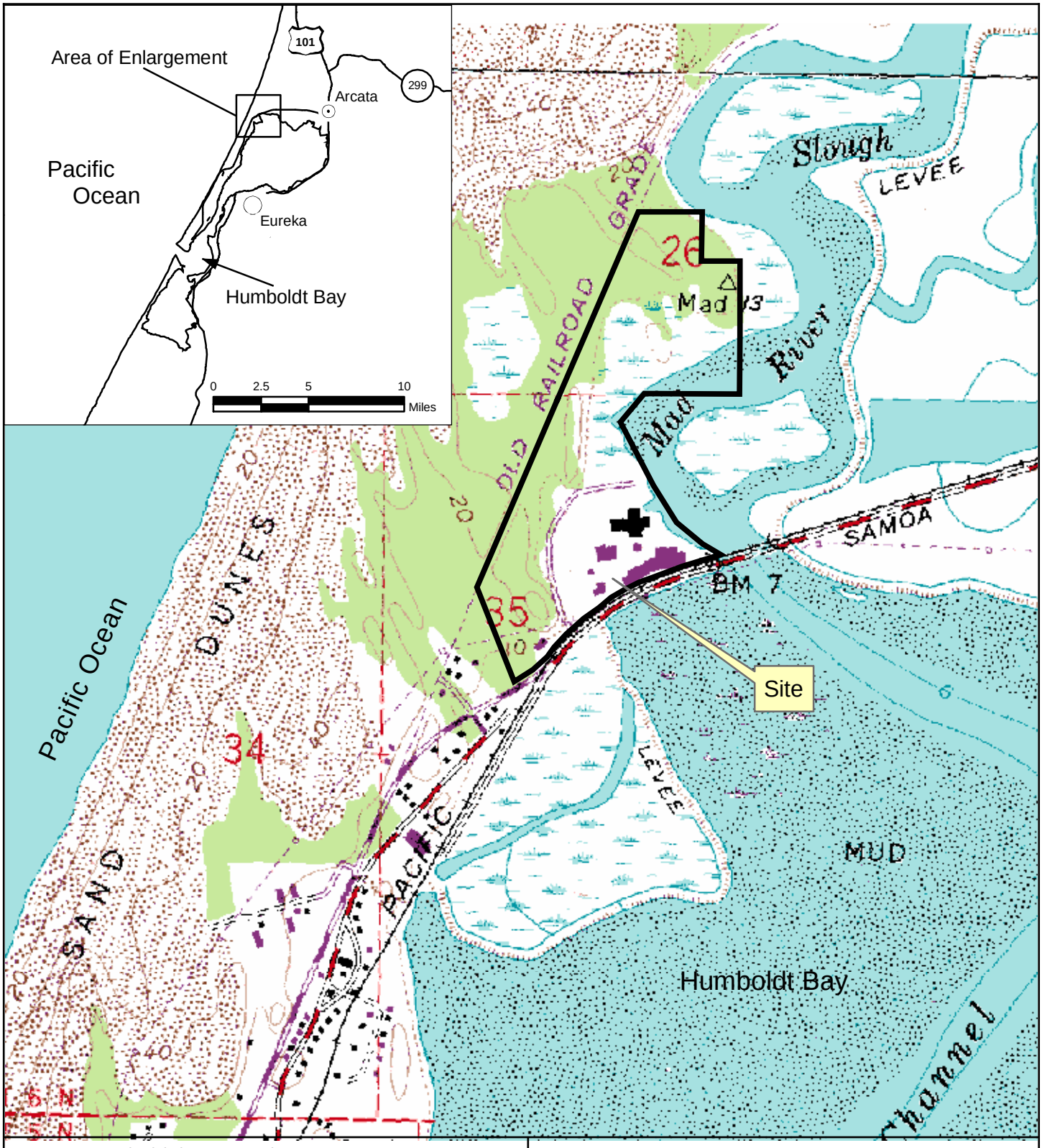
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

DATE	SL-1		SL-2		SL-3		SL-4		SL-5		SL-6		VEGETATED POND		SPRINKLER SUPPLY WELL	
	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP	PCP	TCP
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
2002																
2/19/2002	<1.0	<1.0	2.2	<1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	--
6/5/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<1.0	<1.0

Notes:

SL	Storm water sampling location
PCP	Pentachlorophenol
TCP	Tretachlorophenol
µg/L	micrograms/liter
<	Not detected at or above the listed laboratory reporting limit
--	Indicates data not collected
Duplicate	Field duplicate of the preceding sample in this table
	Storm water sampling location SL-1 was relocated in 2000 from a location near the outfall of dicth # 1 into the Mad River Slough to its present location.

H:\Projects\030229-SPI\fig1_arcata



Source: USGS 24k Digital Raster Graph,
Eureka Quadrangle, Year - 1972

Site Boundary

0 500 1,000 2,000
Feet
Approximate Scale

N

LOCATION MAP

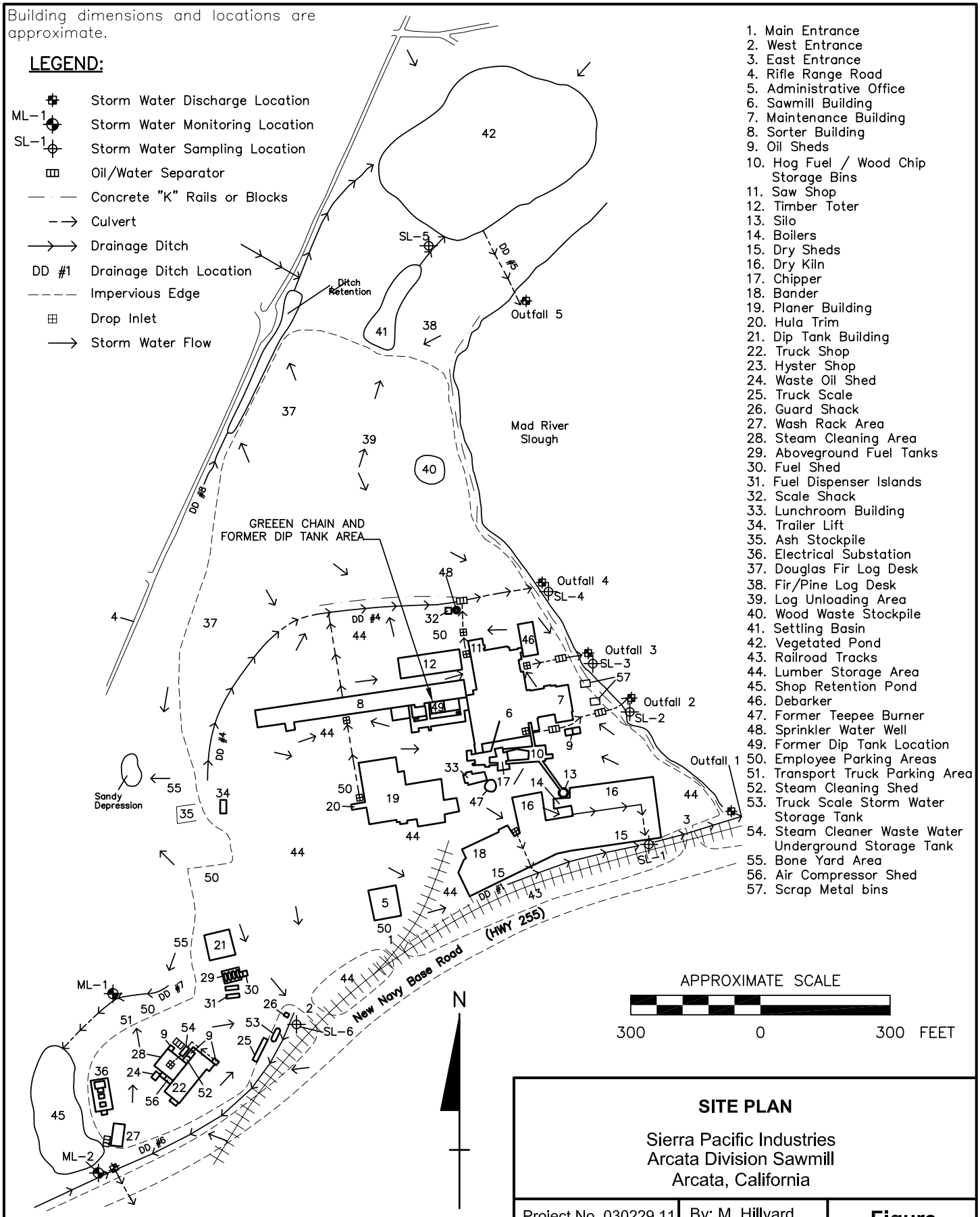
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Project No. 030229	By: I.Pryor	**Figure 1**
Date: 6/6/03	Checked: O.Plocher	

MFG, Inc.
consulting scientists and engineers

H:\Projects\030229-SPI\sw site plan.dwg PLOT SCALE 1:1

Building dimensions and locations are approximate.



NOTE:
Site plan modified from Plate 2B in *Results of the Remedial Investigation for Sierra Pacific Industries - Arcata Division Sawmills, Arcata, California*, dated January 30, 2003, prepared by EnviroNet.

SITE PLAN

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Project No. 030229.11	By: M. Hillyard	**Figure 2**
Date: May 23, 2003	Checked: OWP	

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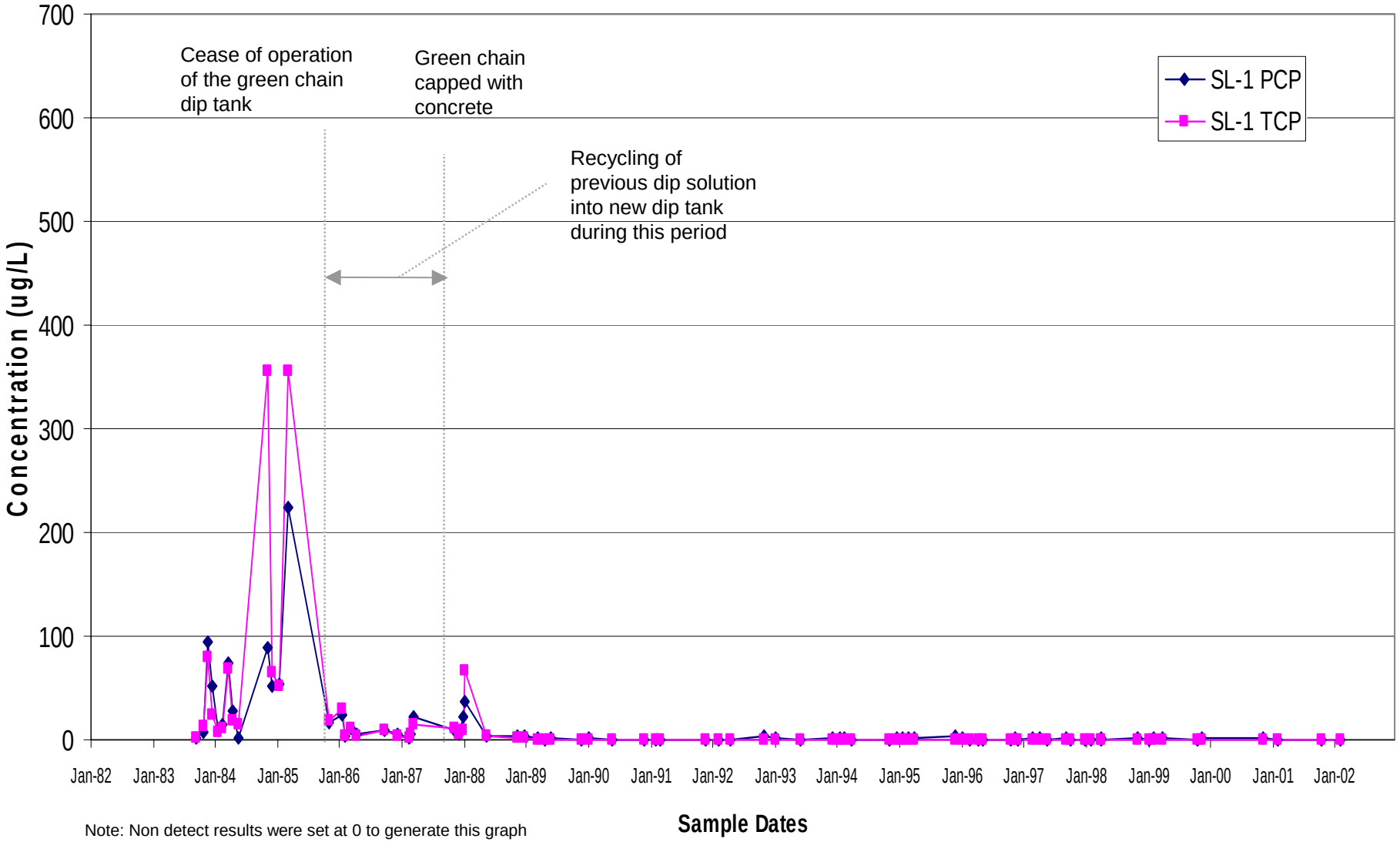
FIGURE 3

HISTORICAL STORM WATER CHEMICAL ANALYSIS RESULTS-SAMPLING LOCATION # 1 (SL-1) (1983-2002)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

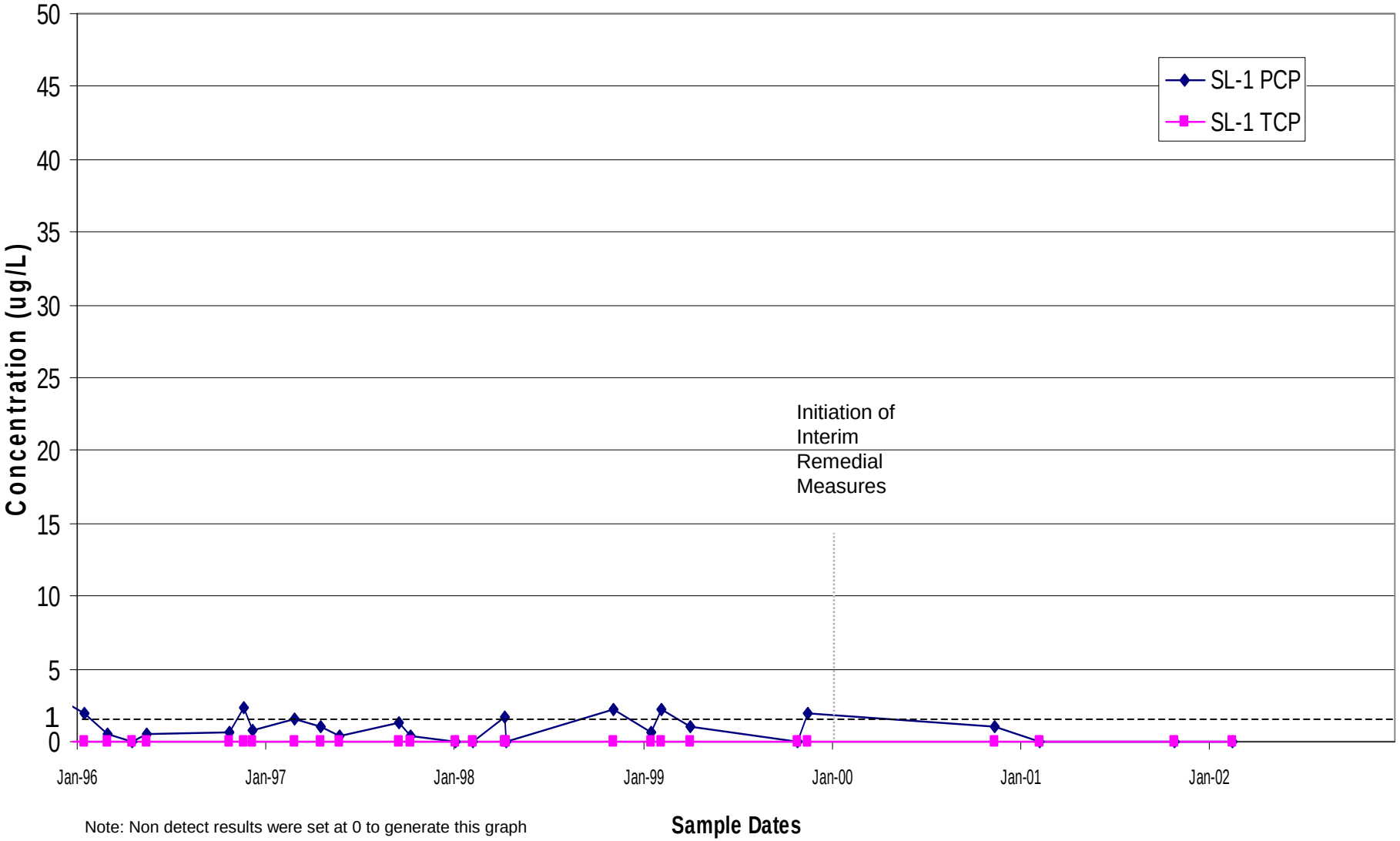


Note: Non detect results were set at 0 to generate this graph

FIGURE 4

HISTORICAL STORM WATER CHEMICAL ANALYSIS RESULTS-SAMPLING LOCATION # 1 (SL-1) (1996-2002)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

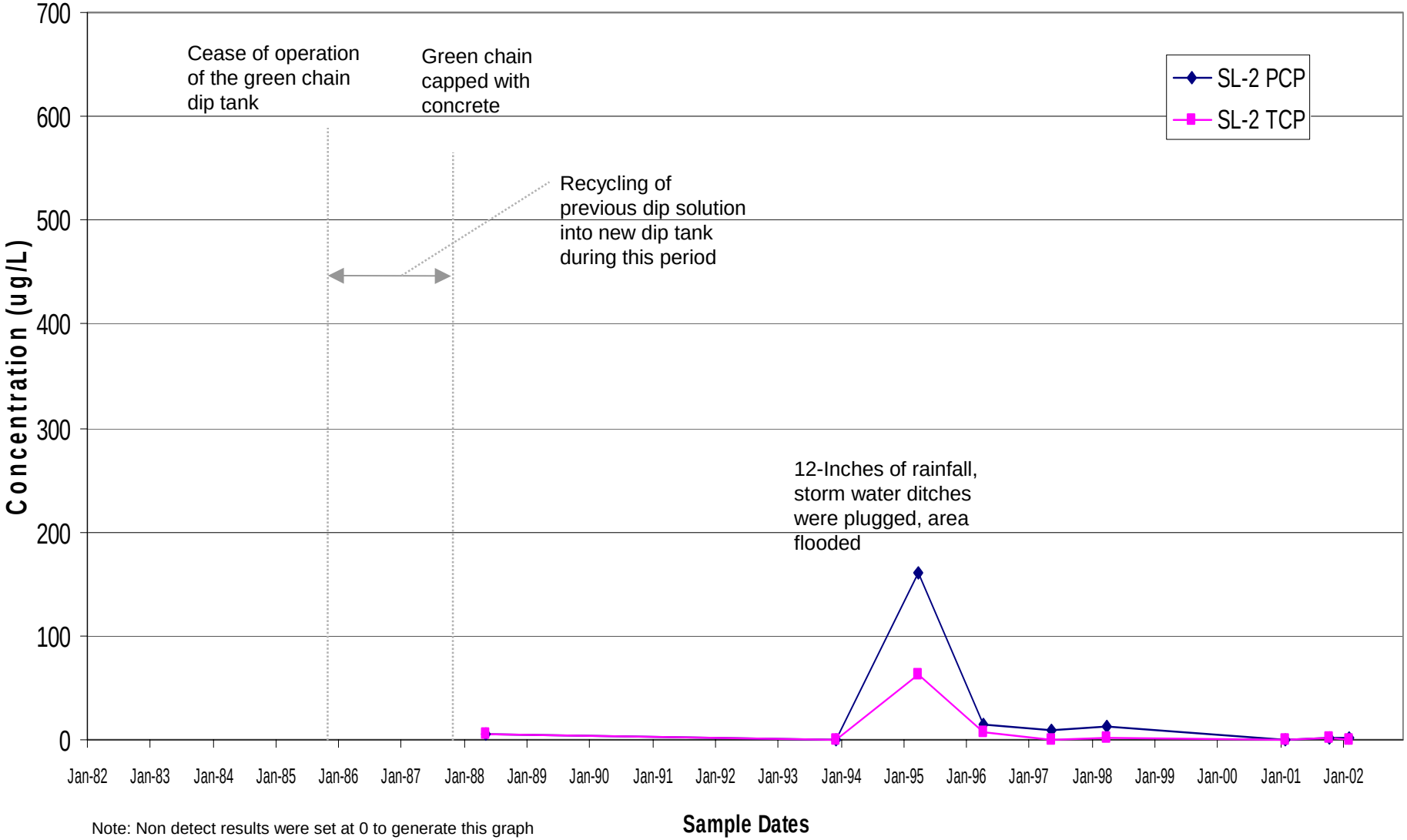


Note: Non detect results were set at 0 to generate this graph

FIGURE 5

HISTORICAL STORM WATER CHEMICAL ANALYSIS RESULTS-SAMPLING LOCATION # 2 (SL-2) (1983-2002)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

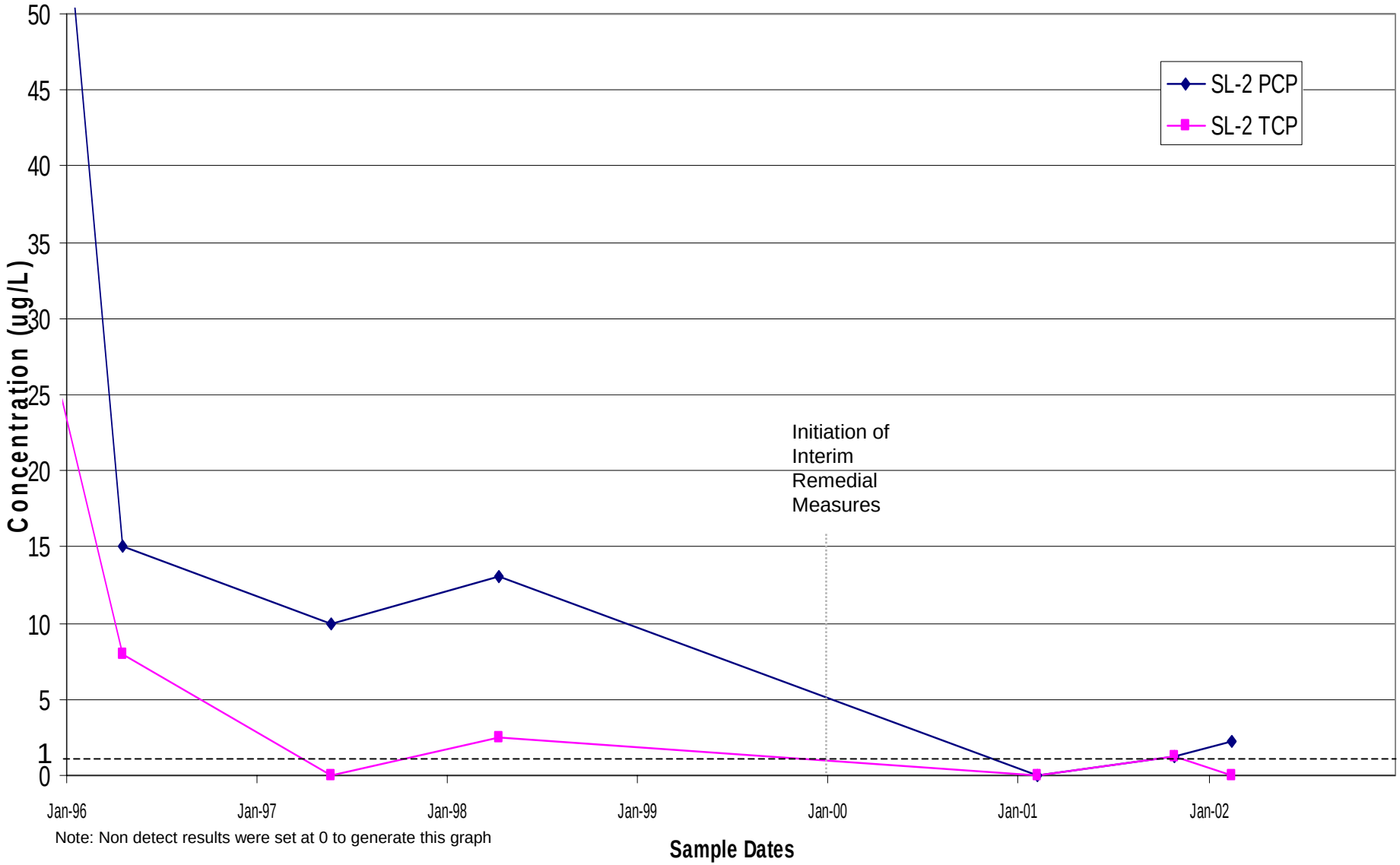


Note: Non detect results were set at 0 to generate this graph

FIGURE 6

HISTORICAL STORM WATER CHEMICAL ANALYSIS RESULTS-SAMPLING LOCATION # 2 (SL-2) (1996-2002)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

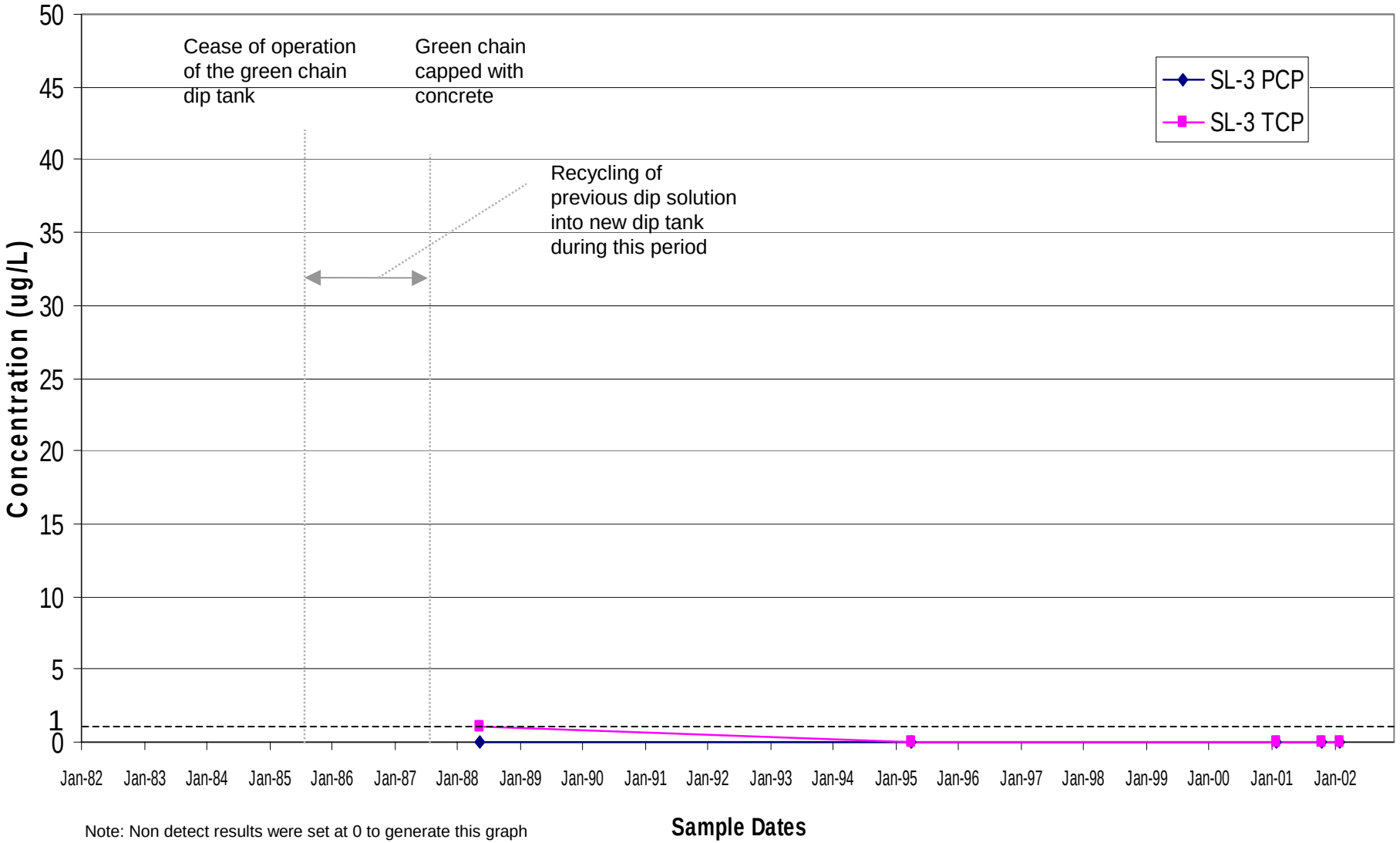


Note: Non detect results were set at 0 to generate this graph

FIGURE 7

HISTORICAL STORM WATER CHEMICAL ANALYSIS RESULTS-SAMPLING LOCATION # 3 (SL-3) (1983-2002)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

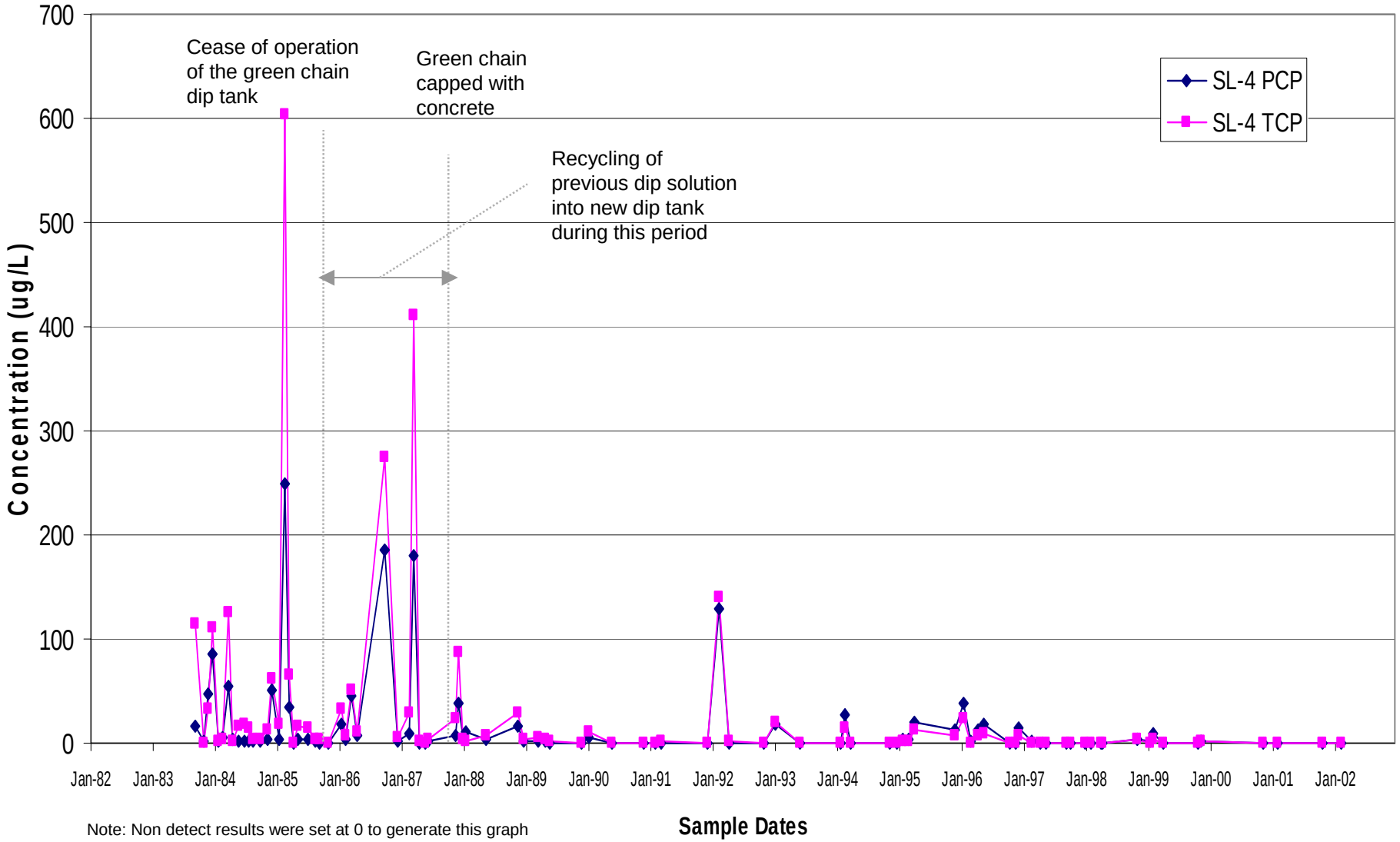


Note: Non detect results were set at 0 to generate this graph

FIGURE 8

HISTORICAL STORM WATER CHEMICAL ANALYSIS RESULTS-SAMPLING LOCATION # 4 (SL-4) (1983-2002)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

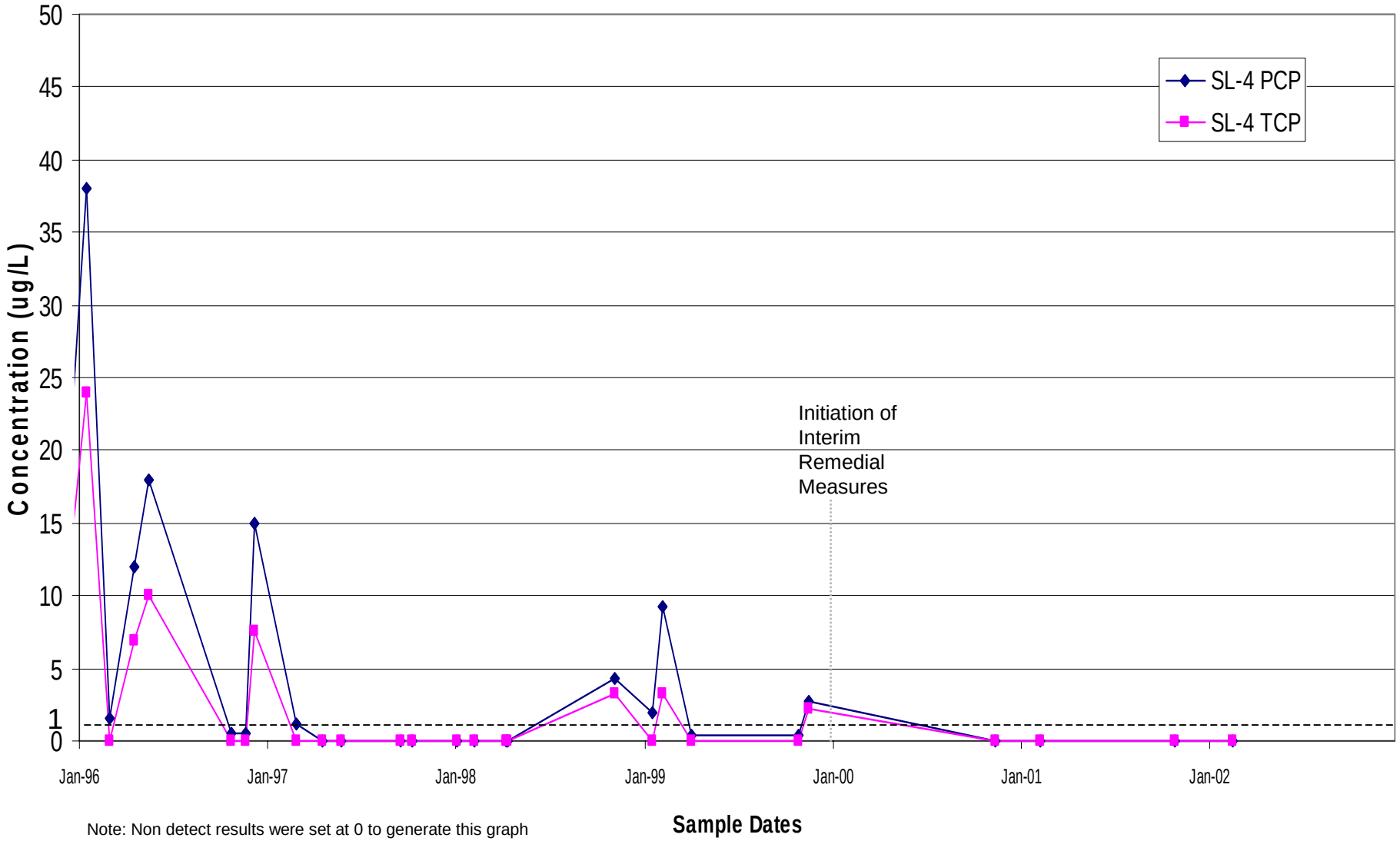


Note: Non detect results were set at 0 to generate this graph

FIGURE 9

HISTORICAL STORM WATER CHEMICAL ANALYSIS RESULTS-SAMPLING LOCATION # 4 (SL-4) (1996-2002)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

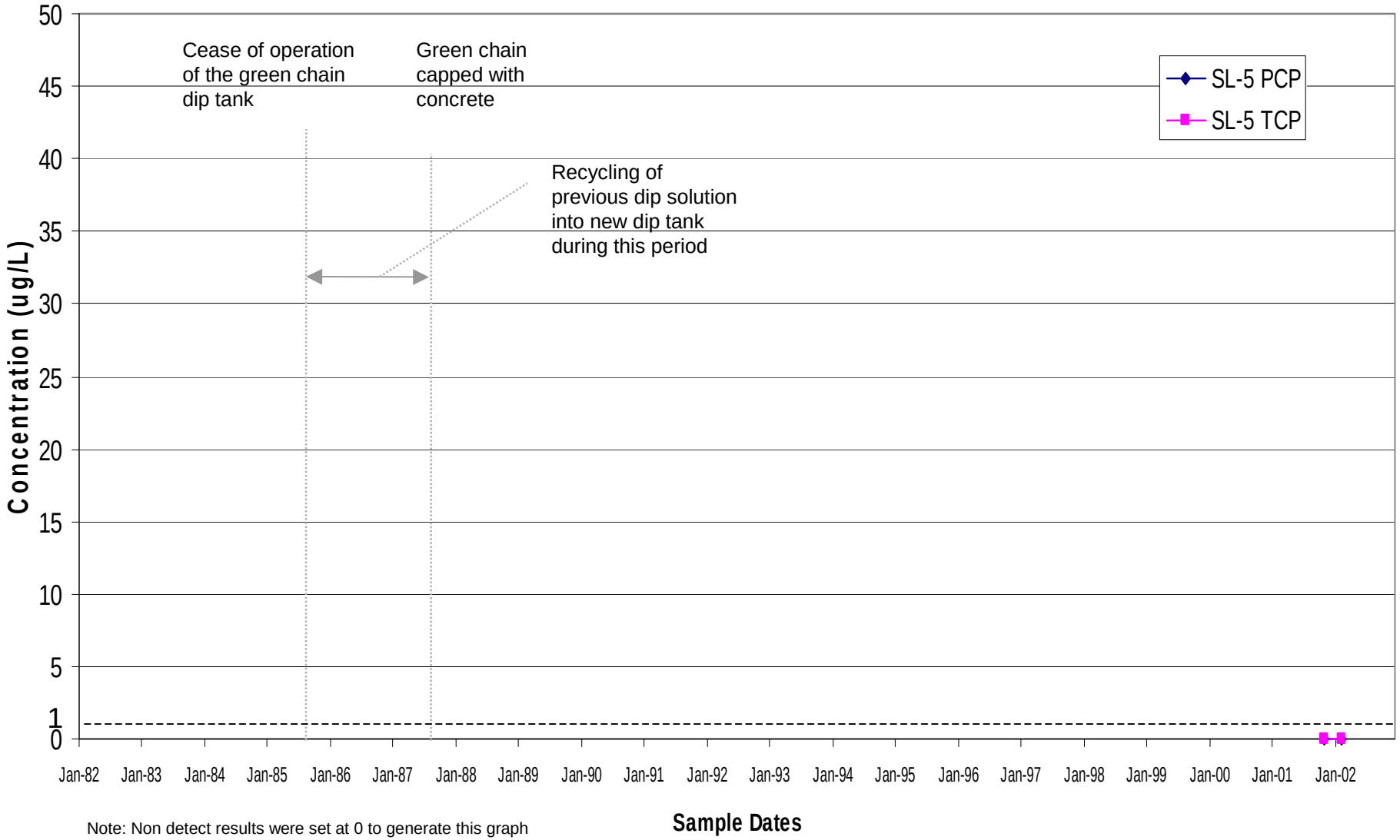


Note: Non detect results were set at 0 to generate this graph

FIGURE 10

HISTORICAL STORM WATER CHEMICAL ANALYSIS RESULTS-SAMPLING LOCATION # 5 (SL-5) (1983-2002)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

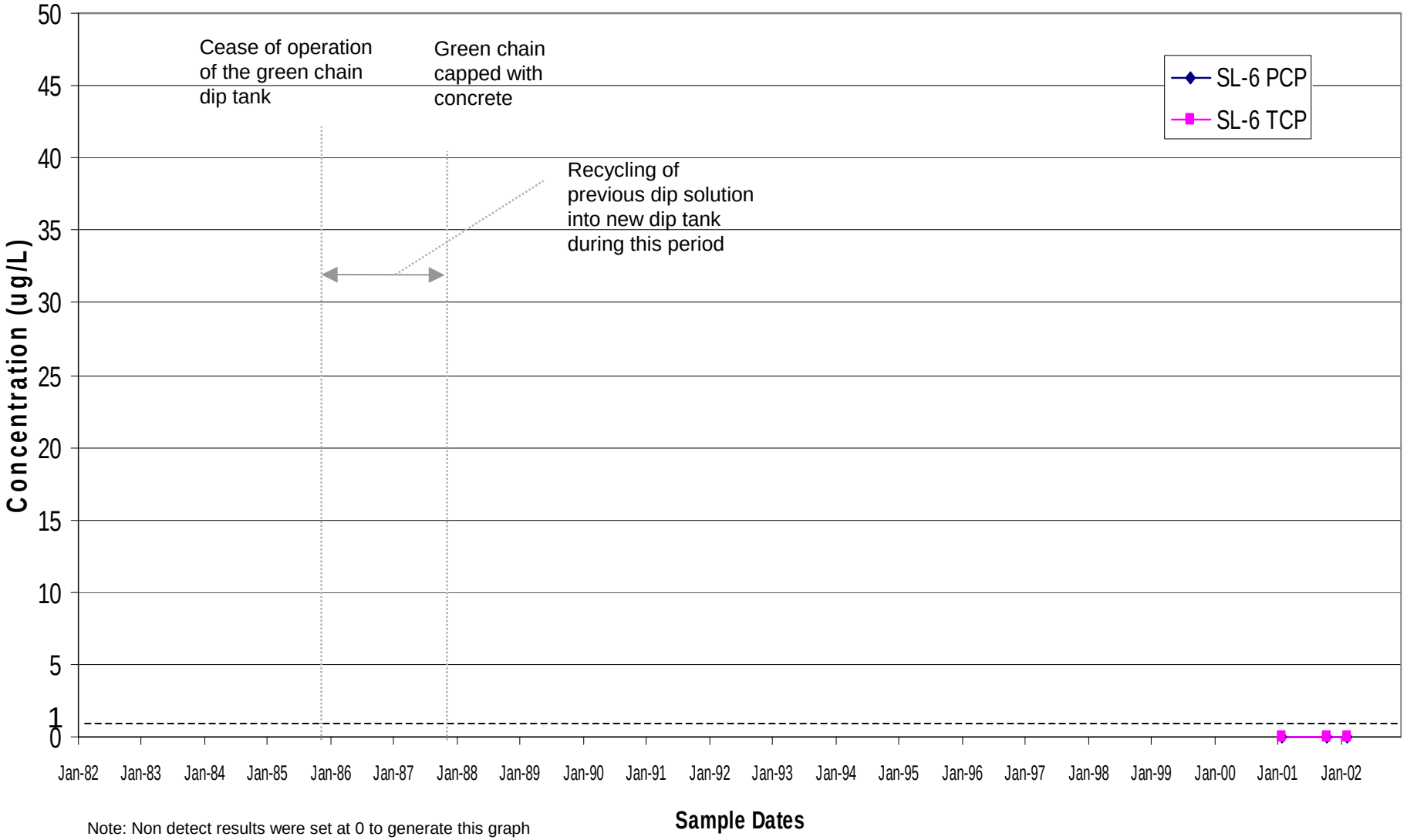


Note: Non detect results were set at 0 to generate this graph

FIGURE 11

HISTORICAL STORM WATER CHEMICAL ANALYSIS RESULTS-SAMPLING LOCATION # 6 (SL-6) (1983-2002)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

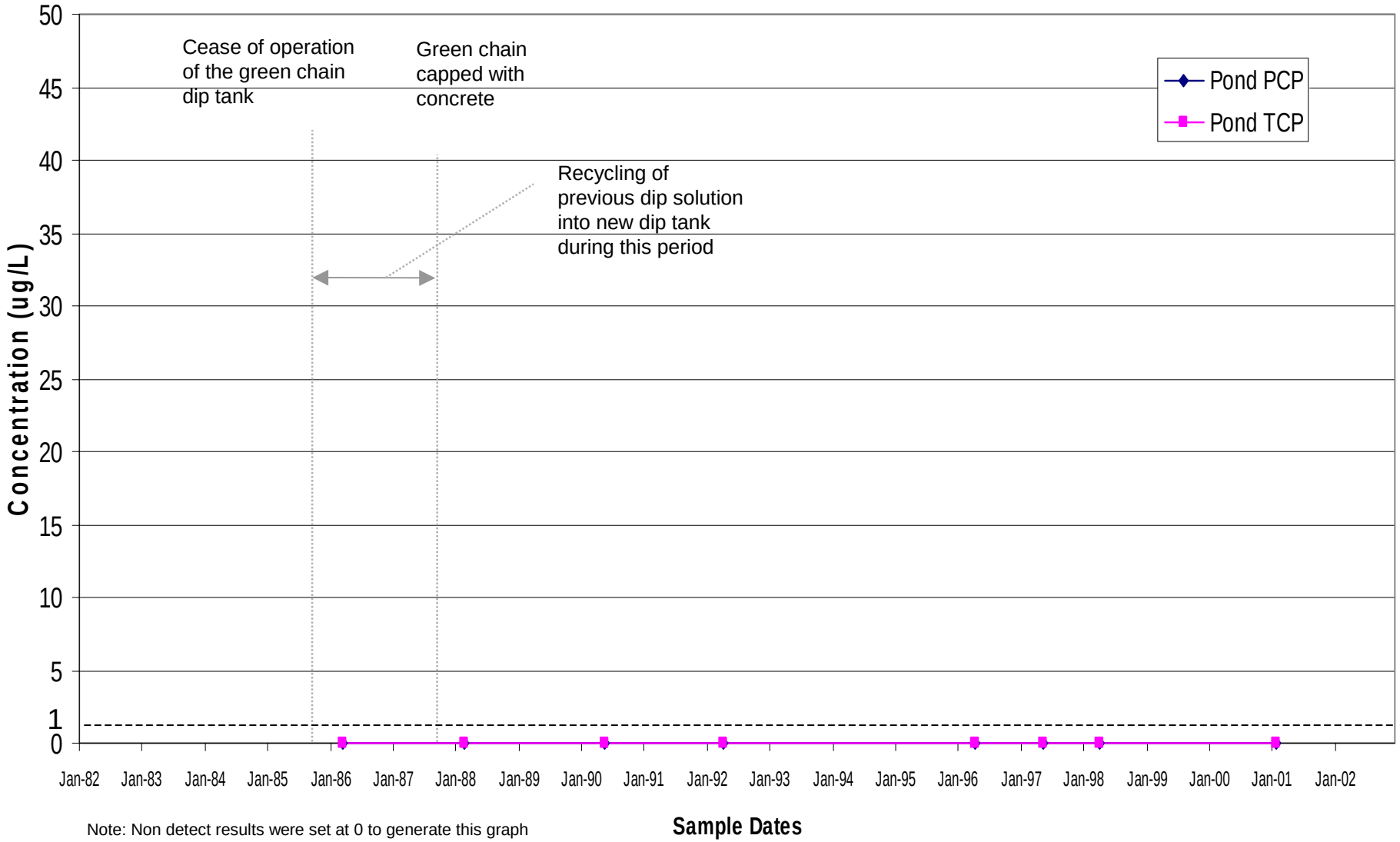


Note: Non detect results were set at 0 to generate this graph

FIGURE 12

HISTORICAL STORM WATER CHEMICAL ANALYSIS RESULTS-SAMPLING LOCATION VEGETATED POND (1983-2002)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

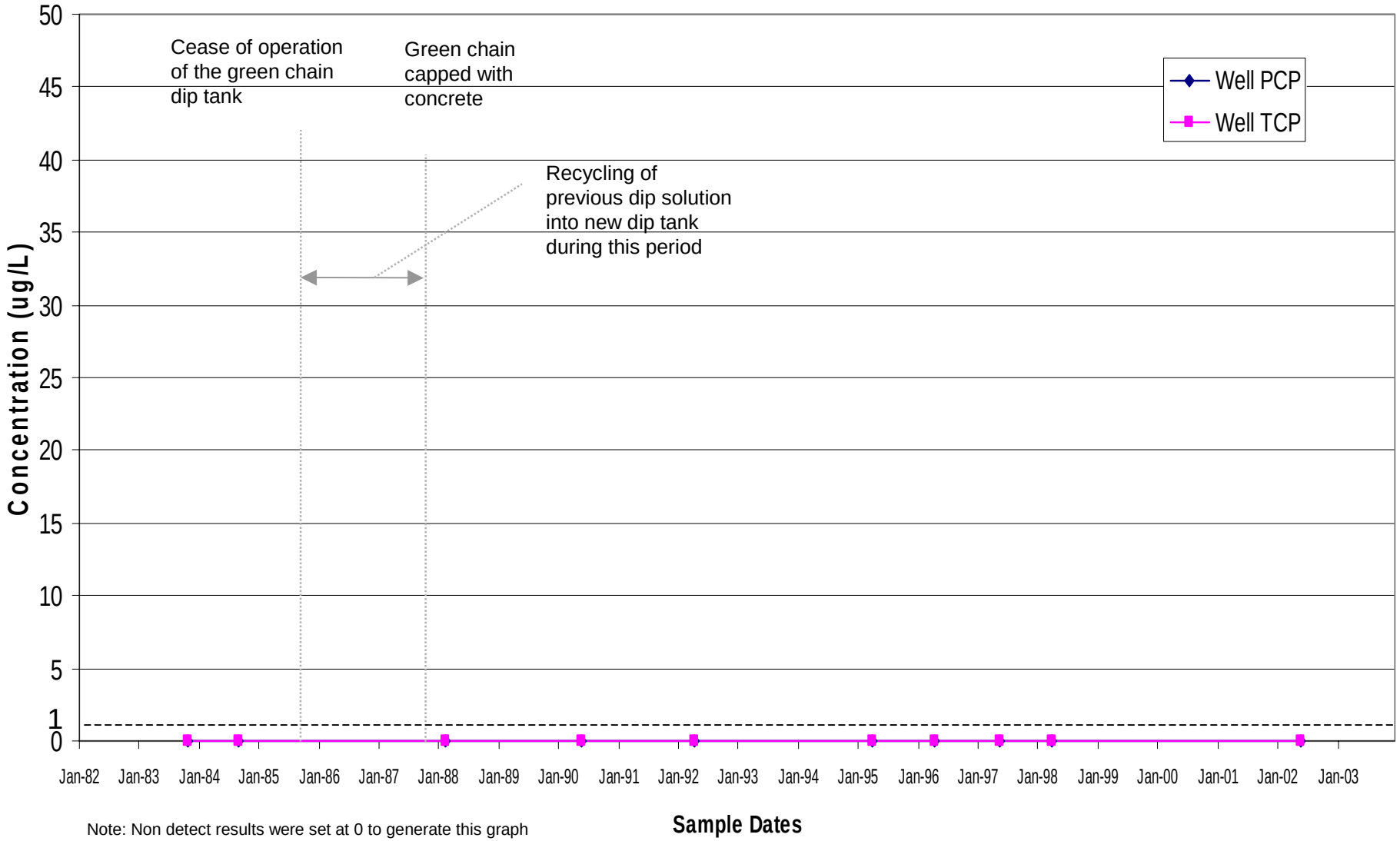


Note: Non detect results were set at 0 to generate this graph

FIGURE 13

HISTORICAL STORM WATER CHEMICAL ANALYSIS RESULTS-SAMPLING LOCATION SPRINKLER SUPPLY WELL (1983-2002)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California



Note: Non detect results were set at 0 to generate this graph