Santa Rosa Subregional Long-Term Wastewater Project

LAGUNA DE SANTA ROSA WATER QUALITY MONITORING RESULTS

SANTA ROSA SUBREGIONAL LONG-TERM WASTEWATER PROJECT

Prepared for

City of Santa Rosa
and
U.S. Army Corps of Engineers

MAY 1996

Prepared by:

Merritt Smith Consulting
Environmental Science and Communication
3675 Mt. Diablo Blvd. #120 Lafayette, CA 94549

For

HARLAND BARTHOLOMEW & ASSOCIATES, INC.

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Authors

This report was prepared by James C. Roth, Ph.D. and Marcie L. Commins, Ph.D.

1.0 SUMMARY

The Laguna de Santa Rosa is a tributary of the Russian River and is the receiving water of the existing Santa Rosa Subregional System reclaimed water discharge from November through mid-May of each year. This report describes water quality collections made on the Laguna de Santa Rosa and Santa Rosa Creek in 1995. In addition, this report contains a summary of water quality data collected between 1985 and 1995 from the Laguna and its principal tributaries, Santa Rosa Creek and Mark West Creek. It is intended to provide a summary of relevant data describing existing environmental conditions and provide input to the water quality model summarized in the *Russian River Water Quality Model* Technical Report (RMA 1996). Water quality data are not evaluated in this report. Potential project impacts are assessed in the *Water Quality Impact Analysis* Technical Report (MSC 1996a).

The data reported include a study of metals and nutrients conducted in 1995 as well as a compendium of other available Laguna and tributaries water quality data, presented in tables with mean values for each season. These data consist of a four-year study of nutrients and other constituents conducted by the study team and additional data supplied by the North Coast Regional Water Quality Control Board (NCRWQCB). NCRWQCB data, tabulated in appendices, includes nutrients and phytoplankton from 1989-1992 and results of metals and organic analyses made on a few dates in 1985-1986 and 1992.

Dissolved metal species were undetectable in Laguna water, with the exception of nickel. Total cadmium, chromium, copper, lead, nickel, silver, and zinc were detectable on one or more dates. All organic analyses were below the limit of detection with the single exception of gamma BHC (Lindane) which was detected once in Santa Rosa Creek. Nutrients (nitrate, ammonia, phosphate) were higher in winter and spring than in summer and fall.

Toxicity and algal growth potential (AGP) test results on Laguna and Santa Rosa Creek samples made during 1990-1994 are reviewed. No lethal or sublethal effects on animals were found, except for one wet-weather runoff Laguna sample which was lethally toxic to *Ceriodaphnia*. AGP tests usually showed algal biostimulation when nutrients were abundant, although in a few cases sublethal algal toxicity was found. Typically nutrients available for algal growth were depleted in summer, when growth is limited by supplies of nitrogen, not phosphorus.

2.0 INTRODUCTION

Water quality characterization in the area of the existing Santa Rosa reclaimed water discharge is necessary to provide a basis for evaluating the impact of Laguna discharge alternatives.

The objectives of this report are as follows:

- To describe the results of the 1995 Laguna de Santa Rosa water quality monitoring conducted by the project team. The 1995 Laguna water quality monitoring was conducted to provide input for the Russian River water quality model as necessary, to supplement to the Regional Water Quality Control Board Laguna monitoring program, and to provide information on metals in the Laguna and Santa Rosa Creek.

- To summarize existing Laguna, Santa Rosa Creek, and Mark West Creek water quality data gathered both by the project team and the NCRWQCB.

The data in this report are used to described the existing conditions in the Laguna and as input to the water quality model that was used to evaluate potential impacts of discharge scenarios. The analysis of potential water quality impacts is described in the *Water Quality Impacts Analysis*Technical Report (MSC 1996a).

2.1 THE DISCHARGE SETTING

The Laguna de Santa Rosa is a tributary of the Russian River, and has two principal tributaries, Santa Rosa Creek and Mark West Creek (Figure 1). Reclaimed water is presently discharged to the Laguna de Santa Rosa system between November and May. Present discharges are primarily from Meadowlane Pond, near the Laguna Treatment Plant, into the Laguna (just downstream from Llano Road) and from Delta Pond on Santa Rosa Creek (downstream from Willowside Road). Reclaimed water is released to the creeks at a volume of up to 1 percent (under special circumstances, 5 percent) of the flow in the Russian River at Hacienda Bridge. The actual concentration of reclaimed water in the Laguna during the discharge season can be much higher than 1 or 5 percent. Laguna and Santa Rosa Creek reclaimed water concentrations (as a percentage of measured stream flow) have been calculated on a daily basis during the past five winters in conjunction with the anadromous fish migration study, and are tabulated in the fish technical memoranda (Roth, et al. 1991, 1992, 1993; MSC 1995a, 1996b).

The present report focuses on water quality in the Laguna under existing discharge conditions. The contribution of reclaimed water to measurable changes in Laguna water quality has been discussed in a series of technical memoranda (Roth and Smith 1992, 1993, 1994; Santa Rosa Subregional Reclamation Staff 1995), and appear to consist

primarily of an increase in nutrients. Potential reclaimed water impacts in the Laguna are often confounded by non-point source inputs from winter storm runoff.

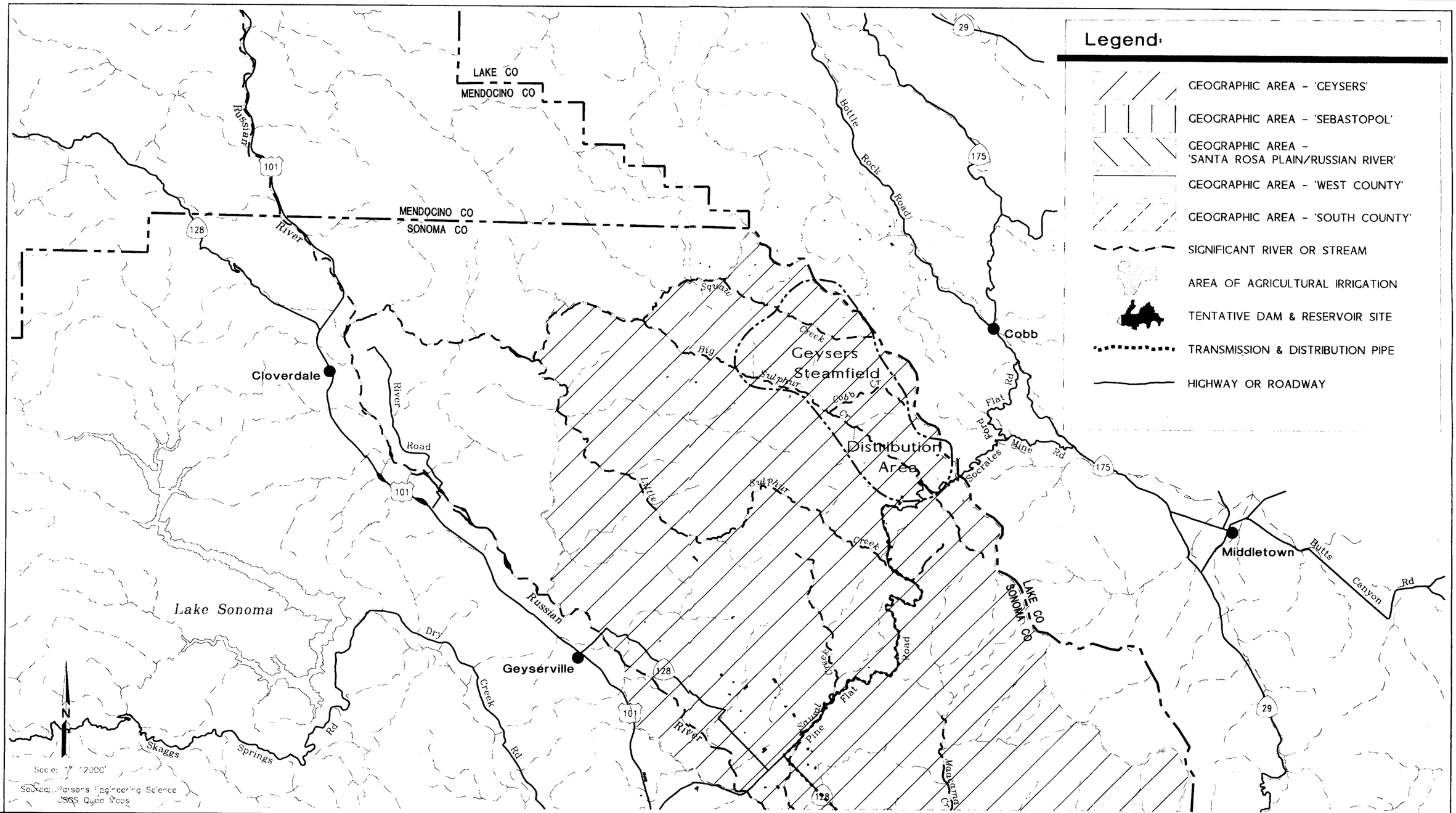
2.2 SCOPE OF THIS TECHNICAL REPORT

This report contains the following sections:

- Monitoring plan (Section 3). This section describes the methods and analyses used to determine the Laguna de Santa Rosa water quality during 1995.

- Monitoring results (Section 4). This section describes the results of the 1995 Laguna water quality monitoring program.

- Summary of existing information (Section 5). This section summarizes existing Laguna and Santa Rosa Creek water quality data.



Legend

- GEOGRAPHIC AREA - 'GEYSERS'
- GEOGRAPHIC AREA - 'SEBASTOPOL'
- GEOGRAPHIC AREA - 'SANTA ROSA PLAIN/RUSSIAN RIVER'
- GEOGRAPHIC AREA - 'WEST COUNTY'
- GEOGRAPHIC AREA - 'SOUTH COUNTY'
- SIGNIFICANT RIVER OR STREAM
- AREA OF AGRICULTURAL IRRIGATION
- TENTATIVE DAM & RESERVOIR SITE
- TRANSMISSION & DISTRIBUTION PIPE
- HIGHWAY OR ROADWAY

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LAGUNA WATER QUALITY MONITORING STATIONS

Figure 1a

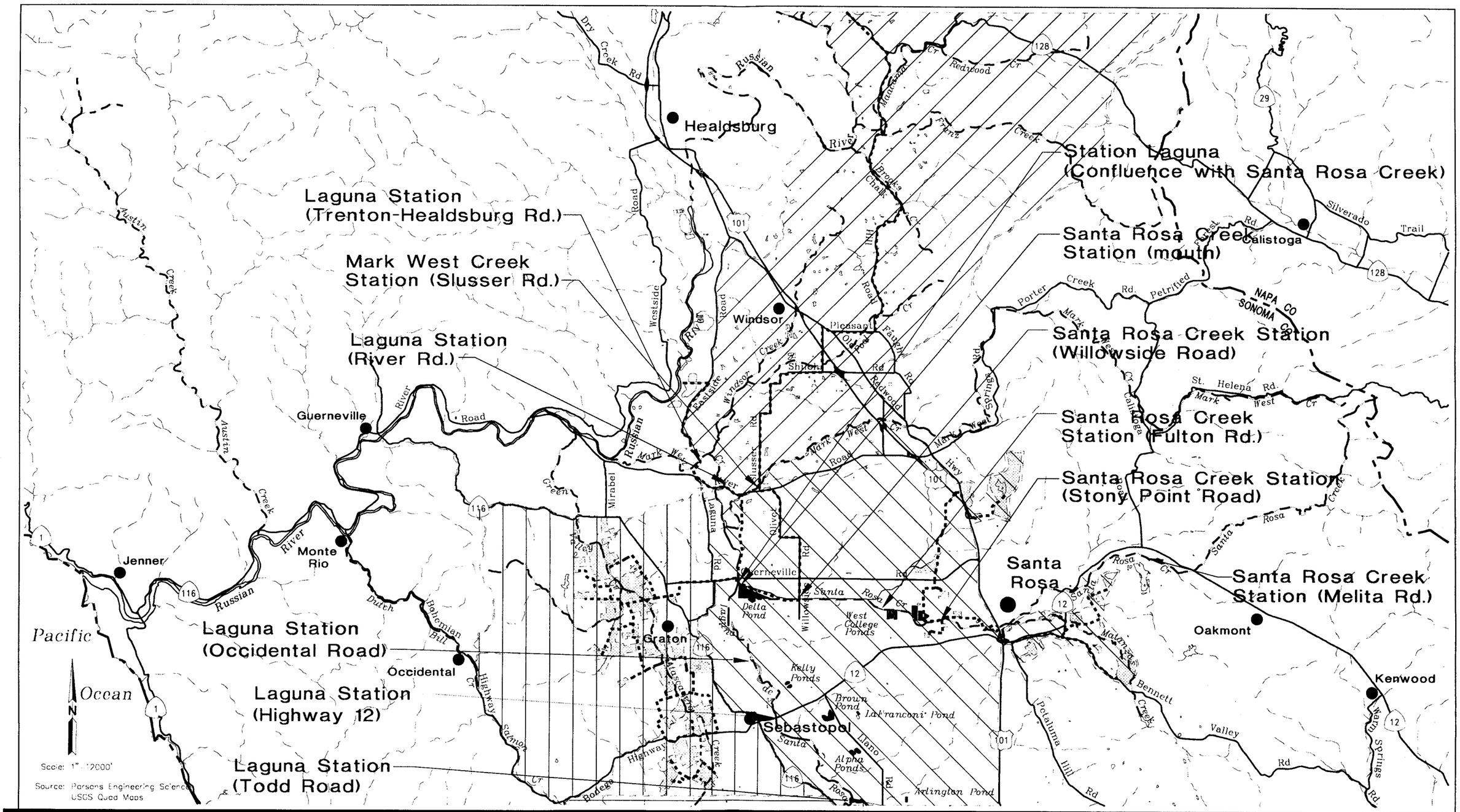

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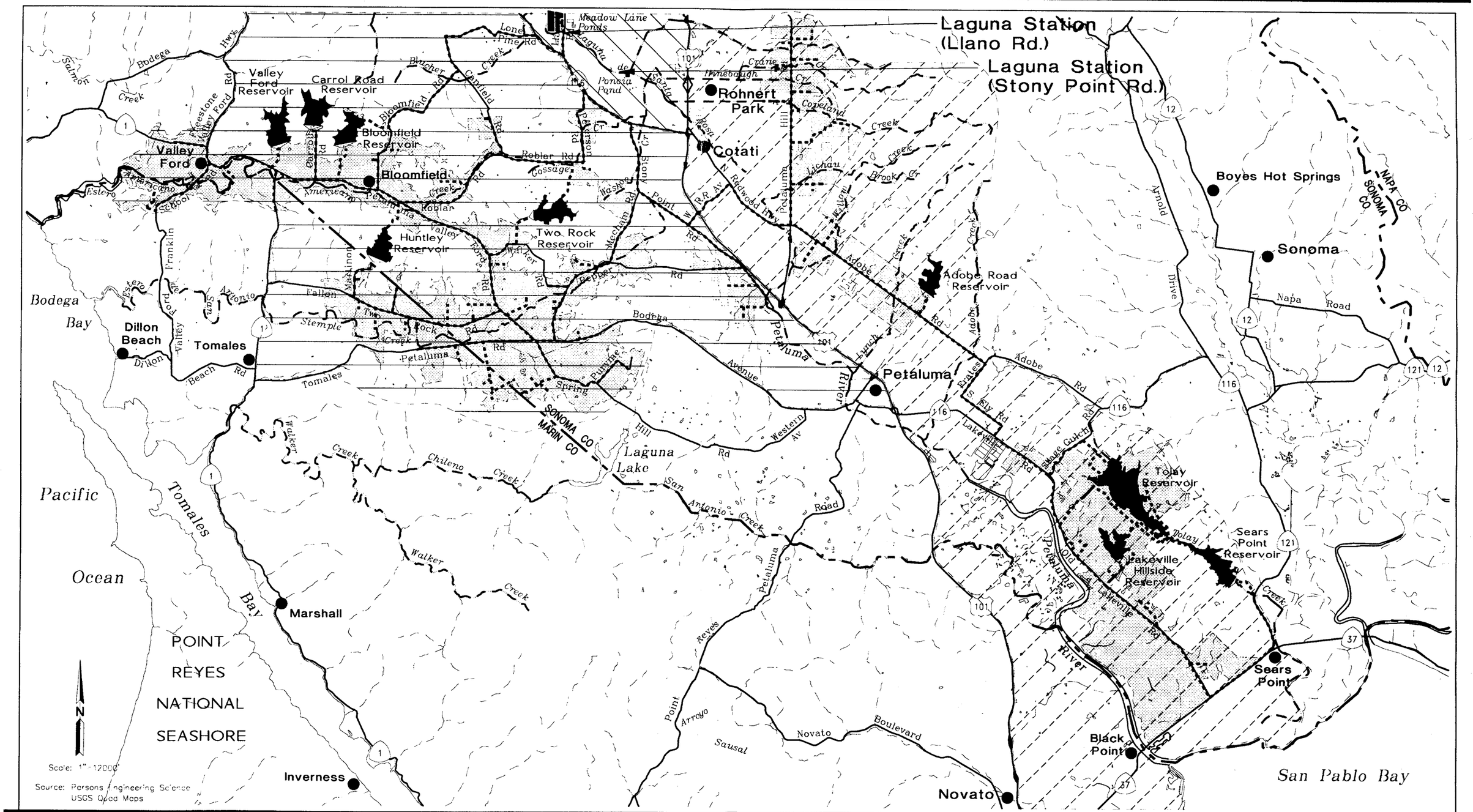
Figure 1b

LAGUNA WATER QUALITY MONITORING STATIONS



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LAGUNA WATER QUALITY MONITORING STATIONS

Figure 1c

3.0 MONITORING PLAN

This section describes the methods and analyses used to determine water quality in the Laguna de Santa Rosa and Santa Rosa Creek for the 1995 collections. Figure 1 shows locations of sampling stations. Table 1 lists locations, dates, collection staff, and constituents analyzed.

Table 1.

Laguna de Santa Rosa and Santa Rosa Creek Sample Collections, 1995

Location	Dates Sampled	Samples Collected By	Constituents
Laguna at Stony Point Road[1]	16 Feb, 16 Mar, 14 Apr, 11 May	Study Team	Temperature, conductivity, dissolved oxygen, pH, TOC, DOC, hardness, total and dissolved metals (arsenic, cadmium, copper, lead, magnesium, mercury, nickel, selenium, silver, and zinc)
Laguna at Trenton-Healdsburg Road[2]	16 Feb, 16 Mar, 14 Apr, 11 May	Study Team	Temperature, conductivity, dissolved oxygen, pH, TOC, DOC, hardness, total and dissolved metals (arsenic, cadmium, copper, lead, magnesium, mercury, nickel, selenium, silver, and zinc)
Santa Rosa Creek at Willowside Road[3]	16 Feb, 16 Mar, 14 Apr, 11 May	Study Team	Temperature, conductivity, dissolved oxygen, pH, TOC, DOC, hardness, total and dissolved metals (arsenic, cadmium, copper, lead, magnesium, mercury, nickel, selenium, silver, and zinc)
Laguna at Stony Point Road[1]	19 July, 21 August	RWQCB	NO_3, NO_2, NH_4, TKN, dissolved ortho PO4
Laguna at Occidental Road[4]	19 July, 21 August	RWQCB	NO_3, NO_2, NH_4, TKN, dissolved ortho PO4
Laguna at Guerneville Road[2]	19 July, 21 August	RWQCB	NO_3, NO_2, NH_4, TKN, dissolved ortho PO4
Laguna at Trenton-Healdsburg Road	19 July, 21 August	RWQCB	NO_3, NO_2, NH_4, TKN, dissolved ortho PO4

[1] Located upstream of Laguna discharges.
[2] Located downstream of Laguna and Santa Rosa Creek Discharges.
[3] Located upstream of Santa Rosa Creek discharges.
[4] Located downstream of Laguna discharges and upstream of Santa Rosa Creek discharges.

Water samples were collected for metals analyses monthly between February and May 1995 at two stations in the Laguna de Santa Rosa (Stony Point Road and Trenton-Healdsburg Road) and one station in Santa Rosa Creek (Willowside Road). When possible, samples were collected by wading into the water and dipping laboratory prepared sample bottles into the subsurface at three different locations. The Laguna at Stony Point Road was not accessible in this manner so samples were collected from the bridge using a cleaned, acid rinsed bucket. Water was poured from the bucket directly into the sample bottles. At all times, care was taken not to entrain sediment into the samples. Field measurements of temperature, conductivity, dissolved oxygen, and pH were made at the time of sample collection. The following parameters were measured by a certified laboratory (National Environmental Testing, Inc., Santa Rosa (NET)): total organic carbon (TOC), dissolved organic carbon (DOC), hardness and total and dissolved metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc).

Water samples were collected in July and August 1995 by NCRWQCB staff in the Laguna at Stony Point Road, Occidental Road, Guerneville Road, and Trenton Healdsburg Road. The following parameters were analyzed on these samples by a commercial laboratory: total dissolved solids (TDS), nitrate, nitrite, ammonia, total Kjeldahl nitrogen (TKN), and dissolved orthophosphate.

4.0 MONITORING RESULTS

The complete results from the 1995 collection are presented in Appendix 1-1 (project team metals data) and 1-2 (NCRWQCB nutrient data). The results are summarized below.

4.1 METALS

The concentrations of all dissolved metals except dissolved nickel were below detection on all dates. The concentration of total arsenic, mercury, selenium, and silver were also below detection on all dates. Table 2 shows the non-detectable metals and their detection limits.

Table 2.

Non-Detectable Metals

Constituent	Detection Limit (mg/L)
Total Arsenic	0.005
Dissolved Arsenic	0.005
Dissolved Cadmium	0.0005
Dissolved Chromium	0.005
Dissolved Copper	0.005
Dissolved Lead	0.002
Total Mercury	0.0001-0.00025
Dissolved Mercury	0.0001-0.00025
Total Selenium	0.005
Dissolved Selenium	0.005
Total Silver	0.001
Dissolved Silver	0.001
Dissolved Zinc	0.05

The remaining metals were detectable on at least one occasion and location. The average concentrations for detectable metals are shown in Table 3 (Laguna stations) and Table 4 (Santa Rosa Creek station). For the calculation of the mean, one half the detection limit was used for non-detectable values. Also shown in Tables 3 and 4 are the number of times the metal was detectable (out of four samples) or the detection limit when all samples were below detection.

Table 3.

Concentrations of Metals In the Laguna de Santa Rosa

Constituent	Above Santa Rosa Creek mg/L	Below Santa Rosa Creek mg/L	EPA Criteria mg/L
Total cadmium	ND (0.0005)[a]	0.0007 (1)	none[b]
Total chromium	0.005 (2)	0.007 (4)	none
Total copper	ND (0.005)[a]	0.022 (2)	none
Total lead	0.002 (3)	0.004 (3)	none
Total nickel	0.010 (4)	0.013 (4)	none
Total magnesium	18.5	12.7	none
Dissolved nickel	0.007 (4)	0.006 (3)	0.198[c]
Total silver	ND (0.01)[a]	0.001 (1)	none
Total zinc	0.035 (2)	0.071 (3)	none

[a] ND indicates all values were below detection. The numbers in parentheses are the detection limits. For detectable metals the numbers in parentheses are the number of detects (out of 4 samples).

[b] EPA criteria are for dissolved metals only. No total metals criteria have been established for these metals (EPA 1995)

[c] EPA criteria are hardness related. Value shown is for a hardness of 131 mg/L which is the average for the Laguna.

Table 4

Concentrations of Metals in Santa Rosa Creek

Constituent	Average Concentration at Willowside (mg/L)	EPA Criteria
Total chromium	0.005 (2)[a]	none
Total copper	0.004 (2)	none
Total lead	0.003 (3)	none
Total magnesium	16.75	none
Total nickel	0.006 (3)	none
Dissolved nickel	0.004 (1)	0.183[b]
Total zinc	0.033 (2)	none

[a] Numbers in parentheses are the number of detects (out of 4 samples).
[b] EPA criteria are for dissolved metals and are hardness related. The value shown is for a hardness of 120 mg/L which is the average for Santa Rosa Creek.

One set of samples was collected during the March 1995 flood. With the exception of lead, metals concentrations were not elevated during the flood. The concentrations of lead at all three stations was slightly higher in the flood samples than in the other samples. This slight increase in the concentration lead in the flood samples did not greatly increase the average concentration. The largest increase in average lead concentration due to the flood sample occurred in the Laguna at Trenton Healdsburg Road, where the average concentration of total lead without the flood sample was 0.0023 mg/L as compared to 0.0037 with the flood sample.

4.2 NUTRIENTS

The average nutrient concentrations in the four Laguna stations for the July and August collections by the North Coast Regional Water Quality Control Board are shown in Table 5. For the calculation of the means, one half the detection limit was used for non-detectable values. Also shown in Table 5 are the number of times the nutrient was detectable (out of two samples) or the detection limit when all samples were below detection.

Table 5

Nutrients in the Laguna de Santa Rosa, July-August 1995
(mg/L)

Constituent	Laguna at Stony Point Road	Laguna at Occidental Road	Laguna at Guerneville Road	Laguna at Trenton/ Healdsburg Road
Nitrate	ND (0.03)[a]	ND (0.03)[a]	0.11 (2)	0.11 (2)
Nitrite	ND (0.03)[a]	ND (0.03)[a]	ND (0.03)[a]	ND (0.03)[a]
Ammonia	0.04 (1)	0.04 (1)	0.04 (1)	0.09 (2)
TKN	0.73 (2)	0.66 (2)	0.92 (2)	0.56 (2)
Dissolved Orthophosphate	0.24 (2)	0.70 (2)	0.19 (2)	0.32 (2)

[a] ND indicates all values were below detection. The numbers in parentheses are the detection limits. For detectable nutrients the numbers in parentheses are the number of detects (out of 2 samples).

4.3. OTHER CONSTITUENTS

Appendix 1-1 also contains data on other constituents not discussed above. These are temperature, dissolved oxygen, conductivity, pH, dissolved organic carbon, hardness, and calcium.

5.0 SUMMARY OF LAGUNA, SANTA ROSA CREEK, AND MARK WEST CREEK WATER QUALITY DATA

This section summarizes water quality data from the Laguna, Santa Rosa Creek, and Mark West Creek including the data described above and data from other sources including the NCRWQCB and the City of Santa Rosa Reclamation Staff.

5.1 SOURCES OF RECENT DATA

5.1.1 Chemical Data

The Long-Term EIR/S Project Team conducted a Laguna water quality monitoring program which gathered data from seven Laguna stations and one Santa Rosa Creek station beginning in October 1990 and continuing through February 1995 (one Mark West Creek station was included from July 1992 through March 1994). On seven sampling dates each year, data were collected on nutrients (nitrate, total and un-ionized ammonia, total and dissolved phosphate) and other water quality constituents, including conductivity, DO, pH, turbidity, chlorophyll, phaeophytin, TDS, TOC, and DOC. These data were reported in annual technical memoranda (Roth and Smith, 1992, 1993, 1994; Reclamation Staff, 1995), and are tabulated in Appendix 2.

The NCRWQCB has also monitored water quality in the Laguna and its tributaries, and data supplied by them has been included in Appendices 3 and 4. Appendix 3-1 contains a suite of nutrients and other constituents comparable to those reported by the project team, collected between October 1989 and January 1992, with approximately weekly samples between January and June 1990. Appendix 3-2 contains phytoplankton and chlorophyll *a* data collected on some of the same dates in 1989 and 1990.

Metals, organic chemicals, nutrients, and other constituents were sampled by the NCRWQCB on four dates in 1985 and once in January of 1986 and 1992. These data are presented in Appendices 4-1 (Laguna stations), 4-2 (Santa Rosa Creek), and 4-3 (Mark West Creek).

The only detectable organic compound in the Laguna de Santa Rosa or its tributaries was gamma BHC (Lindane), which was found at a concentration of 1.1 µg/L on one occasion in Santa Rosa Creek at Stony Point Road.

5.1.2 Biological Data

Both wet- and dry-weather receiving water toxicity testing (EPA 3-species short-term sensitive life stage toxicity tests) has been done on water from the Laguna de Santa Rosa and Santa Rosa Creek. Water collected from the Laguna near Guerneville Road (i.e.

immediately below the confluence of the Laguna and Santa Rosa Creek) was tested in 1992 (Merritt Smith 1992). Santa Rosa Creek toxicity tests were done in 1994 (Merritt Smith 1994).

Algal Growth Potential (AGP) tests have been made on water collected at 3 Laguna and 1 Santa Rosa Creek station as part of the study team Laguna water quality monitoring program described above.

5.2 LAGUNA DE SANTA ROSA

Nutrients and other constituents in the Laguna are summarized in Table 6. These are listed by season for stations above the confluence with Santa Rosa Creek (Stony Point Road, Llano Road, Todd Road, Highway 12, Occidental Road, and directly above the confluence with Santa Rosa Creek) and below the confluence with Santa Rosa Creek (Guerneville Road, River Road, and Trenton-Healdsburg Road). For the purposes of this report, seasons are defined as: Winter = December, January, and February; Spring = March, April, and May; Summer = June, July, and August; and Fall = September, October, and November.

Nutrients are frequently depleted in Laguna water in summer, as was the case in July and August 1995 (see Table 5). However, the longer-term averages in Table 6 show that nutrients are not always depleted. The relationship between nutrient availability and algal growth potential is discussed below.

Table 6.

Average Water Quality in the Laguna de Santa Rosa

	Above Santa Rosa Creek				Below Santa Rosa Creek			
	Winter	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**
Conductivity (µmhos/cm)	565	670	733	634	328	417	598	534
Turbidity (FTU)	20.2	27.4	28.9	24.5	8.8	22.1	21. 8	5.7
Dissolved oxygen (mg/L)	7.5	8.3	7.1	6.8	9.1	7.3	6.1	6.5
Nitrate (mg-N/L)	4.23	1.60	0.25	0.52	1.95	0.95	1.06	0.59
Ammonia (mg-N/L)	1.72	1.49	0.24	0.24	0.28	0.08	0.12	0.12
TKN (mg /L)	2.62	5.13	2.27	2.05	no data	no data	1.07	no data
Dissolved orthophosphate (mg-P/L)	1.47	1.48	1.13	0.74	0.93	0.63	0.41	0.21
Chlorophyll *a* (mg/L)	0.042	0.096	0.232	0.059	0.013	0.048	0.055	0.006

5.3 SANTA ROSA CREEK

Nutrients and other constituents in the Santa Rosa Creek at Willowside Road are summarized by season in Table 7.

Table 7.

Average Water Quality in Santa Rosa Creek

	Santa Rosa Creek at Willowside			
	Winter	**Spring**	**Summer**	**Fall**
Conductivity (µmhos/cm)	392	488	599	556
Turbidity (NTU)	16.0	8.5	2.3	2.0
Dissolved oxygen (mg/L)	10.7	11.8	9.1	10.0
Nitrate (mg-N/L)	2.16	0.98	0.15	0.45
Ammonia (mg-N/L)	0.12	0.19	0.07	0.12
TKN (mg /L)	0.38	1.07	0.57	1.59
Dissolved orthophosphate (mg-P/L)	0.41	0.26	0.11	0.10
Chlorophyll *a* (mg/L)	0.005	0.010	0.016	0.003

5.4 MARK WEST CREEK

Nutrients and other constituents in the Mark West Creek at Slusser Road are summarized by season in Table 8.

Table 8.

Average Water Quality in Mark West Creek at Slusser Road

	Winter	**Spring**	**Summer**	**Fall**
Conductivity (µmhos/cm)	228	274	492	461
Turbidity (FTU)	41.5	19.3	4.83	5.0
Dissolved oxygen (mg/L)	9.8	9.6	5.0	7.2
Nitrate (mg-N/L)	5.8	0.30	1.11	0.15
Ammonia (mg-N/L)	0.19	0.053	0.12	0.055
TKN (mg /L)	0.88	0.19	0.45	0.17
Dissolved orthophosphate(mg-P/L)	0.016	0.13	0.12	0.22
Chlorophyll *a* (mg/L)	0.007	0.013	0.012	0.045

5.5 BIOLOGICAL DATA

5.5.1 Toxicity tests

Toxicity testing of Laguna de Santa Rosa and Santa Rosa Creek water follows the US EPA freshwater "three species" short term sensitive life stage toxicity tests (EPA 1990), which consist of the following elements:

- 96-hour algal growth test with the green alga *Selanastrum capricornutum*;

  Three-brood (7-day) survival and reproduction test with the crustacean *Ceriodaphnia dubia*; and,

  7-day survival and growth test with larval fathead minnows, *Pimephales promelas.*

The algal growth, crustacean reproduction, and fish growth tests measure sublethal toxicity; crustacean and fish survival measure lethal effects. Each test is performed on a series of five effluent concentrations: 100, 50, 25, 10, and 5 percent. A toxic effect is indicated when the test response of a given treatment is significantly less than a control (a parallel test without effluent).

Toxicity results are described in terms of the concentration of effluent in which "no effect" is observed, and the concentration in which the "lowest effect" is observed. For example, if in a test the 100 percent effluent sample had a toxic effect (was significantly less than control), but the other dilutions (50, 25, 10, and 5 percent) had no effect (no significant difference from control), the "lowest effect" level would be 100 percent, and the "no effect" level would be 50 percent (the actual threshold of toxic effect could be 75 percent--or even 99 percent--but since no dilutions between 100 percent and 50 percent were tested, it can only be concluded that the lowest no-effect level *tested* was 50 percent. The "no effect" concentration is also called the NOEC (no observed effect concentration). and the "lowest effect" concentration is also called the LOEC (lowest observed effect concentration).

The results of toxicity tests made on the Laguna de Santa Rosa and Santa Rosa Creek water are summarized in Table 9. No lethal or sublethal effects were found on fish in any of the tests. Toxicity lethal to *Ceriodaphnia* was found in one test only, a sample collected from the Laguna during the runoff from an unseasonable rain on 1 July 1992 (when no reclaimed water was being discharged). On this date Laguna water was lethally toxic to *Ceriodaphnia* at concentrations as low as 25 percent (LOEC = 25, NOEC = 10). Tests on Laguna water during dry conditions showed no effects on any of the three test species. Both dry-weather (base flow) and wet-weather (storm runoff) tests on Santa Rosa Creek water made during winter showed no effects on any of the three test species (The sampling point at Willowside Road is upstream of reclaimed water discharges). During April and May of 1994 both wet- and dry-weather samples were sublethally toxic to algae, and the wet weather sample was sublethally toxic to *Ceriodaphnia* as well.

Table 9.

Results of Receiving Water Toxicity Testing

			Selenastrum		Ceriodaphnia				Pimephales			
			Cell Growth		Survival		Reproduction		Survival		Growth	
Date	Stn	Weather	NOEC	LOEC	NOEC	LOEC	NOEC	LOEC	NOEC	LOEC	NOEC	LOEC
26-Jun-92	Laguna[a]	dry	100	>100	100	>100	100	>100	100	>100	100	>100
1-Jul-92	Laguna[a]	wet			10	25	10	>10	100	>100	100	>100
7-Dec-93	SRC[b]	dry	100	>100	100	>100	100	>100	100	>100	100	>100
4-Jan-94	SRC[b]	dry	100	>100	100	>100	100	>100				
4-May-94	SRC[b]	dry	10	25	100	>100	100	>100				
23-Jan-94	SRC[b]	wet	100	>100	100	>100	100	>100	100	>100	100	>100
7-Feb-94	SRC[b]	wet	100	>100	100	>100	100	>100				
10-Apr-94	SRC[b]	wet	5	10	100	>100	50	100				

[a] Laguna de Santa Rosa at Guerneville Road
[b] Santa Rosa Creek at Willowside Road

5.5.2 Algal Growth Potential (AGP) tests

Algal growth potential (AGP) tests are similar to the 96-hour *Selenastrum* tests except that they are conducted on water samples not enriched with added nutrients, and the AGP tests are continued until growth stops (up to 14 days). These tests provide a measure of the potential of the test water to support algal growth. The AGP test can be used to detect sublethal toxicity (see MSC 1995b for a comparison of the AGP and 96-hour tests to measure toxicity). In addition the AGP measures the biostimulatory potential of test waters, and provides information about limiting macronutrients.

Details of the AGP tests are given in the study team annual reports (Roth and Smith, 1992, 1993, 1994; Reclamation Staff, 1995). Table 10 is a summary of the results. Three basic types of growth response were noted in the AGP test results. A biostimulatory response ("B" in Table 10), typically found at stations downstream from the reclaimed water discharge during releases (e.g., Occidental & River Road in April 1991), but also occurring when nutrient availability is high in summer (River Road in May and August 1994), due to *in situ* regeneration and/or external sources. In some tests under similar conditions, a sublethally toxic response ("T" in Table 10) was found. Most sublethally toxic responses were in samples from stations above reclaimed water discharge; however, the reclaimed water discharged into the Laguna was also frequently sublethally toxic to

algal growth (see *Reclaimed Water Quality Update* MSC 1996c). A third type of growth response was typically found in summer. This is the case where growth is limited due to depletion of available nutrients ("ND" in Table 10). In most cases at Laguna stations, growth stopped when nitrogen was exhausted, but phosphorus supplies remained ("ND*" in Table 10). This provides evidence that algal growth in the Laguna is nitrogen-limited. No evidence for phosphorus limitation of algal growth was found in any of the AGP tests.

Table 10.

Summary of Algal Growth Potential Tests

Station	1991			1992		1993		1994		
	Apr	Jun	Aug	Apr	Aug	May	Aug	Mar	May	Aug
Laguna at Stony Point Rd.	SB	ND*	ND*	ND*	ND*	ND*	T	T	T	T
Laguna at Occidental Rd.	B	ND*	SB	ND*	ND	B	ND*	SB	T	
Laguna at River Rd.	B	ND*	ND*	ND*	ND	SB	B		B	B
Santa Rosa Creek at Willowside Rd.	ND	ND	ND	ND	ND	ND	ND	SB	SB	SB
Mark West Creek at Slusser Rd.								T		

B = biostimulatory
SB = slightly biostimulatory
T = sublethally toxic
ND = low growth (nutrient-depleted)
ND* = low growth (nitrogen depleted but phosphorus available)

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7.0 APPENDICES

Appendix 1-1. Laguna de Santa Rosa and Santa Rosa Creek metals and other constituents, 1995. *indicates undetectable; number shown is half the detection limit. Boldface numbers indicate samples collected during flood.

Station	Date	Temp C	Cont-ductivity µmhos	DO ppm	pH	TOC mg/L	DOC mg/L	Hardness (CaCO3) mg/L	Arsenic		Cadmium	
									total mg/L	diss. mg/L	total mg/L	diss. mg/L
Laguna @Stony Point	16-Feb-95	7.5	271	8.3	7.7	2.9	2.9	140	0.0025 *	0.0025 *	0.00025 *	0.00025 *
Laguna @Stony Point	**16-Mar-95**	**13**	**232**	**7.2**	**7.35**	**7.9**	**8.2**	**110**	**0.0025 ***	**0.0025 ***	**0.00025 ***	**0.00025 ***
Laguna @Stony Point	14-Apr-95	14.2	440	11	8	7	7	170	0.0025 *	0.0025 *	0.00025 *	0.00025 *
Laguna @Stony Point	11-May-95	17	463	6.2	6.2	4.9	5.9	200	0.0025 *	0.0025 *	0.00025 *	0.00025 *
Laguna @Trenton-Healdsburg	16-Feb-95	10	222	7.4	7.6	8.6	8.4	100	0.0025 *	0.0025 *	0.002	0.00025 *
Laguna @Trenton-Healdsburg	**16-Mar-95**	**14**	**145**	**6.1**	**7.2**	**8.7**	**8.1**	**69**	**0.0025 ***	**0.0025 ***	**0.00025 ***	**0.00025 ***
Laguna @Trenton-Healdsburg	14-Apr-95	14.5	190	7.5	7.8	5	5	85	0.0025 *	0.0025 *	0.00025 *	0.00025 *
Laguna @Trenton-Healdsburg	11-May-95	18	323	7.9	7.1	5	4	140	0.0025 *	0.0025 *	0.00025 *	0.00025 *
SRC @ Willowside	16-Feb-95	9	210	10.7	8	3.3	3.3	120	0.0025 *	0.0025 *	0.00025 *	0.00025 *
SRC @ Willowside	**16-Mar-95**	**13**	**182**	**9.6**	**7.5**	**3.3**	**2.8**	**100**	**0.0025 ***	**0.0025 ***	**0.00025 ***	**0.00025 ***
SRC @ Willowside	14-Apr-95	14.5	220	9.3	8	4	5	98	0.0025 *	0.0025 *	0.00025 *	0.00025 *
SRC @ Willowside	11-May-95	17.1	321	11.5	8.3	1.7	1.6	160	0.0025 *	0.0025 *	0.00025 *	0.00025 *

Appendix 1-1. Laguna de Santa Rosa and Santa Rosa Creek metals and other constituents, 1995. *indicates undetectable; number shown is half the detection limit. Boldface numbers indicate samples collected during flood.

Station	Date	Calcium	Chromium		Chromium +6		Copper		Lead		Mag-nesium
			total	diss.	total	diss.	total	diss.	total	diss.	
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Laguna @Stony Point	16-Feb-95	30	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.001 *	0.001 *	17
Laguna @Stony Point	**16-Mar-95**	**23**	**0.005**	**0.0025 ***			**0.0025 ***	**0.0025 ***	**0.003**	**0.001 ***	**13**
Laguna @Stony Point	14-Apr-95	36	0.01	0.0025 *			0.0025 *	0.0025 *	0.002	0.001 *	20
Laguna @Stony Point	11-May-95	42	0.0025 *	0.0025 *			0.0025 *	0.0025 *	0.002	0.001 *	24
Laguna @Trenton-Healdsburg	16-Feb-95	20	0.007	0.0025 *	0.0025 *	0.0025 *	0.079	0.0025 *	0.001 *	0.001 *	13
Laguna @Trenton-Healdsburg	**16-Mar-95**	**13**	**0.008**	**0.0025 ***			**0.0025 ***	**0.0025 ***	**0.008**	**0.001 ***	**8.8**
Laguna @Trenton-Healdsburg	14-Apr-95	16	0.007	0.0025 *			0.0025 *	0.0025 *	0.002	0.001 *	11
Laguna @Trenton-Healdsburg	11-May-95	26	0.006	0.0025 *			0.005	0.0025 *	0.004	0.001 *	18
SRC @ Willowside	16-Feb-95	21	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.002	0.001 *	17
SRC @ Willowside	**16-Mar-95**	**17**	**0.007**	**0.0025 ***			**0.0025 ***	**0.0025 ***	**0.006**	**0.001 ***	**14**
SRC @ Willowside	14-Apr-95	18	0.007	0.0025 *			0.008	0.0025 *	0.001 *	0.001 *	13
SRC @ Willowside	11-May-95	28	0.0025 *	0.0025 *			0.0025 *	0.0025 *	0.002	0.001 *	23

Appendix 1-1. Laguna de Santa Rosa and Santa Rosa Creek metals and other constituents, 1995. *indicates undetectable; number shown is half the detection limit. Boldface numbers indicate samples collected during flood.

Station	Date	Mercury		Nickel		Selenium		Silver		Zinc	
		total mg/L	diss. mg/L	total mg/L	diss. mg/L	total mg/L	diss. mg/L	total mg/L	diss. mg/L	total mg/L	diss. mg/L
Laguna @Stony Point	16-Feb-95	0.00025 *	0.00025 *	0.008	0.006	0.0025 *	0.0025 *	0.0005 *	0.0005 *	0.06	0.025 *
Laguna @Stony Point	**16-Mar-95**	**0.00025 ***	**0.00025 ***	**0.012**	**0.005**	**0.0025 ***	**0.0025 ***	**0.0005 ***	**0.0005 ***	**0.05 ***	**0.025 ***
Laguna @Stony Point	14-Apr-95	0.00025 *	0.00025 *	0.012	0.006	0.0025 *	0.0025 *	0.0005 *	0.0005 *	0.03	0.025 *
Laguna @Stony Point	11-May-95	0.0001 *	0.0001 *	0.007	0.011	0.0025 *	0.0025 *	0.0005 *	0.0005 *	0.025 *	0.025 *
Laguna @Trenton-Healdsburg	16-Feb-95	0.00025 *	0.00025 *	0.017	0.01	0.0025 *	0.0025 *	0.004	0.0005 *	0.17	0.025 *
Laguna @Trenton-Healdsburg	**16-Mar-95**	**0.00025 ***	**0.00025 ***	**0.016**	**0.005**	**0.0025 ***	**0.0025 ***	**0.0005 ***	**0.0005 ***	**0.025 ***	**0.025 ***
Laguna @Trenton-Healdsburg	14-Apr-95	0.00025 *	0.00025 *	0.01	0.0025 *	0.0025 *	0.0025 *	0.0005 *	0.0005 *	0.06	0.025 *
Laguna @Trenton-Healdsburg	11-May-95	0.0001 *	0.0001 *	0.009	0.006	0.0025 *	0.0025 *	0.0005 *	0.0005 *	0.03	0.025 *
SRC @ Willowside	16-Feb-95	0.00025 *	0.00025 *	0.005	0.0025 *	0.0025 *	0.0025 *	0.0005 *	0.0005 *	0.05 *	0.025 *
SRC @ Willowside	**16-Mar-95**	**0.00025 ***	**0.00025 ***	**0.011**	**0.0025 ***	**0.0025 ***	**0.0025 ***	**0.0005 ***	**0.0005 ***	**0.025 ***	**0.025 ***
SRC @ Willowside	14-Apr-95	0.00025 *	0.00025 *	0.006	0.0025 *	0.0025 *	0.0025 *	0.0005 *	0.0005 *	0.04	0.025 *
SRC @ Willowside	11-May-95	0.0001 *	0.0001 *	0.0025 *	0.008	0.0025 *	0.0025 *	0.0005 *	0.0005 *	0.04	0.025 *

Appendix 1-2. Laguna de Santa Rosa nutrtients, 1995. *indicates undetectable; number shown is half the detection limit.

Station	Date	NO3 mg-N/L	NO2 mg-N/L	NH4 mg-N/L	TKN mg/L	Dissolved ortho P mg-P/L
Laguna @Stony Point	19-Jul-95	0.015 *	0.015 *	0.06	0.68	0.21
Laguna @Stony Point	21-Aug-95	0.015 *	0.015 *	0.025 *	0.79	0.26
Laguna @ Occidental	19-Jul-95	0.015 *	0.015 *	0.05	0.71	0.63
Laguna @ Occidental	21-Aug-95	0.015 *	0.015 *	0.025 *	0.61	0.76
Laguna @Guerneville Road	19-Jul-95	0.16	0.015 *	0.16	1.5	0.16
Laguna @Guerneville Road	21-Aug-95	0.06	0.015 *	0.025 *	0.35	0.21
Laguna @Trenton-Healdsburg	19-Jul-95	0.16	0.015 *	0.13	0.72	0.26
Laguna @Trenton-Healdsburg	21-Aug-95	0.07	0.015 *	0.06	0.4	0.37

Appendix 2. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data And Nutrients, 1990-1994. *indicates below the detection limit; number shown is one-half the detection limit. ND = undetectable, detection, limit not available.

Date	Time	Temp °C	Cond umho	DO ppm	pH	Turbid. FTU	Chl a µg/L	Phaeo µg/L	TDS mg/L	NO3-N mg/L	total NH3-N mg/L	un-ion NH3-N ug/L	Tot P mg/L	Diss P mg/L	TOC mg/L	DOC mg/L
Laguna de Santa Rosa at Stony Point Road																
24-Oct-90	1010	12.9	830	6.4	7.8	12	20		650	0.015 *	0.025 *		0.39	0.21	12	9.6
14-Dec-90	915	5.5	449	8.2	6.7	8.4	50.6		430	0.43	0.2	1.3	0.43	0.4	13	12
3-Apr-91	1030	15	366	8.3	7.35	6.9	6.8		290	0.89	0.025 *		0.4	0.29	9.1	9
12-Apr-91	1045	15	500	9.5	7.7					0.33	0.14	1.9				
30-Apr-91	1215	19.7	720	8.7	7.5	8.9	4.8	28.8	460	0.045	0.025 *			0.25	9	8.8
3-Jun-91	1230	21.2	1280	10.2	7.8	12	32	2	830	0.015 *	0.025 *		0.67	0.56	12	11
27-Jun-91	1205	18	1400	8.8	7.9	17	50	0	920	0.042	0.22	0.0058	0.68	0.4	12	11
20-Aug-91	1400	21.8	1230	7.8	7.9	6.4	16	3	810	0.015 *	0.058	1.75	0.83	0.66	12	12
11-Dec-91	1400	9.1	435	10.9	6.7	4.8	15		380	0.087	0.025 *		0.4	0.31	10	8.6
25-Mar-92	1448	17	413	9.2	7.8				280	0.7	0.19	3.74	0.59	0.57	11	11
29-Apr-92	1600	21	958	9.5	8.3	11	80	0.0003*	530	0.06	0.06	4.72	0.42	0.24	7	6.2
3-Jun-92	855	19	1072	3.1	7.9	70	60	12	650				0.66		13	10
1-Jul-92	1030	20	507	2.5	7.2	8.3	74	39	320	0.18	0.4	2.5	0.74	0.58	19	17
8-Sep-92	1300	22	1515	8.4	8.3				870	0.015 *	0.08	6.71	0.71		44	52
28-Oct-92	1130	16.5	105	6.8	7.3	99	13	38	85	0.43	0.37	2.25	0.82	0.23	13	8.3
16-Dec-92	1455	8	542	7.6	8.6	17	4	ND	350	2.4	0.36	19.8	0.51		11	7.4
17-Mar-93	1520	15	197	6.5	7.7	73	18.7	ND	210	0.61	0.3	3.72	0.68	0.55	22	19
14-Apr-93	1540	16	247	6.7	8.1	3.4	2.75 *	2.75 *	520	1.2	0.25	8.00	0.28	0.17	24	16
12-May-93	1350	19	819	10.7	8.1	19			500	0.03	0.025 *		0.73	0.21	14	9.8
16-Jun-93	1620	30	1260	7.8	6.8	22.7	18.7	7.48	340	0.015 *	0.025 *		0.33	0.24	12	12
18-Aug-93	920	20	1257	2.2	9.4	25	42.6	5.37	680	0.02	0.025 *		0.54	0.33	17	13
19-Oct-93	1355	21	712	6.8	7.6	11.2	13	2.78	433	0.9	0.2	2.982	1.12	0.6	17	17
14-Dec-93		10	240	6.7	7.6	33	4.6	5.1	185	26.7	0.3		1.00	0.56	12.0	12.0
22-Mar-94	1455	16.5	809	17.0	8.2	6.5	32.0	0.2 *	506	0.7	0.05 *		0.5	0.2	8.8	8.1
25-Apr-94	1545	14.5	391	5.6	7.4	25.5	6.9	1.7	226	0.4	0.05 *		0.52	0.34	10.0	13.0
24-May-94	1610	24.0	795	8.4	8.3	9.0	18.7	8.41	226	0.4	0.05 *		0.95	0.72	7.4	7.5
23-Jun-94	1623	23.2	1317	6.1	8.2	11.5	18.0	2.9	823	1.1	0.05 *		1.2	1.2	15.0	14.0
25-Aug-94	1730	18.8	1223	5.2	8.7	3.5	2.4	6.4	763	1.8	0.05 *		0.7	0.7		
25-Oct-94	1610	15.5	933	9.6	6.5	4.9	3.2	11.0	518	2.0	0.05 *		0.5	0.5	84	11.0
Laguna de Santa Rosa at Todd Road																
24-Oct-90	1040	12.5	960	3	8.3	5	46.5		760	0.015 *	0.62	26.78	1.7	1.4	24	23
14-Dec-90	1035	9.6	650	10.2	7.1	17	22.1		540	7.2	0.56	1.26	4.1	3.8	12	10
3-Apr-91	1130	18	434	9.4	7.3	13	38.8	24.6	330	5.3	0.22	1.5	1.8	1.7	11	11
30-Apr-91	1300	18.5	650	2.5	7.2	8	15.5	23.2	430	1.4	2.2	12.3		3.3	12	11
3-Jun-91	1254	21.5	980	6.8	7.8	12	24	11	640	0.21	2.4	0.065	2.2	1.9	18	16
27-Jun-91	1230	18	1000	7.6	8.1	17	117	2	670	0.042	0.025 *		1.4	1.3	20	16
20-Aug-91	1428	21	970	8.6	8.3	17	235	64	640	0.015 *	0.025 *		2.7	1.6	27	22

Appendix 2. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data And Nutrients, 1990-1994. *indicates below the detection limit; number shown is one-half the detection limit. ND = undetectable, detection, limit not available.

Date	Time	Temp °C	Cond umho	DO ppm	pH	Turbid. FTU	Chl a µg/L	Phaeo µg/L	TDS mg/L	NO3-N mg/L	total NH3-N mg/L	un-ion NH3-N ug/L	Tot P mg/L	Diss P mg/L	TOC mg/L	DOC mg/L
11-Dec-91	1425	7.7	343	8.4	7.5	3.1	91	597	320	0.015 *	0.025 *		0.71	0.56	12	10
25-Mar-92	1505	17	523	6.6	7.5				340	5.4	0.38	3.79	2.3	2.3	11	11
29-Apr-92	1535	21	750	8.4	8.9	12	35	16	440	5.2	0.1	25.3	1.9	1.6	7.7	6.6
3-Jun-92	911	19	1096	0.4	8.1	40	147	64	650				1.4		25	17
1-Jul-92	1000	20	521	2.3	7.4	30	114	45	320	0.07	0.54	5.34	1.2	0.86	17	16
8-Sep-92	1240	23	1089	13.1	9.2				650	0.015 *	0.08	35.12	1.8		24	20
28-Oct-92	1645	17	205	7.2	7.5	22.6	0	2	420	0.015 *	0.07	0.7	2	1.6	18	16
16-Dec-92	1430	10	583	6.7	7.1	11	17.4	4.1	390	9.7	2.5	5.2	2		10	8
17-Mar-93	1700	15	217	5.8	7.7	55	16	4.5	220	0.95	0.41	5.08	0.9	0.83	18	15
14-Apr-93	1520	16	579	4.8	7.4	16.7	3.15 *	3.15 *	390	6.2	1.4	9.17	1.9	1.7	26	17
12-May-93	1425	16	898	6.9	7.7	33			540	0.85	2.4	31.16	1	0.91	29	9.2
16-Jun-93	1740	27	878	11.2	8.4	20.2	120	48.1	290	0.21	0.11	14.43	1.1	0.63	21	18
18-Aug-93	848	22	1055	2.5	9.3	47	96.1	17.5	600	0.028	0.064	28.769	1.1	0.66	34	22
19-Oct-93	1331	17	504	2.3	7.1	16.6	12.5	1.25	206	0.9	1	3.6594	1.51	0.8	22	18
14-Dec-93		10.5	212	6.9	7.9	29	13.4	0.05 *	168	22.9	0.7		1.50	0.80	12.0	10.0
22-Mar-94	1645	12.5	880	9.3	8.3	17.5	0.1 *	292	486	1.6	2.4		1.4	0.5	16.0	12.0
25-Apr-94	1600	14.9	484	6.8	7.5	15.2	21.4	19.0	228	0.9	0.2		0.51	0.44	14.0	14.0
24-May-94	1700	22.8	594	6.6	8.3	28.0	46.4	7.21	228	0.4	0.05 *		0.58	0.32	10.0	9.8
23-Jun-94	1607	23.1	822	4.2	8.3	15.0	32.0	6.1	490	0.6	0.05 *		1.1	1.0	13.0	12.0
25-Aug-94	1800	21.0	732	4.8	8.3	24.0	43.0	212	618	1.6	0.05 *		0.6	0.5		
25-Oct-94	1545	14.0	636	3.1	7.1	7.5	7.6	47.0	428	2.0	0.05 *		1.2	1.0	59	17.0
Laguna de Santa Rosa at Highway 12																
24-Oct-90	1135	12	169	2	6.9	4	15.8									
14-Dec-90	1110	6	580	9.7	6.1	9.2	38.8									
3-Apr-91	1150	18	430	11.4	7.3	18	11.1	67.8								
30-Apr-91	1400	18.2	550	9.2	7.5	16	100.8	135.8	400	0.15	0.059	0.6		1.1	14	13
3-Jun-91	1320	20	680	5.8	7.5	53	64	56								
27-Jun-91	1248	18	590	7.5	7.5	21	36	14								
20-Aug-91	1500	22.7	342	6.4	7.7	22	0	60								
11-Dec-91	1450	9.7	441	11.8	7.3	6.4	101	823								
25-Mar-92	930	14	473	5	7.4				280	2.2	0.24	1.52	1.8	1.9	14	14
1-Jul-92	1100	19	986	7.4	7.5	50			590	1.6	0.21	2.42	1.9	1.8	17	16
8-Sep-92	1220	18	680	4.9	7.8											
28-Oct-92	1630	17	647	7.5	7.2	24.5	137	17								
14-Apr-93	1405	20	620	5.2	7.6	45.4	17.6	15.2								
12-May-93	1320	15	646	8.5	7.7	81										
16-Jun-93	1500	26.5	816	3.8	6.9	61.3	3.325 *	103								
18-Aug-93	1013	21	1274	2.1	9.3	16	46.3	12								

Appendix 2. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data And Nutrients, 1990-1994. *indicates below the detection limit; number shown is one-half the detection limit. ND = undetectable, detection, limit not available.

Date	Time	Temp °C	Cond umho	DO ppm	pH	Turbid. FTU	Chl a µg/L	Phaeo µg/L	TDS mg/L	NO3-N mg/L	total NH3-N mg/L	un-ion NH3-N ug/L	Tot P mg/L	Diss P mg/L	TOC mg/L	DOC mg/L
19-Oct-93	1256	17	421	4.2	7.1		18.2	11								
14-Dec-93		10.5	411	6.2	7.8											
22-Mar-94	1425	16.2	709	13.6	8.6		0.1 *	246								
25-Apr-94	1440	15.4	580	10.2	7.6	26.0	64.1	13.4								
24-May-94	1535	24.0	438	1.9	8.2	34.0	30.3	16								
23-Jun-94	1548	16.8	713	7.8	3.4		14.0	11.0								
25-Aug-94	1650	17.2	461	3.5	7.9		8.2	45.0								
25-Oct-94	1520	14.0	723	3.3	6.9	10.5	29.0	137								
Laguna de Santa Rosa at Occidental Road																
24-Oct-90	1250	18.9	790	16.8	9.2	70	564		570	0.015 *	0.088	32.47	1.8	1.2	38	16
14-Dec-90	1130	8.4	600	8.4	6.7	22	27.9		530	1.6	1.1	0.91	1.9	1.8	15	14
3-Apr-91	1215	18.2	418	9.4	7.2	7.9	6.4	52.3	330	4.4	0.025 *		1.8	1.6	13	12
11-Apr-91	1615	17.6	481	14.2	8.3											
30-Apr-91	1430	22	590	17.5	8.8	26	155.9	37.7	380	0.015 *	0.025 *			1.3	15	11
3-Jun-91	1346	25	700	9.8	7.9	32	43	13	430	0.015 *	0.025 *		2.1	1.7	12	10
27-Jun-91	1305	21.5	730	11.4	8	29	85	0	440	0.051	0.071	0.003	1.3	1.2	12	11
20-Aug-91	1530	27	940	10.2	8.7	29	43	6	550	0.015 *	0.14	31.53	2.2	1.6	14	4.3
11-Dec-91	1520	9.6	415	6.2	7.5	22	66	303	390	0.015 *	0.063	0.36	1.3	1.2	15	13
25-Mar-92	1410	16	417	5.3	7.4				260	2.4	0.32	2.36	2.1	1.4	15	13
29-Apr-92	1500	20		5.6	7.8	30	67	36	370	0.015 *	0.1	2.44	1.8	1.1	15	13
3-Jun-92	955	24	738	3	7.6	85	84	31	460				1.6		14	14
1-Jul-92	910	20.5	802	4.8	7.6	45	100	0.0005*	490	0.015 *	0.14	2.25	1.3	0.86	12	11
8-Sep-92	1155	27	1150	8.8	8.3				720	0.015 *	0.025 *		2.3		23	22
28-Oct-92	1412	17.5	646	7.9	7.7	28.5	107	3	410	0.42	0.41	0.67	1.4	0.84	12	11
16-Dec-92	1310	10	554	4.4	6.8	12.4	5.4	25	360	8	2	2.15	2.6		13	11
17-Mar-93	1430	15	455	7.8	7.5	45	21.4	4.8	320	2.2	0.73	6.44	1.6	1	17	14
14-Apr-93	1250	15	623	6	8.2	14.5	94.4	3.15 *	330	3.2	0.13	0.13	1.3	1.2	22	20
12-May-93	1140	23	546	9	7.7	51			420	2	0.2	4.36	1.2	1	13	11
16-Jun-93	1337	24	585	3.7	7.3	77.6	33.4	27.4	140	0.05	0.26	2.50	1.3	1.2	14	16
18-Aug-93	1745	28	696	8.4	7.6	50	67.6	24.5	390	0.023	0.13	3.1569	1.8	1.4	37	17
19-Oct-93	1145	18	430	1.3	7	14.4	2.14	2.72	266	1.1	0.5	1.5689	1.95	1	20	17
14-Dec-93		10.5	403	4.7	7.7	47	13.4	0.05 *	239	36.6	1.2		2.30	1.40	13.0	13.0
22-Mar-94	1310	15.2	689	9.8	8.0	38.0	61.8	0.2 *	356	1.6	0.2		1.3	0.8	13.0	9.9
25-Apr-94	1335	14.2	603	13.5	8.6	39.0	105	12.0	326	0.5	0.05 *		1.6	1.09	7.5	13.0
24-May-94	1440	27.0	480	13.1	8.8	32.0	41.4	2.54	326	0.4	0.05 *		1.89	1.54	9.6	12.0
23-Jun-94	1512	31.1	566	7.9	8.3	22.5	15.0	6.7	347	0.4	0.2		1.9	1.8	10.0	10.0
25-Aug-94																
25-Oct-94																

Appendix 2. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data And Nutrients, 1990-1994. *indicates below the detection limit; number shown is one-half the detection limit. ND = undetectable, detection, limit not available.

Date	Time	Temp °C	Cond umho	DO ppm	pH	Turbid. FTU	Chl a µg/L	Phaeo µg/L	TDS mg/L	NO3-N mg/L	total NH3-N mg/L	un-ion NH3-N ug/L	Tot P mg/L	Diss P mg/L	TOC mg/L	DOC mg/L
19-Oct-93	1256	17	421	4.2	7.1		18.2	11								
14-Dec-93		10.5	411	6.2	7.8											
22-Mar-94	1425	16.2	709	13.6	8.6		0.1 *	246								
25-Apr-94	1440	15.4	580	10.2	7.6	26.0	64.1	13.4								
24-May-94	1535	24.0	438	1.9	8.2	34.0	30.3	16								
23-Jun-94	1548	16.8	713	7.8	3.4		14.0	11.0								
25-Aug-94	1650	17.2	461	3.5	7.9		8.2	45.0								
25-Oct-94	1520	14.0	723	3.3	6.9	10.5	29.0	137								
Laguna de Santa Rosa at Occidental Road																
24-Oct-90	1250	18.9	790	16.8	9.2	70	564		570	0.015 *	0.088	32.47	1.8	1.2	38	16
14-Dec-90	1130	8.4	600	8.4	6.7	22	27.9		530	1.6	1.1	0.91	1.9	1.8	15	14
3-Apr-91	1215	18.2	418	9.4	7.2	7.9	6.4	52.3	330	4.4	0.025 *		1.8	1.6	13	12
11-Apr-91	1615	17.6	481	14.2	8.3											
30-Apr-91	1430	22	590	17.5	8.8	26	155.9	37.7	380	0.015 *	0.025 *			1.3	15	11
3-Jun-91	1346	25	700	9.8	7.9	32	43	13	430	0.015 *	0.025 *		2.1	1.7	12	10
27-Jun-91	1305	21.5	730	11.4	8	29	85	0	440	0.051	0.071	0.003	1.3	1.2	12	11
20-Aug-91	1530	27	940	10.2	8.7	29	43	6	550	0.015 *	0.14	31.53	2.2	1.6	14	4.3
11-Dec-91	1520	9.6	415	6.2	7.5	22	66	303	390	0.015 *	0.063	0.36	1.3	1.2	15	13
25-Mar-92	1410	16	417	5.3	7.4				260	2.4	0.32	2.36	2.1	1.4	15	13
29-Apr-92	1500	20		5.6	7.8	30	67	36	370	0.015 *	0.1	2.44	1.8	1.1	15	13
3-Jun-92	955	24	738	3	7.6	85	84	31	460				1.6		14	14
1-Jul-92	910	20.5	802	4.8	7.6	45	100	0.0005*	490	0.015 *	0.14	2.25	1.3	0.86	12	11
8-Sep-92	1155	27	1150	8.8	8.3				720	0.015 *	0.025 *		2.3		23	22
28-Oct-92	1412	17.5	646	7.9	7.7	28.5	107	3	410	0.42	0.41	0.67	1.4	0.84	12	11
16-Dec-92	1310	10	554	4.4	6.8	12.4	5.4	25	360	8	2	2.15	2.6		13	11
17-Mar-93	1430	15	455	7.8	7.5	45	21.4	4.8	320	2.2	0.73	6.44	1.6	1	17	14
14-Apr-93	1250	15	623	6	8.2	14.5	94.4	3.15 *	330	3.2	0.13	0.13	1.3	1.2	22	20
12-May-93	1140	23	546	9	7.7	51			420	2	0.2	4.36	1.2	1	13	11
16-Jun-93	1337	24	585	3.7	7.3	77.6	33.4	27.4	140	0.05	0.26	2.50	1.3	1.2	14	16
18-Aug-93	1745	28	696	8.4	7.6	50	67.6	24.5	390	0.023	0.13	3.1569	1.8	1.4	37	17
19-Oct-93	1145	18	430	1.3	7	14.4	2.14	2.72	266	1.1	0.5	1.5689	1.95	1	20	17
14-Dec-93		10.5	403	4.7	7.7	47	13.4	0.05 *	239	36.6	1.2		2.30	1.40	13.0	13.0
22-Mar-94	1310	15.2	689	9.8	8.0	38.0	61.8	0.2 *	356	1.6	0.2		1.3	0.8	13.0	9.9
25-Apr-94	1335	14.2	603	13.5	8.6	39.0	105	12.0	326	0.5	0.05 *		1.6	1.09	7.5	13.0
24-May-94	1440	27.0	480	13.1	8.8	32.0	41.4	2.54	326	0.4	0.05 *		1.89	1.54	9.6	12.0
23-Jun-94	1512	31.1	566	7.9	8.3	22.5	15.0	6.7	347	0.4	0.2		1.9	1.8	10.0	10.0
25-Aug-94																
25-Oct-94																

Appendix 2. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data And Nutrients, 1990-1994. *indicates below the detection limit; number shown is one-half the detection limit. ND = undetectable, detection, limit not available.

Date	Time	Temp °C	Cond umho	DO ppm	pH	Turbid. FTU	Chl a µg/L	Phaeo µg/L	TDS mg/L	NO3-N mg/L	total NH3-N mg/L	un-ion NH3-N ug/L	Tot P mg/L	Diss P mg/L	TOC mg/L	DOC mg/L
11-Dec-91	1645	10	380	10.4	7.6	3.5	22		360	2.9	0.099	0.73	1.3	1.1	7.8	7.3
25-Mar-92	1103	14	428	5.4	7.6				260	2.3	0.06	1.6	1	0.93	8.7	8.2
29-Apr-92	1015	20	512	4.9	7.5	20	368	284	320	0.1	0.13	1.61	0.84	0.57	6.7	5
3-Jun-92	1100	21	570	3.5	7.5	55	20	6	350				0.65		6.6	5.6
1-Jul-92	750	17.5	356	5.6	7.5	19	27	0.0005*	230	0.28	0.15	1.55	0.4	0.29	11	11
8-Sep-92	1025	19	683	6.8	8				410	0.015 *	0.025 *		0.57		12	5.6
28-Oct-92	1125	16	576	7.8	7.7	11.4	21	9								
16-Dec-92	935	8	361	5.5	6.9	27	4	1.6								
17-Mar-93	1150	14	162	6.4	7.5	53	16	14.2								
14-Apr-93	1015	13	446	8.8	8.3	12.4	40.6	2.9 *								
12-May-93	938	16	520	6.3	7.8	40										
16-Jun-93	1028	22.5	738	3.4	7.4	30.9	4.45	8.01								
18-Aug-93	1118	22.5	604	2.8	7.5	26	12.8	0.29 *								
19-Oct-93	905	17	432	1.7	6.9		4	3.16								
14-Dec-93		9	169	9.3	7.4		8.0	0.1							11.0	9.9
22-Mar-94	1020	13.8	531	8.1	8.2		0.1 *	13.1								
25-Apr-94	1210	13.9	367	7.4	7.5	20.5	32.0	2.0	174	0.6	0.05 *		0.53	0.35	8.9	12.0
24-May-94	1305	19.0	494	5.2	8.1	15.0	17.2	2.76	174	0.8	0.05 *		0.79	0.62	7.0	6.9
23-Jun-94	1305	17.2	451	5.0	7.4	1.8	1.0	3.4	346	2.0	0.3		0.2	0.2	3.7	3.5
25-Aug-94	1410	17.5	832	7.4	7.3	2.0	0.5	1.7	566	8.7	0.2		0.4	0.4		
25-Oct-94	1250	13.0	541	4.4	6.7	0.8	0.6	4.1	360	1.7	0.3		0.2	0.2	51	3.3
Laguna de Santa Rosa at Trenton-Healdsburg Road																
24-Oct-90	1500	18.3	460	9.5	8.1	7.3	3.3									
14-Dec-90	1358	7	392	10.5	6.9	4.7	6.7									
3-Apr-91	1520	17.8	280	7.7	7.1	16	3.3									
30-Apr-91	1555	22	460	9.4	7.8	9.7	70.4	27.2	320	0.2	0.095	2.7		0.58	8	7.1
3-Jun-91	1518	22.5	520	7.6	7.7	17	21	23								
27-Jun-91	1423	20	520	7.6	7.5	15	16	10								
20-Aug-91	1700	22	580	7.8	7.9	12	8	1								
11-Dec-91	1655	9	375	10.5	7.5	3.1	25									
25-Mar-92	1122	14	420	6.9	7.6											
29-Apr-92	1030	20.5	510	6.2	7.6	18	4	9	310	0.14	0.11	1.77	0.8	0.57	6.8	4.9
3-Jun-92							20	10								
25-Apr-94	1150	14.0	336	8.2	7.7	29.5	11.0	2.8								
24-May-94	1225	19.0	484	6.3	8.2	18.0	18.2	2.03								
23-Jun-94	1225	21.8	599	6.2	8.0		1.0	9.0								
25-Aug-94	1345	19.2	652	5.8	7.8		0.3	1.8								
25-Oct-94	1000	13.0	603	7.8	6.7	2.8	1.2	7.3								

Appendix 2. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data And Nutrients, 1990-1994. *indicates below the detection limit; number shown is one-half the detection limit. ND = undetectable, detection, limit not available.

Date	Time	Temp °C	Cond umho	DO ppm	pH	Turbid. FTU	Chl a µg/L	Phaeo µg/L	TDS mg/L	NO3-N mg/L	total NH3-N mg/L	un-ion NH3-N ug/L	Tot P mg/L	Diss P mg/L	TOC mg/L	DOC mg/L
Santa Rosa Creek at Willowside Road																
24-Oct-90	1305	17.2	540	11	8.4	1.5	1.6		380	0.035	0.025 *		0.1	0.092	5.2	4.3
14-Dec-90	1157	7.5	325	11.2	7.5	1.8	6.7		320	0.29	0.025 *		0.14	0.14	5	4.7
3-Apr-91	1330	19	328	13.4	8.4	3.2	3.9		230	1	0.099	8.4	0.062	0.033	3.5	4.3
11-Apr-91	1555	17	377	16.9												
30-Apr-91	1515	19.5	495	9.5	8.1	2	7.7		310	0.35	0.056	2.5		0.11	4.5	4.4
3-Jun-91	1412	23.5	600	10.4	8.2	1.4	2	3	370	0.015 *	0.058	0.0044	0.14	0.14	2.8	3
27-Jun-91	1335	21	600	13	8.2	2.4	16	0	370	0.042	0.048	0.003	0.11	0.11	2.6	2.7
20-Aug-91	1550	26	660	12.5	8.8	1.3	3	0	380	0.015 *	0.057	14.7	0.13	0.096	4	3.6
11-Dec-91	1618	8.5	348	12.4	7.5	0.5	4		340	0.14	0.054	0.28	0.14	0.12	3.3	3.1
25-Mar-92	1307	16	425	14.6	8.7				250	0.66	1.4	180.6	0.47	0.34	9.1	6.4
29-Apr-92	1440	20	1561	12.2	8.5	2.2	10	34	330	0.04	0.025 *		0.13	0.04	3.4	2.8
3-Jun-92	1015	20	615	3.6	7.8	3.2	3	4	370				0.21		4.4	4
1-Jul-92	830	19	416	5.5	7.1	4.9	20	0.0005*	250	0.26	0.11	0.51	0.18	0.16	8.5	8.9
8-Sep-92	1130	23	692	9.3	8				410	0.015 *	0.025 *		0.13		3.5	4
28-Oct-92	1350	17	606	8.5	8.2	1	0	2	370	0.09	0.025 *		0.14	0.14	5.9	3.6
16-Dec-92	1106	8	391	10.6	7.7	7.6	5.2	ND	270	1.9	0.16	1.16	0.2		8.5	4.9
17-Mar-93	1330	15	350	7.8	7.4	52	18.7	ND	250	0.41	0.11	0.69	0.5	0.27	12	12
14-Apr-93	1214	13	559	11	8.6	1.2	2.8 *	2.8 *	270	0.3	0.025 *		0.07	0.03	25	21
12-May-93	1110	15	590	13.5	8.5	1.1			310	0.015 *	0.025 *		0.05	0.02	5.9	5.6
16-Jun-93	1243	26	770	9.4	8.3	2	1.48	1.11	200	0.015 *	0.025 *		0.23	0.08	6.1	6.4
18-Aug-93	1428	27	621	7.1	6.9	2.6			340	0.012	0.025 *		0.16	0.063	6.6	6.1
19-Oct-93	1115	17	562	7.75	7.8	4.3	10.1	1.82	319	1.4	0.025 *		0.73	<0.1	7.4	6.6
14-Dec-93		10.5	212	11.6	7.8	54	2.7	4.8	155	18.9	0.1		0.43	0.18		
22-Mar-94	1240	15.1	233	16.5	8.1	7.6	0.1 *	94.0	305	1.2	0.05 *		0.05 *	0.05 *	3.8	3.7
25-Apr-94	1305	15.0	281	11.3	7.8	9.2	4.3	2.8	98	0.9	0.05 *		0.27	0.19	11.0	10.0
24-May-94	1412	26.5	554	10.8	8.9	2.3	1.1	1.17	98	0.4	0.7		0.08	0.08	4.7	4.9
23-Jun-94	1438	29.0	611	12.3	8.5	1.8	2.1	0.2 *	361	0.3	0.05 *		0.1	0.1	4.2	5.0
25-Aug-94	1600	26.0	643	11.2	8.5	1.4	0.5	2.3	412	1.1	0.05 *		0.4	0.4		
25-Oct-94	1350	16.5	392	12.1	6.8	1.1	0.6	0.4	376	1.9	0.05 *		0.2	0.1	64	2.8
Mark West Creek at Slusser Road																
1-Jul-92	730	18.5	339	4.5	7.5	14	33	0.0005*	220	0.33	0.16	1.78	0.3	0.26	11	10
8-Sep-92	1000	19	680	3.3	7.8				400	0.015 *	0.07	1.6	0.61		5.1	5
28-Oct-92	1225	16	564	7	7.6	9.6	12	7	350	0.25	0.1	0.12	0.71	0.66	9	8.7
16-Dec-92	911	8	352	5	7.6	27	6.7	ND	300	3.5	0.61	3.53	1.5		14	10
17-Mar-93	1110	13	159	6.3	7.5	72	16	4.5	170	0.6	0.14	0.95	0.44	0.28	11	11
14-Apr-93	1048	13	286	9.4	8	2	2.9 *	2.9 *	210	0.15	0.025 *		0.14	0.09	13	13
12-May-93	953	12	337	10	7.7	1.1			250	0.07	0.025 *		0.06	0.12	3.8	2

Appendix 2. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data And Nutrients, 1990-1994. *indicates below the detection limit; number shown is one-half the detection limit. ND = undetectable, detection, limit not available.

Date	Time	Temp °C	Cond umho	DO ppm	pH	Turbid. FTU	Chl a µg/L	Phaeo µg/L	TDS mg/L	NO3-N mg/L	total NH3-N mg/L	un-ion NH3-N ug/L	Tot P mg/L	Diss P mg/L	TOC mg/L	DOC mg/L
16-Jun-93	1045	19.2	540	6.9	7.5	0.4	1.48	0.37 *	81	0.015 *	0.18	2.08	0.22	0.05	4.5	4.5
18-Aug-93	1310	20.5	514	5.6	6.8	0.1	0.135 *	1.12	290	1.6	0.025 *		0.17	0.13	4.5	7.6
19-Oct-93	950	16	342	6.6	7.3	0.4	77.6	1.2	224	0.4	0.025 *		0.23	0.05 *	6	5.1
14-Dec-93		9	111	12.5	7.7	56	0.05 *	11.2	136	8.1	0.05 *		0.57	0.16	11.0	9.4
22-Mar-94	1040	11.4	326	13.0	7.0	0.9	0.1 *	31.1	114	0.6	0.05 *		0.7	0.05 *	3.0	2.7

Appendix 3-1. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data and Nutrients, 1989-1992 (RWQCB data).

Date	Time	Temp C	DO mg/L	pH	Cond umho/cm	TFR mg/L	TURB NTU	NO3 mg/L	NO2 mg/L	NH3 mg/L	TKN mg/L	Ortho PO4 mg/L	Total PO4 mg/L	TOC mg/L	DOC mg/L
Laguna de Santa Rosa at Stony Point Road															
17-Oct-89	1445	17.3	10.0	8.0	1115	650		0.070	0.001	0.025	0.93	0.36	0.43	9.3	9.6
14-Nov-89	1315	16.5	13.2	8.5	1247	720		0.030	0.008	0.070	0.80	0.18	0.23	8.3	8.7
22-Jan-90	1250	9.6		7.5	670			1.400	0.140	0.560	1.50	0.54	0.60		
26-Jan-90	1031	8.6		7.7	787			1.300	0.230	0.080	1.50	0.46	0.40		
31-Jan-90	1225	9.5		7.7	665			0.940	0.220	0.250	1.70	0.36	0.36		
2-Feb-90	1509	10.1		7.3	378			1.600	0.590	0.640	2.50	0.92	0.76		
7-Feb-90	1225	8.3		7.4	454			0.690	0.090	0.180	1.20	0.50	0.57		
14-Feb-90	1252	9.4		8.1	794			1.400	0.320	1.400	2.50	0.79	0.91		
20-Feb-90	1139	7.1		7.0	372			0.700	0.077	0.580	1.30	0.64	0.66		
21-Feb-90	1110	9.3		7.0	414			0.650	0.058	0.220	1.10	0.45	0.58		
28-Feb-90	1409	15.1		7.9	723			0.580	0.220	0.080	1.00	0.43	0.58		
6-Mar-90	1429	14.8		7.4	410			0.600	0.100	2.400	4.30	1.30	1.60		
14-Mar-90	931	12.7		7.9	534			0.430	0.040	0.240	0.81	0.39	0.38		
23-Mar-90	1050	18.6		7.8	908			0.150	0.074	0.060	1.70	0.49	0.54		
4-Apr-90	1318	22.0		8.1	1175			0.100	0.007	0.380	0.60	0.48	0.50		
10-Apr-90	1217	20.8		8.1	1211			0.620	0.007	0.120	0.90	0.06	0.64		
18-Apr-90	1302	20		7.6	1154			0.100	0.010	0.025	1.80	0.99	1.10		
25-Apr-90	1420	26.3			1091			0.050	0.001	0.060	1.20	0.64	0.91		
1-May-90	1345	22.4		8.0	1108			0.110	0.001	0.120	1.10	0.10	1.20		
9-May-90	1120	19.3		7.8	1164			0.120	0.001	0.025	0.90	1.20	1.40		
16-May-90	1224	21.9		8.2	2020			0.070	0.001	0.025	1.00	1.40	1.40		
24-May-90	1400	25.3	10.6		405	260	17.00	0.140	0.044	0.025	0.24	0.86	0.90	17.7	12.2
5-Jun-90	1315	27.3	10.2	8.2	774	430	7.00	0.050	0.025	0.030	1.10	0.56	0.57	11.9	12.6
12-Jun-90	1320	28	10.5		1055	620	10.00	0.050	0.001	0.030	1.00	0.73	0.83	11.1	9.6
19-Jun-90	1220	28	9.7	8.1	1157	630	8.30	0.030	0.001	0.030	1.20	1.10	1.70	8.5	8.6
4-Dec-90	1015							0.130	0.048	0.025	0.10	0.20	0.26	14.0	11.0
6-Dec-90	0930							0.120	0.043	0.025	0.30	0.17	0.22	13.0	12.0
11-Dec-90	0940							1.200	0.320	0.590	1.20	0.52	0.69	18.0	15.0
13-Dec-90	0925							0.800	0.230	0.100	0.20	0.51	0.59	11.0	13.0
18-Dec-90	1012							4.800	0.230	0.160	0.81	0.69	0.79	15.0	10.0
20-Dec-90	0920							0.860	0.092	0.110	0.29	0.15	0.44	9.6	8.1
27-Dec-90	0920							0.300	0.040	0.025	0.24	0.25	0.26	10.0	6.8
3-Jan-91	0925							0.290	0.025	0.025	0.05	0.23	0.23	11.0	6.1
10-Jan-91	1005	7.7	8.6	7.9	622			0.410	0.240	0.025	0.15	0.30	0.34	8.9	9.2
15-Jan-91	0930	11.2	8.2	7.9	645			0.080	0.020	0.025	0.15	0.28	0.34	9.3	8.8
23-Jan-91	0940							0.040	0.001	0.025	0.12	0.25	0.28	8.4	8.9
30-Jan-91	0955							0.040	0.001	0.025	0.05	0.18	0.23	9.0	11.0
2-Feb-91	1540	12.8		8.0	155			2.200	0.200	0.350	0.38	0.38	0.46		
8-Feb-91	1100	11.8	4.2	7.3	425			1.400	0.360	0.920	1.10	1.20	1.20	17.0	18.0
12-Apr-91	1050	14.8	10.0	8.2	521			0.370	0.034	0.025	1.00	0.16	0.27		
17-Apr-91	1320	18.4	10.0		610			0.410	0.070	0.025	0.80	0.16	0.22		
7-Jun-91	1330	24.8	9.8	8.2	1438			0.020	0.001	0.025	1.00	0.38	0.54		

Appendix 3-1. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data and Nutrients, 1989-1992 (RWQCB data).

Date	Time	Temp C	DO mg/L	pH	Cond umho/cm	TFR mg/L	TURB NTU	NO3 mg/L	NO2 mg/L	NH3 mg/L	TKN mg/L	Ortho PO4 mg/L	Total PO4 mg/L	TOC mg/L	DOC mg/L
29-Jan-92	1050	9.9	8.5	8.0	802					0.100	1.10		0.38		
Laguna de Santa Rosa at Llano Road															
29-Jan-92	1155	9.6	5.0	7.7	930					7.900	14.00		0.82		
14-Feb-92	1100	11.2	7.0	7.5	360					5.000	8.81	0.00	1.40		
Laguna de Santa Rosa at Todd Road															
14-Nov-89	1345	14.4	4.4	7.4	484	320		0.550	0.076	0.830	2.30	0.80	0.91	11.8	10.8
22-Jan-90	1220	12.0		7.1	731			6.200	0.880	9.400	9.50	2.10	2.10		
26-Jan-90	1008	10.8		7.2	757			5.500	0.980	10.000	11.00	3.40	1.90		
31-Jan-90	1130	10.4		7.2	810			3.300	0.700	8.500	9.70	0.32	1.70		
2-Feb-90	1450	10.6		7.0	340			2.200	0.410	2.000	5.30	1.20	0.72		
7-Feb-90	1133	12.4		6.9	689			3.700	0.890	12.000	13.00	2.00	2.00		
14-Feb-90	1203	10.2		7.2	758			5.200	0.970	10.000	11.00	3.00	3.20		
20-Feb-90	1113	11.9		6.8	552			2.500	1.300	6.800	8.50	2.50	2.70		
21-Feb-90	1126	11.7		7.1	740			5.600	1.000	11.000	11.00	3.20	3.20		
28-Feb-90	1226	15.8		6.7	820			2.700	4.300	14.000	12.00	3.10	3.20		
6-Mar-90	1155	15.1		6.7	527			2.000	1.300	7.800	7.90	2.80	2.90		
14-Mar-90	958	15.4		6.5	751			5.600	2.600	13.000	12.00	3.10	3.30		
23-Mar-90	1024	17.7		6.7	892			7.400	3.000	15.000	19.00	4.80	5.60		
4-Apr-90	1241	19.0		6.8	876			5.300	2.000	9.600	13.00	3.80	4.10		
10-Apr-90	1155	16.7		7.2	990			0.670	0.470	11.000	17.00	3.50	3.70		
18-Apr-90	1142	17.6		7.0	1080			0.270	0.330	5.600	7.30	2.60	3.00		
25-Apr-90	1316	19.8			1148			0.250	0.500	4.500	6.90	1.60	2.00		
1-May-90	1326	20.3		7.8	1221			0.200	0.120	2.600	3.20	2.20	2.60		
9-May-90	1100	18.3		7.7	1442			0.170	0.020	12.000	16.00	4.80	6.20		
16-May-90	1155	20.5		8.2	2120			0.240	0.670	9.000	15.00	5.10	5.80		
24-May-90	1220	17.9	5.1	0.0	469	280	22.00	0.160	0.061	0.170	0.38	0.77	0.80	14.1	7.8
5-Jun-90	1220	21.7	6.1	7.2	608	380	10.00	0.200	0.340	2.000	4.80	1.20	1.10	17.8	16.0
12-Jun-90	1230	23.6	9.5		637	410	10.00	0.080	0.001	0.025	2.70	1.00	1.10	18.7	15.5
19-Jun-90	1125	23.5	8.5	7.7	685	380	9.80	0.070	0.001	0.025	2.50	0.85	0.87	17.1	21.6
4-Dec-90	0930							0.220	0.070	0.025	0.50	0.46	0.52	17.0	14.0
6-Dec-90	0900							6.200	0.290	0.660	1.00	4.00	2.60	15.0	13.0
11-Dec-90	0900							8.900	0.330	0.590	1.00	4.20	4.60	17.0	11.0
13-Dec-90	0855							6.300	0.220	0.360	0.60	2.90	3.40	10.0	13.0
18-Dec-90	0945							6.300	0.310	0.390	0.65	2.50	2.50	11.0	8.7
20-Dec-90	0855							10.000	0.400	0.420	1.20	3.70	3.70	9.9	7.3
27-Dec-90	0855							9.600	0.470	0.400	1.10	3.80	3.90	11.0	8.9
3-Jan-91	0910							10.000	0.400	0.270	0.71	3.80	3.70	12.0	10.0
10-Jan-91	920	7.1	6.9	7.6	543			0.810	0.140	0.210	0.46	0.66	0.73	10.0	11.0
15-Jan-91	0905	11.6	9.2	7.7	726			0.080	0.020	0.025	0.30	0.46	0.51	12.0	18.0
23-Jan-91	0920							0.060	0.001	0.025	0.30	0.48	0.54	11.0	10.0
30-Jan-91	0905							0.060	0.001	0.025	0.05	0.40	0.49	10.0	11.0
2-Feb-91	1430	11.8		7.8	294			1.600	0.400	0.320	0.22	0.39	0.65		
8-Feb-91	0950	10.9		7.3	422			1.600	0.400	0.960	1.10	1.30	1.30	17.0	19.0

Appendix 3-1. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data and Nutrients, 1989-1992 (RWQCB data).

Date	Time	Temp C	DO mg/L	pH	Cond umho/cm	TFR mg/L	TURB NTU	NO3 mg/L	NO2 mg/L	NH3 mg/L	TKN mg/L	Ortho PO4 mg/L	Total PO4 mg/L	TOC mg/L	DOC mg/L
10-Apr-91	1445	15.6	6.2	7.7	666			1.100	0.360	1.400	2.00	1.30	1.20		
17-Apr-91	1230	15	5.6		571			0.360	0.200	0.025	2.40	0.86	0.93		
29-Jan-92	1130	11.2	8.8	7.4	779			0.000		2.200	4.60	0.00	4.50		
Laguna de Santa Rosa at Highway 12															
29-Jan-92	1210	8.7	5.2	7.5	1452					3.500	5.90		2.10		
14-Feb-92	1220	11.2	7.0	7.5	360					4.200	9.30		5.50		
Laguna de Santa Rosa at Occidental Road															
27-Sep-89	1140	19.5	9.2	7.3	504	350		0.570	0.070	0.100	4.30	1.10	0.53	18.0	17.0
14-Nov-89	1230	15.7	9.6	7.8	371	220		0.430	0.016	0.025	3.20	0.71	1.10	9.6	9.4
22-Jan-90	1150	9.7		7.0	647			5.600	0.310	5.200	5.60	1.90	1.90		
26-Jan-90	940	9.1		7.1	671			6.500	0.200	5.000	6.00	2.00	1.60		
31-Jan-90	1054	10.3		7.1	696			5.600	0.480	4.400	4.60	1.70	1.90		
2-Feb-90	1421	11.6		7.1	649			3.100	0.360	2.500	4.00	1.20	1.40		
7-Feb-90	1103	10.4		6.9	515			3.400	0.260	1.800	4.60	1.30	1.60		
14-Feb-90	1131	10.1		7.0	680			4.900	0.490	5.600	6.30	1.90	2.00		
20-Feb-90	1030	9.9		7.1	416			3.000	0.200	0.025	2.20	1.70	2.10		
21-Feb-90	1208	10.3		6.9	463			3.100	0.180	2.600	4.80	1.60	1.60		
28-Feb-90	1154	13.7		7.0	700			4.700	0.590	4.900	5.90	3.20	3.40		
6-Mar-90	1118	15.5		6.8	410			2.200	0.220	2.800	3.90	1.50	1.80		
14-Mar-90	1031	12.3		7.0	613			3.300	0.440	3.400	3.50	1.80	2.10		
23-Mar-90	956	16.6		7.1	749			3.800	0.720	4.200	8.50	2.70	3.00		
4-Apr-90	1216	18.8		7.0	771			10.000	1.500	2.900	61.00	3.00	3.10		
10-Apr-90	1127	18.0		7.8	751			7.600	1.030	2.500	4.20	2.50	2.60		
18-Apr-90	1115	19.5		8.5	711			4.700	0.710	0.530	3.80	2.20	2.70		
25-Apr-90	1251	21.1			682			1.900	0.480	0.060	1.30	1.90	2.60		
1-May-90	1304	20.4		8.2	692			0.750	0.280	0.230	2.10	2.70	2.90		
9-May-90	1041	19.9		7.9	704			0.110	0.014	0.100	1.10	3.20	3.40		
16-May-90	1140	21.5		8.3	1019			0.080	0.048	0.150	3.70	2.20	3.00		
24-May-90	1120	19.5	11.1		693	410	27.00	0.340	0.120	0.680	0.90	2.60	2.70	24.3	12.6
5-Jun-90	1145	23.2	19.2	8.4	363	300	16.00	0.110	0.076	0.030	3.00	1.80	1.60	19.1	17.3
12-Jun-90	1200	25.7	13.2		409	300	44.00	0.080	0.001	0.030	1.40	1.80	1.90	17.8	15.0
19-Jun-90	1040	25.9	12.2	8.7	446	290	28.00	0.090	0.001	0.030	2.50	2.30	2.60	17.5	16.4
4-Dec-90	1100							0.005	0.001	0.025	0.50	0.07	0.33	18.0	15.0
6-Dec-90	1000							0.005	0.001	0.025	0.30	0.09	0.27	24.0	19.0
11-Dec-90	1025							1.500	0.078	1.400	2.00	1.50	1.50	14.0	16.0
13-Dec-90	1000							2.400	0.082	0.910	1.40	1.50	1.80	12.0	16.0
18-Dec-90	1043							6.000	0.330	0.490	1.40	2.60	3.30	14.0	11.0
20-Dec-90	0950							7.300	0.460	0.550	1.40	2.40	2.90	14.0	20.0
27-Dec-90	0956							8.100	0.350	1.100	1.60	2.90	2.80	13.0	11.0
3-Jan-91	1000							9.700	0.390	0.140	0.68	3.30	3.40	16.0	12.0
10-Jan-91	1040	7.9	8.7	7.6	860			8.300	0.270	0.390	0.59	2.80	3.00	12.0	12.0
15-Jan-91	1010	10.6	6.4	7.7	921			6.300	0.320	1.900	2.70	2.60	2.70	16.0	14.0
23-Jan-91	1015							6.300	0.430	1.600	1.80	2.60	2.80	15.0	13.0

Appendix 3-1. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data and Nutrients, 1989-1992 (RWQCB data).

Date	Time	Temp C	DO mg/L	pH	Cond umho/cm	TFR mg/L	TURB NTU	NO3 mg/L	NO2 mg/L	NH3 mg/L	TKN mg/L	Ortho PO4 mg/L	Total PO4 mg/L	TOC mg/L	DOC mg/L
30-Jan-91	1100							5.500	0.230	0.470	0.56	2.30	2.50	25.0	12.0
2-Feb-91	1615	11.0		7.8	760			4.200	0.160	0.170	0.25	2.10	2.20		
8-Feb-91	1150	12.3	6.5	7.3	400			1.400	0.320	0.420	0.63	1.50	1.60		
10-Apr-91	1415	17.2	14.0	8.3	575			3.900	0.140	0.025	0.99	1.80	1.90		
17-Apr-91	1215	17.6	13.8		524			1.800	0.200	0.900	2.10	1.40	1.20		
29-Jan-92	1310	10	7.1	7.3	770					0.270	2.10		3.00		
Laguna de Santa Rosa upstream of confluence with Santa Rosa Creek															
30-Aug-89	0915	18.6	2.7	7.2	234	160		0.800	0.007	0.500	0.90	0.31	0.02	2.0	2.6
18-Oct-89	1000	16.4	10.4	7.0	413	270		0.740	0.027	0.490	1.20	0.81	1.00	13.0	11.0
14-Nov-89	1120	14.8	7.4	7.1	353	210		0.400	0.022	0.025	1.60	0.52	0.73	8.8	9.1
22-Jan-90	1110	9.4		6.8	525			2.800	0.180	3.400	4.40	1.80	1.60		
26-Jan-90	910	8.8		6.9	610			3.400	0.150	4.000	4.40	1.60	1.40		
31-Jan-90	1054	9.40		7.0	652			4.700	0.330	3.200	3.30	0.31	1.20		
2-Feb-90	1353	12.2		6.9	539			2.400	0.430	2.600	3.30	1.20	0.70		
7-Feb-90	1027	9.30		6.6	399			1.400	0.190	2.000	3.40	1.10	1.30		
14-Feb-90	1047	8.60		7.0	599			2.700	0.340	4.400	5.60	1.50	1.60		
21-Feb-90	1422	12.6		6.6	309			1.700	0.080	0.030	0.88	1.14	1.30		
28-Feb-90	1110	12.7		6.9	641			3.900	0.460	2.800	2.90	0.95	1.50		
6-Mar-90	1030	13.7		6.8	521			2.900	0.410	3.600	3.50	1.70	1.80		
14-Mar-90	1149	12.3		6.9	599			3.300	0.420	3.600	4.10	1.70	1.90		
23-Mar-90	918	15.6		7.0	701			3.200	0.430	6.600	6.60	2.10	2.60		
10-Apr-90	1032	16.1		7.3	696			4.300	0.590	0.460	3.10	1.70	2.00		
18-Apr-90	0957	17.3		7.0	560			2.900	0.310	0.025	3.50	1.60	2.00		
25-Apr-90	1220	20.0			622			1.200	0.150	0.140	1.90	1.30	2.20		
1-May-90	1049	19.5			624			0.450	0.170	0.100	2.80	2.30	2.70		
9-May-90	955	18.6		7.5	470			0.150	0.020	0.003	2.70	2.40	2.50		
16-May-90	1010	19.6		7.2	625			0.590	1.000	0.250	1.30	1.80	2.20		
24-May-90	1100	17.2	8.0		564		13.00	0.350	0.104	0.700	0.80	2.20	2.30	12.2	12.2
5-Jun-90	1045	20.7	1.2	7.0	334	240	10.00	0.180	0.003	0.030	3.10	2.30	2.20	20.9	17.3
12-Jun-90	1050	22.1	16.6		419	300	29.00	0.290	0.051	0.030	2.80	2.20	2.50	17.3	13.2
19-Jun-90	1005	22	6.3	7.2	374	180	28.00	0.140	0.033	0.160	2.30	1.60	1.60	10.0	9.7
4-Dec-90	1220							1.200	0.050	0.440	0.20	0.20	0.26	3.2	1.9
6-Dec-90	1030							1.300	0.034	0.120	0.20	0.19	0.26	5.3	3.7
11-Dec-90	1100							0.560	0.056	0.290	0.40	0.45	0.51	8.7	10.0
13-Dec-90	1035							2.300	0.100	0.880	1.50	1.20	1.40	14.0	14.0
18-Dec-90	1136							6.100	0.320	0.320	1.60	2.20	2.30	14.0	11.0
20-Dec-90	1025							6.100	0.410	0.380	1.10	2.00	2.70	12.0	11.0
27-Dec-90	1030							8.000	0.330	0.800	1.40	2.70	2.70	12.0	11.0
3-Jan-91	1035							9.800	0.380	0.130	0.52	3.20	3.20	14.0	9.4
10-Jan-91	1105	7.6	8.8	7.6	803			8.400	0.350	0.320	0.64	2.40	2.50	12.0	12.0
15-Jan-91	1040	11.0	7.4	7.6	866			6.500	0.350	1.500	1.60	2.30	2.60		
23-Jan-91	1050							5.700	0.450	1.100	1.50	2.10	2.50	12.0	13.0
30-Jan-91	1215							7.200	0.240	0.180	0.23	2.00	2.20	11.0	19.0

Appendix 3-1. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data and Nutrients, 1989-1992 (RWQCB data).

Date	Time	Temp C	DO mg/L	pH	.Cond umho/cm	TFR mg/L	TURB NTU	NO3 mg/L	NO2 mg/L	NH3 mg/L	TKN mg/L	Ortho PO4 mg/L	Total PO4 mg/L	TOC mg/L	DOC mg/L
8-Feb-91	1225	12.3	4.2	7.4	434			1.100	0.450	0.450	0.75	1.50	1.60	16.0	13.0
10-Apr-91	1345	16	8.1	7.7	546			2.500	0.130	0.120	0.98	1.60	1.60		
17-Apr-91	1143	16.0	7.6		485			1.400	0.160	0.100	1.80	1.20	1.40		
31-May-91	1210	22.2	9.8	7.7	510			0.220	0.100	0.025	2.80	0.98	0.72		
7-Jun-91	1520	24.1	9.4	8.0	502			0.050	0.001	0.025	1.80	0.87	1.10		
17-Jun-91	0920	19.1		6.8	290			0.110	0.040	0.025	1.10	2.00	2.00		
29-Jan-92	1530	10.9	8.2	7.4	715					0.330	1.60		3.50		
Laguna de Santa Rosa at River Road															
5-Jun-90	1245	23.2	10.2	7.6	554	230	8.00	0.100	0.001	0.030	1.80	1.20	1.20	13.6	14.2
12-Jun-90	1255	23.4	8.0		668	280	37.00	0.130	0.030	0.030	1.00	0.48	0.53	6.7	6.2
19-Jun-90	1155	23.4	6.8	7.6	861	280	34.00	0.050	0.044	0.030	0.70	0.36	0.44	4.0	3.7
Santa Rosa Creek at Melita Road															
30-Aug-89	1215	17.1	4.1	8.1	486	430		0.500	0.006	0.050	0.05	0.06	0.01	1.7	1.7
17-Oct-89	1310	16.2	12.5	8.1	495	300		0.240	0.001	0.300	0.28	0.07	0.06	2.6	2.2
14-Nov-89	1500	13.0	14.5	8.4	496	280		0.030	0.120	0.050	0.05	0.05	0.04	2.2	1.9
2-Feb-91	1245							0.810	0.001	0.025	0.13	0.11	0.33	14.0	
30-Jan-92	0920	7.2	8.8	8.3	452					0.055	0.40		0.03		
Santa Rosa Creek at Willowside Road															
30-Aug-89	1000	19.2	7.6	7.9	635	360		0.040	0.003	0.050	0.10	0.09	0.06	2.8	3.9
16-Sep-89	1215	17.2		7.8	346			0.890	0.050	0.440	5.80	0.16	0.84	24.0	24.0
16-Sep-89	950	18.5		7.9	648			0.050	0.002	0.250	1.20	0.10	0.11	5.5	4.6
27-Sep-89	1030	19.8	8.1	7.6	584	400		0.050	0.002	0.025	0.58	0.10	0.09	4.0	1.3
18-Oct-89	1040	16.7	10.1	8.1	618	360		0.040	0.003	0.120	0.30	0.10	0.06	2.4	3.2
14-Nov-89	1200	14.2	11.2	8.4	570	340		0.040	0.003	0.025	0.05	0.04	0.07	2.4	2.5
22-Jan-90	1040	7.9		7.8	446			1.600	0.022	0.025	0.42	0.10	0.12		
26-Jan-90	835	8.7		7.6	490			0.800	0.020	0.070	0.27	0.08	0.09		
29-Jan-90	2100			8.4	494			0.830	0.014	0.025	0.29	0.06	0.08		
30-Jan-90	1020			7.8	432			0.890	0.060	0.025	0.29	0.10	0.14		
30-Jan-90	1430			8.3	393			0.740	0.052	0.025	0.17	0.11	0.18		
31-Jan-90	945	9.0		7.6	407			0.860	0.030	0.025	0.58	0.06	0.10		
2-Feb-90	1325	11.6		7.9	355			0.840	0.060	0.025	0.70	0.16	0.14		
7-Feb-90	950	7.6		7.5	360			0.930	0.020	0.030	0.48	0.10	0.09		
14-Feb-90	1012	6.8		7.9	480			0.550	0.016	0.025	0.05	0.04	0.05		
20-Feb-90	1018	8.2		7.7	319			0.910	0.022	0.260	0.69	0.12	0.17		
21-Feb-90	1347	13.1		7.9	352			0.970	0.022	0.025	0.55	0.16	0.17		
28-Feb-90	1025	12.4		7.6	445			0.630	0.020	0.025	0.29	0.05	0.01		
6-Mar-90	944	12.5		7.4	211			0.790	0.030	0.260	0.87	0.21	0.20		
14-Mar-90	1206	11.6		6.9	599			0.260	0.010	0.160	0.24	0.06	0.06		
23-Mar-90	840	15.1		7.8	490			0.070	0.020	0.160	0.53	0.08	0.11		
4-Apr-90								0.640	0.040	0.150	7.20	0.06	0.08		
10-Apr-90								0.350	0.041	0.025	0.30	0.70	0.08		
18-Apr-90	1018	17		7.8	552			0.280	0.020	0.570	1.20	0.05	0.08		
25-Apr-90	1157	21.6			500			0.070	0.012	0.130	0.40	0.16	0.21		

Appendix 3-1. Laguna de Santa Rosa and Tributaries: Physical-Chemical Data and Nutrients, 1989-1992 (RWQCB data).

Date	Time	Temp C	DO mg/L	pH	Cond umho/cm	TFR mg/L	TURB NTU	NO3 mg/L	NO2 mg/L	NH3 mg/L	TKN mg/L	Ortho PO4 mg/L	Total PO4 mg/L	TOC mg/L	DOC mg/L
1-May-90	1118	19.1			559			0.015	0.001	0.070	0.30	0.06	0.07		
9-May-90	1010	18.7		7.6	470			0.040	0.001	0.025	0.30	0.08	0.10		
16-May-90	1105	20.0		8.0	866			0.050	0.001	0.025	0.70	0.08	0.20		
24-May-90	1020	17.6	9.6		336		4.00	0.540	0.033	0.025	0.11	0.11	0.13	5.6	6.3
5-Jun-90	1115	21.0	12.0	8.0	476	290	2.00	0.170	0.015	0.030	0.60	0.01	0.04	3.9	4.6
12-Jun-90	1130	21.8	7.0		532	320	1.20	0.010	0.001	0.030	0.40	0.05	0.02	3.1	3.0
19-Jun-90	0925	21.0	6.7	8.0	564	290	3.00	0.030	0.001	0.030	0.30	0.08	0.11	2.9	2.9
4-Dec-90	1200							0.005	0.001	0.025	0.05	0.05	0.05	2.9	3.0
6-Dec-90	1100							0.005	0.001	0.025	0.05	0.04	0.05	3.7	4.7
11-Dec-90	1050							0.660	0.230	0.170	0.30	0.11	0.26	9.6	12.0
13-Dec-90	1020							0.170	0.013	0.025	0.05	0.08	0.09	7.1	8.0
18-Dec-90	1116							1.100	0.041	0.025	0.33	0.31	0.31	5.9	5.5
20-Dec-90	1015							0.250	0.010	0.025	0.16	0.08	0.10	3.9	4.4
27-Dec-90	1015							0.250	0.015	0.025	0.05	0.05	0.06	3.3	2.4
3-Jan-91	1020							7.200	0.280	0.520	0.69	2.70	2.80	7.1	4.7
10-Jan-91	1055	8.0	10.8	8.0	556			6.700	0.220	0.460	0.60	2.00	2.00	6.5	5.9
15-Jan-91	1025	10.2	11.0	8.3	663			6.600	0.190	0.680	0.88	2.00	2.10		
23-Jan-91	1035							0.005	0.001	0.025	0.05	0.03	0.05	3.2	3.4
30-Jan-91	1115							0.440	0.030	0.025	0.05	0.16	0.19	3.2	3.8
2-Feb-91	1710	13.1		7.0	161			2.000	0.110	0.100	0.10	0.25	0.40	6.3	
2-Feb-91	0830	14.6		7.8	171			1.500	0.100	0.025	0.15	0.38	0.74	18.0	
2-Feb-91	1030							1.600	0.090	0.200	0.16	0.19	0.35	11.0	
8-Feb-91	1210	11.4	10.8	7.8	644			8.800	0.250	0.460	0.68	2.80	2.90	7.4	5.9
10-Apr-91	1325	15.5	12.4	7.9	558			7.500	0.150	0.290	0.69	1.70	0.69		
17-Apr-91	1130	15.3	12.4		461			7.500	0.180	0.100	0.70	1.70	1.70		
31-May-91	1155	21.1	10.0	8.3	598			0.040	0.011	0.025	1.40	0.06	0.07		
7-Jun-91	1500	24.6	9.2	8.3	615			0.050	0.001	0.025	0.42	0.08	0.09		
17-Jun-91	0850	18.7		7.5	634			0.005	0.001	0.160	1.60	0.06	0.07		
30-Jan-92	0820	10.4	8.3	7.9	489					0.310	0.83		0.15		
14-Feb-92	1030	11.3	9.8	7.7	255					0.170	1.30		0.28		
Mark West Creek at Slusser Road															
30-Aug-89	0840	16.3	3.0	6.6	575	330		1.400	0.012	0.100	0.20	0.08	0.01	1.7	2.4
17-Oct-89	0930	12.1	9.0	6.7	355	230		0.060	0.001	0.025	0.24	0.07	0.07	4.1	3.8
14-Nov-89	1030	10.8	10.1	7.5	363	230		0.005	0.003	0.025	0.10	0.10	0.10	2.8	1.1
10-Apr-91	1215	13.3	9.4	7.9	213			0.240	0.006	0.025	0.15	0.04	0.05		
17-Apr-91	1112	13.1	11.6	8.2	231			0.130	0.001	0.025	0.20	0.02	0.06		
30-May-91	1520							0.040	0.001	0.025	0.21	0.07	0.07		
18-Jun-91								0.000	0.001	0.025	0.70	0.08	0.00		
30-Jan-92	1055	8.8	11.2	8.0	319					0.025	0.35		0.05		
14-Feb-92	1300	10.8	10.4	7.7	131					0.060	1.40		0.49		

Appendix 3-2. Laguna de Santa Rosa and Tributaries: Phytoplankton and Chlorophyll Data, 1989-1990 (RWQCB data).

Date	Time	Phyto. Density mil cells/L	DIA %	GRN %	BLU %	DINO %	EUG %	Chlorophyll a ug/L	Chlorophyll b ug/L	Chlorophyll c ug/L
Laguna de Santa Rosa at Stony Point Road										
17-Oct-89	1445	0.3500	89.0	1.0	1.0	9.0	0.0			
14-Nov-89	1315	0.1070	82.0	2.0	0.0	16.0	0.0			
24-May-90	1400	0.2500	45.0	0.0	55.0	0.0	0.0	0.150	0.025	0.030
5-Jun-90	1315	0.3400	96.0	3.0	0.0	0.0	0.0	0.250	0.080	0.120
12-Jun-90	1320	0.0022	100.0	0.0	0.0	0.0	0.0	0.170	0.025	0.060
19-Jun-90	1220	0.0730	94.0	6.0	0.0	0.0	0.0	0.120	0.025	0.030
Laguna de Santa Rosa at Todd Road										
14-Nov-89	1345	0.3130	26.0	70.0	0.0	4.0	0.0			
24-May-90	1220	0.4000	100.0	0.0	0.0	0.0	0.0	0.720	0.025	0.030
5-Jun-90	1220	0.7800	63.0	35.0	0.0	0.0	0.0	0.570	0.080	0.160
12-Jun-90	1230	0.1500	94.0	6.0	0.0	0.0	0.0	0.630	0.025	0.160
19-Jun-90	1125	0.8000	97.0	3.0	0.0	0.0	0.0	0.810	0.025	0.180
Laguna de Santa Rosa at Occidental Road										
27-Sep-89	1140	2.4000	31.0	0.0	0.0	68.0	0.0			
14-Nov-89	1230	1.5500	1.0	4.0	0.0	95.0	0.0			
24-May-90	1120	0.8900	52.0	48.0	0.0	0.0	0.0	0.740	0.025	0.080
5-Jun-90	1145	0.1000	25.0	46.0	29.0	0.0	0.0	0.640	0.070	0.170
12-Jun-90	1200	0.4500	14.0	16.0	70.0	0.0	0.0	0.970	0.000	0.170
19-Jun-90	1040	1.4000	7.0	54.0	39.0	0.0	0.0	2.500	0.025	0.310
Laguna de Santa Rosa upstream of confluence with Santa Rosa Creek										
30-Aug-89	0915	0.0087	100.0	0.0	0.0	0.0	0.0			
18-Oct-89	1000	0.2600	77.0	1.0	1.0	21.0	0.0			
14-Nov-89	1120	0.9450	2.0	3.0	1.0	95.0	0.0			
24-May-90	1100	0.9700	64.0	36.0	0.0	0.0	0.0	0.360	0.000	0.090
5-Jun-90	1045	0.4600	22.0	69.0	9.0	0.0	0.0	0.400	0.240	0.320
12-Jun-90	1050	0.8600	47.0	22.0	31.0	0.0	0.0	0.930	0.025	0.190
19-Jun-90	1005	0.8700	35.0	22.0	43.0	0.0	0.0	0.520	0.025	0.030
Laguna de Santa Rosa at River Road										
5-Jun-90	1245	440000	40.0	42.0	18.0	0.0	0.0	0.220	0.080	0.140
12-Jun-90	1255	130000	70.0	13.0	17.0	0.0	0.0	0.060	0.080	0.060
19-Jun-90	1155	400000	60.0	19.0	21.0	0.0	0.0	0.550	0.490	0.600
Santa Rosa Creek at Melita Road										
30-Aug-89	1215	0.0039	99.0	0.0	1.0	0.0	0.0			
17-Oct-89	1310	0.0710	99.0	0.0	0.0	1.0	0.0			
14-Nov-89	1500	0.0024	100.0	0.0	0.0	0.0	0.0			
Santa Rosa Creek at Willowside Road										
30-Aug-89	1000	0.0310	99.0	1.0	0.0	0.0	0.0			
27-Sep-89	1030	0.1000	94.0	1.0	1.0	4.0	0.0			
18-Oct-89	1040	0.0100	97.0	1.0	1.0	1.0	0.0			
14-Nov-89	1200	0.0340	95.0	3.0	1.0	1.0	0.0			
24-May-90	1020	0.2100	100.0	0.0	0.0	0.0	0.0			
5-Jun-90	1115	0.1100	100.0	0.0	0.0	0.0	0.0			
12-Jun-90	1130	0.0044	0.0	50.0	50.0	0.0	0.0	0.070	0.025	0.030
19-Jun-90	0925	0.0180	100.0	0.0	0.0	0.0	0.0	0.040	0.025	0.030
Mark West Creek at Slusser Road										
30-Aug-89	0840	0.0037	99.0	0.0	0.0	1.0	0.0			
17-Oct-89	0930	0.0088	96.0	1.0	1.0	2.0	0.0			
14-Nov-89	1030	0.0043	54.0	16.0	0.0	30.0	0.0			

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Stony Point Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	18-Jun-92
Heavy Metals							
Arsenic	(mg/L)	0.007	0.009	0.005	0.006	0.0025 *	0.008
Cadmium	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Chromium (VI)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *	0.0025 *
Chromium (Total)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *	
Copper	(mg/L)	0.0005 *	0.01 *	0.01 *	0.01 *	0.01 *	0.01 *
Lead	(mg/L)						0.001 *
Mercury	(mg/L)	0.0005 *	0.0005 *	0.0005 *	0.0005 *	0.0005 *	0.0001 *
Nickel	(mg/L)						0.01
Selenium	(mg/L)						0.0025 *
Silver	(mg/L)						0.005 *
Zinc	(mg/L)	0.01 *	0.005 *	0.01 *	0.005 *	0.02	0.005 *
Nutrients							
Ammonia, as N	(mg/L)		0.06	0.06	0.52	0.2	
Kjeldahl, as N	(mg/L)	2.1	2.8	0.7	1.6	1.7	
Nitrate, as N	(mg/L)	0.05	0.015 *	1.5	0.09	0.41	
Nitrite,as N	(mg/L)	0.0015 *	0.0015 *	0.06	0.006	0.045	
Orthophosphate, as P	(mg/L)	0.05	0.38	0.49	0.31	0.56	
Total Phosphorus	(mg/L)	0.42	0.7	0.54	0.36	0.56	
Physical & Chemical Parameters							
Dissolved Solids	(mg/L)	850	680	190	470	230	
pH	units	8.4	8.2	7	7.7	7.3	
Alakalinity, as CaCo3							
Alakalinity,as CaCO3	(mg/L)	380	310	70	220	120	
Turbidity	NTU	26	30	7	3.9	29	
Conductance	(umhos/cm)	1500	640	250	550	330	
Chloride	(mg/L)	200					
Bacteria							
Total Coliform4	(MPN/100mL)	46	1600	2400 *	2400 *	2400 *	
Fecal Coliform4	(MPN/100mL)	46	1600	2400 *	540	2400 *	
Fecal Streptococci4	(MPN/100mL)	17	70	2400 *	2400 *	350	
Enterococcus	(col/100mL)	200	78	3000 >	220	1000	
Phytoplankton							
Density	(mil cells/L)	0.15	0.3	0.33	0.076	0.05	
Blue Green Algae	%	50	53	38	100	50	
Diatoms	%	0	29	0	0	0	
Green Algae	%	50	18	62	0	50	
Pesticides							
Aldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.01 *
alpha-BHC	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
beta-BHC	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
delta-BHC	(ug/L)		0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
Chlordane	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.2 *
1,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.025 *
1,4'-DDE	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDE	(ug/L)	0.04 *			0.04 *	0.04 *	0.025 *
1,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.025 *
Dieldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan I	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan II	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan Sulfate	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Stony Point Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	18-Jun-92
Heptachlor	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Heptaclor epoxide	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Hexachlorobenzene	(ug/L)						0.025 *
Lindane	(ug/L)	0.015 *					0.01 *
Methoxyclor	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
Mirex	(ug/L)	0.025 *	0.025 *	0.025 *	0.025 *	0.025 *	1 *
Toxaphene	(ug/L)	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *
PCB,s							
PCB-1016	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1221	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	4 *
PCB-1232	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1.5 *
PCB-1242	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1248	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1254	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1260	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
Bromodichloromethane	(ug/L)						0.2 *
Bromoform	(ug/L)						0.2 *
Bromomethane	(ug/L)						0.2 *
Carbon Tetrachloride	(ug/L)						0.2 *
Chlorobenzene	(ug/L)						0.2 *
Chloroethane	(ug/L)						0.2 *
2-Chloroethylvinyl ether	(ug/L)						0.5 *
Chloroform	(ug/L)						0.2 *
Chloromethane	(ug/L)						0.2 *
Dibromochloromethane	(ug/L)						0.2 *
1,2-Dichlorobenzene	(ug/L)						0.2 *
1,3-Dichlorobenzene	(ug/L)						0.2 *
1,4-Dichlorobenzene	(ug/L)						0.2 *
Dichlorodifluoromethane	(ug/L)						0.2 *
1,1-Dichloroethane	(ug/L)						0.2 *
1,2-Dichloroethane	(ug/L)						0.2 *
1,1-Dichloroethene	(ug/L)						0.2 *
trans-,3-Dichloroethene	(ug/L)						0.2 *
1,2-Dichloropropane	(ug/L)						0.2 *
cis-1,3-Dichloropropene	(ug/L)						0.2 *
trans-1,3-Dichloropropene	(ug/L)						0.2 *
Methelene chloride	(ug/L)						5 *
1,1,2,2-Tetrachloroethane	(ug/L)						0.2 *
Tetrachloroethene	(ug/L)						0.2 *
1,1,1-Trichloroethane	(ug/L)						0.2 *
1,1,2-Trichloroethane	(ug/L)						0.2 *
Trichoroethene	(ug/L)						0.2 *
Trichlorofluoromethane	(ug/L)						0.2 *
Vinyl chloride	(ug/L)						0.2 *
Benzene	(ug/L)						0.25 *
Ethylbenzene	(ug/L)						0.3 *
Toluene	(ug/L)						0.25 *
Xylenes (total)	(ug/L)						0.3 *
4-Chloro-3-methylphenyl	(ug/L)						1.5 *
2-Chlorophenol	(ug/L)						1.5 *
2,4-Dichorophenol	(ug/L)						1.5 *
2,4-Dimethylphenol	(ug/L)						1.5 *
2,4-Dinitrophenol	(ug/L)						5 *
2-Methyl-4,6-dinitrophenol	(ug/L)						5 *
2-Nitrophenol	(ug/L)						2 *
4-Nitrophenol	(ug/L)						2 *

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Stony Point Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	18-Jun-92
Pentachlorophenol	(ug/L)						5 *
Phenol	(ug/L)						0.5 *
2,4,6-Trichlorophenol	(ug/L)						2.5 *
Acenaphthene	(ug/L)						0.5 *
Acenaphthylene	(ug/L)						0.5 *
Anthracene	(ug/L)						0.5 *
Benzo(a)anthracene	(ug/L)						1 *
Benzo(b)fluoranthene	(ug/L)						1 *
Benzo(k)fluoranthene	(ug/L)						1 *
Benzo(a)pyrene	(ug/L)						1 *
Benzo(g,h,i)perylene	(ug/L)						2.5 *
Chrysene	(ug/L)						1 *
Dibenzo(a,h)anthracene	(ug/L)						2.5 *
Fluorathene	(ug/L)						0.5 *
Fluorene	(ug/L)						0.5 *
Indeno(1,2,3-cd)pyrene	(ug/L)						2.5 *
Naphthene	(ug/L)						0.5 *
Phenanthrene	(ug/L)						0.5 *
Pyrene	(ug/L)						0.5 *

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Todd Rd.	Hwy 12	Occidental Road			
Parameter	Units	18-Jun-92	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86
Heavy Metals							
Arsenic	(mg/L)	0.0025 *	0.005 *	0.01	0.0025 *	0.005 *	0.005 *
Cadmium	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Chromium (VI)	(mg/L)	0.0025 *	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *
Chromium (Total)	(mg/L)		0.005 *	0.005 *	0.005 *	0.005 *	0.005 *
Copper	(mg/L)	0.01 *	0.0005 *	0.01 *	0.01 *	0.01 *	0.01 *
Lead	(mg/L)	0.001 *					
Mercury	(mg/L)	0.0001 *	0.0005 *	0.0005 *	0.0005 *	0.0005 *	0.0005 *
Nickel	(mg/L)	0.013					
Selenium	(mg/L)	0.0025 *					
Silver	(mg/L)	0.005 *					
Zinc	(mg/L)	0.005 *	0.01 *	0.005 *	0.01 *	0.005 *	0.01
Nutrients							
Ammonia, as N	(mg/L)			0.05	0.025 *	0.17	3
Kjeldahl, as N	(mg/L)		2.1	4	0.6	1.8	5.1
Nitrate, as N	(mg/L)		0.06	0.17	0.94	0.7	1.1
Nitrite,as N	(mg/L)		0.0015 *	0.001	0.05	0.044	0.04
Orthophosphate, as P	(mg/L)		0.92	0.89	0.53	0.98	1.7
Total Phosphorus	(mg/L)		1.2	1.7	0.57	1	1.8
Physical & Chemical Parameters							
Dissolved Solids	(mg/L)		330	480	200	440	240
pH	units		8	8.6	7.2	8	7
Alakalinity, as CaCo3							
Alakalinity,as CaCO3	(mg/L)		200	280	110	160	120
Turbidity .	NTU		20	1	13	6.5	30
Conductance	(umhos/cm)		530	480	200	510	370
Chloride	(mg/L)		45				
Bacteria							
Total Coliform4	(MPN/100mL)		46	2400 *	2400 *	2400 *	2400 *
Fecal Coliform4	(MPN/100mL)		46	2400 *	2400 *	2400 *	2400 *
Fecal Streptococci4	(MPN/100mL)		13	2400 *	2400 *	540	2400 *
Enterococcus	(col/100mL)		12	3000	160	110	100
Phytoplankton							
Density	(mil cells/L)		0.15	7.4	0.96	0.33	0.33
Blue Green Algae	%		0	7	24	23	69
Diatoms	%		0	54	32	0	0
Green Algae	%		100	39	44	77	31
Pesticides							
Aldrin	(ug/L)	0.01 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
alpha-BHC	(ug/L)	0.0025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
beta-BHC	(ug/L)	0.0025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
delta-BHC	(ug/L)	0.0025 *		0.015 *	0.015 *	0.015 *	0.015 *
Chlordane	(ug/L)	0.2 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
1,4'-DDD	(ug/L)		0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
4,4'-DDD	(ug/L)	0.025 *	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
1,4'-DDE	(ug/L)		0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
4,4'-DDE	(ug/L)	0.025 *	0.04 *			0.04 *	0.04 *
1,4'-DDT	(ug/L)		0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
4,4'-DDT	(ug/L)	0.025 *	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
Dieldrin	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endosulfan I	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endosulfan II	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endosulfan Sulfate	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endrin	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Todd Rd.	Hwy 12	Occidental Road			
Parameter	Units	18-Jun-92	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86
Heptachlor	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Heptaclor epoxide	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Hexachlorobenzene	(ug/L)	0.025 *					
Lindane	(ug/L)	0.01 *	0.015 *				
Methoxyclor	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
Mirex	(ug/L)	1 *	0.025 *	0.025 *	0.025 *	0.025 *	0.025 *
Toxaphene	(ug/L)	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *
PCB,s							
PCB-1016	(ug/L)	1 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1221	(ug/L)	4 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1232	(ug/L)	1.5 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1242	(ug/L)	1 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1248	(ug/L)	1 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1254	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1260	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
Bromodichloromethane	(ug/L)	0.2 *					
Bromoform	(ug/L)	0.2 *					
Bromomethane	(ug/L)	0.2 *					
Carbon Tetrachloride	(ug/L)	0.2 *					
Chlorobenzene	(ug/L)	0.2 *					
Chloroethane	(ug/L)	0.2 *					
2-Chloroethylvinyl ether	(ug/L)	0.5 *					
Chloroform	(ug/L)	0.2 *					
Chloromethane	(ug/L)	0.2 *					
Dibromochloromethane	(ug/L)	0.2 *					
1,2-Dichlorobenzene	(ug/L)	0.2 *					
1,3-Dichlorobenzene	(ug/L)	0.2 *					
1,4-Dichlorobenzene	(ug/L)	0.2 *					
Dichlorodifluoromethane	(ug/L)	0.2 *					
1,1-Dichloroethane	(ug/L)	0.2 *					
1,2-Dichloroethane	(ug/L)	0.2 *					
1,1-Dichloroethene	(ug/L)	0.2 *					
trans-,3-Dichloroethene	(ug/L)	0.2 *					
1,2-Dichloropropane	(ug/L)	0.2 *					
cis-1,3-Dichloropropene	(ug/L)	0.2 *					
trans-1,3-Dichloropropene	(ug/L)	0.2 *					
Methelene chloride	(ug/L)	5 *					
1,1,2,2-Tetrachloroethane	(ug/L)	0.2 *					
Tetrachloroethene	(ug/L)	0.2 *					
1,1,1-Trichloroethane	(ug/L)	0.2 *					
1,1,2-Trichloroethane	(ug/L)	0.2 *					
Trichoroethene	(ug/L)	0.2 *					
Trichlorofluoromethane	(ug/L)	0.2 *					
Vinyl chloride	(ug/L)	0.2 *					
Benzene	(ug/L)	0.25 *					
Ethylbenzene	(ug/L)	0.3 *					
Toluene	(ug/L)	0.25 *					
Xylenes (total)	(ug/L)	0.3 *					
4-Chloro-3-methylphenyl	(ug/L)	1.5 *					
2-Chlorophenol	(ug/L)	1.5 *					
2,4-Dichorophenol	(ug/L)	1.5 *					
2,4-Dimethylphenol	(ug/L)	1.5 *					
2,4-Dinitrophenol	(ug/L)	5 *					
2-Methyl-4,6-dinitrophenol	(ug/L)	5 *					
2-Nitrophenol	(ug/L)	2 *					
4-Nitrophenol	(ug/L)	2 *					

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Todd Rd.	Hwy 12	Occidental Road			
Parameter	Units	18-Jun-92	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86
Pentachlorophenol	(ug/L)	5 *					
Phenol	(ug/L)	0.5 *					
2,4,6-Trichlorophenol	(ug/L)	2.5 *					
Acenaphthene	(ug/L)	0.5 *					
Acenaphthylene	(ug/L)	0.5 *					
Anthracene	(ug/L)	0.5 *					
Benzo(a)anthracene	(ug/L)	1 *					
Benzo(b)fluoranthene	(ug/L)	1 *					
Benzo(k)fluoranthene	(ug/L)	1 *					
Benzo(a)pyrene	(ug/L)	1 *					
Benzo(g,h,i)perylene	(ug/L)	2.5 *					
Chrysene	(ug/L)	1 *					
Dibenzo(a,h)anthracene	(ug/L)	2.5 *					
Fluorathene	(ug/L)	0.5 *					
Fluorene	(ug/L)	0.5 *					
Indeno(1,2,3-cd)pyrene	(ug/L)	2.5 *					
Naphthene	(ug/L)	0.5 *					
Phenanthrene	(ug/L)	0.5 *					
Pyrene	(ug/L)	0.5 *					

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Occ. Rd.	Upstream of Confluence with Santa Rosa Creek				
Parameter	Units	18-Jun-92	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86
Heavy Metals							
Arsenic	(mg/L)	0.005	0.005 *	0.005	0.0025 *	0.0025 *	0.0025 *
Cadmium	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Chromium (VI)	(mg/L)	0.0025 *	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *
Chromium (Total)	(mg/L)		0.005 *	0.005 *	0.005 *	0.005 *	0.005 *
Copper	(mg/L)	0.01 *	0.0005 *	0.01 *	0.01 *	0.01 *	0.01 *
Lead	(mg/L)	0.001 *					
Mercury	(mg/L)	0.0001 *	0.0005 *	0.0005 *	0.0005 *	0.0005 *	0.0005 *
Nickel	(mg/L)	0.017					
Selenium	(mg/L)	0.0025 *					
Silver	(mg/L)	0.005 *					
Zinc	(mg/L)	0.005 *	0.01 *	0.005 *	0.005 *	0.01	0.01
Nutrients							
Ammonia, as N	(mg/L)			0.025 *	0.1	0.24	1.7
Kjeldahl, as N	(mg/L)		1.3	1	0.1 *	1.5	3.9
Nitrate, as N	(mg/L)		0.05	0.12	0.015 *	0.26	0.9
Nitrite,as N	(mg/L)		0.006	0.0015 *	0.0015 *	0.006	0.034
Orthophosphate, as P	(mg/L)		1	0.74	0.08	0.5	1.4
Total Phosphorus	(mg/L)		1.3	0.91	0.08	0.92	1.5
Physical & Chemical Parameters							
Dissolved Solids	(mg/L)		200	190	200	310	240
pH	units		8	8.2	7.1	7.2	7
Alakalinity, as CaCo3							
Alakalinity,as CaCO3	(mg/L)		120	120	160	140	110
Turbidity .	NTU		54	29	0.8	5.1	28
Conductance	(umhos/cm)		200	200	330	400	360
Chloride	(mg/L)		9				
Bacteria							
Total Coliform4	(MPN/100mL)		110	2400 *	2400 *	2400 *	2400 *
Fecal Coliform4	(MPN/100mL)		46	920	540	1600	920
Fecal Streptococci4	(MPN/100mL)		21	95	2400 *	540	2400 *
Enterococcus	(col/100mL)		40	77	3000 >	100	2000
Phytoplankton							
Density	(mil cells/L)		0.05	0.51	0.28	0.23	0.78
Blue Green Algae	%		50	85	55	11	32
Diatoms	%		0	0	9	22	6
Green Algae	%		50	15	36	67	62
Pesticides							
Aldrin	(ug/L)	0.01 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
alpha-BHC	(ug/L)	0.0025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
beta-BHC	(ug/L)	0.0025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
delta-BHC	(ug/L)	0.0025 *		0.015 *	0.015 *	0.015 *	0.015 *
Chlordane	(ug/L)	0.2 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
1,4'-DDD	(ug/L)		0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
4,4'-DDD	(ug/L)	0.025 *	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
1,4'-DDE	(ug/L)		0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
4,4'-DDE	(ug/L)	0.025 *	0.04 *			0.04 *	0.04 *
1,4'-DDT	(ug/L)		0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
4,4'-DDT	(ug/L)	0.025 *	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
Dieldrin	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endosulfan I	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endosulfan II	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endosulfan Sulfate	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endrin	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Occ. Rd.	Upstream of Confluence with Santa Rosa Creek				
Parameter	Units	18-Jun-92	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86
Heptachlor	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Heptaclor epoxide	(ug/L)	0.025 *	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Hexachlorobenzene	(ug/L)	0.025 *					
Lindane	(ug/L)	0.01 *	0.015 *				
Methoxyclor	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
Mirex	(ug/L)	1 *	0.025 *	0.025 *	0.025 *	0.025 *	0.025 *
Toxaphene	(ug/L)	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *
PCB,s							
PCB-1016	(ug/L)	1 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1221	(ug/L)	4 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1232	(ug/L)	1.5 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1242	(ug/L)	1 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1248	(ug/L)	1 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1254	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1260	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
Bromodichloromethane	(ug/L)	0.2 *					
Bromoform	(ug/L)	0.2 *					
Bromomethane	(ug/L)	0.2 *					
Carbon Tetrachloride	(ug/L)	0.2 *					
Chlorobenzene	(ug/L)	0.2 *					
Chloroethane	(ug/L)	0.2 *					
2-Chloroethylvinyl ether	(ug/L)	0.5 *					
Chloroform	(ug/L)	0.2 *					
Chloromethane	(ug/L)	0.2 *					
Dibromochloromethane	(ug/L)	0.2 *					
1,2-Dichlorobenzene	(ug/L)	0.2 *					
1,3-Dichlorobenzene	(ug/L)	0.2 *					
1,4-Dichlorobenzene	(ug/L)	0.2 *					
Dichlorodifluoromethane	(ug/L)	0.2 *					
1,1-Dichloroethane	(ug/L)	0.2 *					
1,2-Dichloroethane	(ug/L)	0.2 *					
1,1-Dichloroethene	(ug/L)	0.2 *					
trans-,3-Dichloroethene	(ug/L)	0.2 *					
1,2-Dichloropropane	(ug/L)	0.2 *					
cis-1,3-Dichloropropene	(ug/L)	0.2 *					
trans-1,3-Dichloropropene	(ug/L)	0.2 *					
Methelene chloride	(ug/L)	5 *					
1,1,2,2-Tetrachloroethane	(ug/L)	0.2 *					
Tetrachloroethene	(ug/L)	0.2 *					
1,1,1-Trichloroethane	(ug/L)	0.2 *					
1,1,2-Trichloroethane	(ug/L)	0.2 *					
Trichoroethene	(ug/L)	0.2 *					
Trichlorofluoromethane	(ug/L)	0.2 *					
Vinyl chloride	(ug/L)	0.2 *					
Benzene	(ug/L)	0.25 *					
Ethylbenzene	(ug/L)	0.3 *					
Toluene	(ug/L)	0.25 *					
Xylenes (total)	(ug/L)	0.3 *					
4-Chloro-3-methylphenyl	(ug/L)	1.5 *					
2-Chlorophenol	(ug/L)	1.5 *					
2,4-Dichorophenol	(ug/L)	1.5 *					
2,4-Dimethylphenol	(ug/L)	1.5 *					
2,4-Dinitrophenol	(ug/L)	5 *					
2-Methyl-4,6-dinitrophenol	(ug/L)	5 *					
2-Nitrophenol	(ug/L)	2 *					
4-Nitrophenol	(ug/L)	2 *					

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Occ. Rd.	Upstream of Confluence with Santa Rosa Creek				
Parameter	Units	18-Jun-92	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86
Pentachlorophenol	(ug/L)	5 *					
Phenol	(ug/L)	0.5 *					
2,4,6-Trichlorophenol	(ug/L)	2.5 *					
Acenaphthene	(ug/L)	0.5 *					
Acenaphthylene	(ug/L)	0.5 *					
Anthracene	(ug/L)	0.5 *					
Benzo(a)anthracene	(ug/L)	1 *					
Benzo(b)fluoranthene	(ug/L)	1 *					
Benzo(k)fluoranthene	(ug/L)	1 *					
Benzo(a)pyrene	(ug/L)	1 *					
Benzo(g,h,i)perylene	(ug/L)	2.5 *					
Chrysene	(ug/L)	1 *					
Dibenzo(a,h)anthracene	(ug/L)	2.5 *					
Fluorathene	(ug/L)	0.5 *					
Fluorene	(ug/L)	0.5 *					
Indeno(1,2,3-cd)pyrene	(ug/L)	2.5 *					
Naphthene	(ug/L)	0.5 *					
Phenanthrene	(ug/L)	0.5 *					
Pyrene	(ug/L)	0.5 *					

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Trenton-Healdsburg Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	31-Mar-92
Heavy Metals							
Arsenic	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Cadmium	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Chromium (VI)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *	0.0025 *
Chromium (Total)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.01 *	
Copper	(mg/L)	0.0005 *	0.01 *	0.01 *	0.01 *	0.01 *	0.01 *
Lead	(mg/L)						0.001 *
Mercury	(mg/L)	0.001 *	0.0005 *	0.0005 *	0.0005 *	0.0005 *	0.0001 *
Nickel	(mg/L)						0.008
Selenium	(mg/L)						0.0025 *
Silver	(mg/L)						0.005 *
Zinc	(mg/L)	0.01 *	0.005 *	0.005 *	0.005 *	0.01	0.01
Nutrients							
Ammonia, as N	(mg/L)		0.025 *	0.07	0.025 *	0.95	
Kjeldahl, as N	(mg/L)	0.8	0.4	0.7	0.5	3.3	
Nitrate, as N	(mg/L)	0.04	0.015 *	0.22	0.05	0.88	
Nitrite,as N	(mg/L)	0.0015 *	0.004	0.011	0.003	0.033	
Orthophosphate, as P	(mg/L)	0.37	0.25	0.29	0.35	1	
Total Phosphorus	(mg/L)	0.46	0.28	0.52	0.36	1	
Physical & Chemical Parameters							
Dissolved Solids	(mg/L)	290	330	71	300	210	
pH	units	7.9	7.8	7.5	8	7.2	
Alakalinity, as CaCo3							
Alakalinity,as CaCO3	(mg/L)	220	250	150	200	100	
Turbidity .	NTU	15	1.6	2.3	1.2	26	
Conductance	(umhos/cm)	430	360	350	430	300	
Chloride	(mg/L)	22					
Bacteria							
Total Coliform4	(MPN/100mL)	23	2400 *	2400 *	350	1600	
Fecal Coliform4	(MPN/100mL)	23	130	540	79	920	
Fecal Streptococci4	(MPN/100mL)	220	2400 *	110	170	2400 *	
Enterococcus	(col/100mL)	36	30	8	58	1500	
Phytoplankton							
Density	(mil cells/L)	0.076	0	0.53	0.23	1.44	
Blue Green Algae	%	67	0	14	0	82	
Diatoms	%	0	0	0	0	2	
Green Algae	%	33	0	86	100	16	
Pesticides							
Aldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.01 *
alpha-BHC	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
beta-BHC	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
delta-BHC	(ug/L)		0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
Chlordane	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.2 *
1,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.025 *
1,4'-DDE	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDE	(ug/L)	0.04 *			0.04 *	0.04 *	0.025 *
1,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.025 *
Dieldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan I	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan II	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan Sulfate	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Trenton-Healdsburg Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	31-Mar-92
Heptachlor	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Heptaclor epoxide	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Hexachlorobenzene	(ug/L)						0.025 *
Lindane	(ug/L)	0.015 *					0.01 *
Methoxyclor	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
Mirex	(ug/L)	0.025 *	0.025 *	0.025 *	0.025 *	0.025 *	1 *
Toxaphene	(ug/L)	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *
PCB,s							
PCB-1016	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1221	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	4 *
PCB-1232	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1.5 *
PCB-1242	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1248	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1254	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1260	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
Bromodichloromethane	(ug/L)						
Bromoform	(ug/L)						
Bromomethane	(ug/L)						
Carbon Tetrachloride	(ug/L)						
Chlorobenzene	(ug/L)						
Chloroethane	(ug/L)						
2-Chloroethylvinyl ether	(ug/L)						
Chloroform	(ug/L)						
Chloromethane	(ug/L)						
Dibromochloromethane	(ug/L)						
1,2-Dichlorobenzene	(ug/L)						
1,3-Dichlorobenzene	(ug/L)						
1,4-Dichlorobenzene	(ug/L)						
Dichlorodifluoromethane	(ug/L)						
1,1-Dichloroethane	(ug/L)						
1,2-Dichloroethane	(ug/L)						
1,1-Dichloroethene	(ug/L)						
trans-,3-Dichloroethene	(ug/L)						
1,2-Dichloropropane	(ug/L)						
cis-1,3-Dichloropropene	(ug/L)						
trans-1,3-Dichloropropene	(ug/L)						
Methelene chloride	(ug/L)						
1,1,2,2-Tetrachloroethane	(ug/L)						
Tetrachloroethene	(ug/L)						
1,1,1-Trichloroethane	(ug/L)						
1,1,2-Trichloroethane	(ug/L)						
Trichoroethene	(ug/L)						
Trichlorofluoromethane	(ug/L)						
Vinyl chloride	(ug/L)						
Benzene	(ug/L)						
Ethylbenzene	(ug/L)						
Toluene	(ug/L)						
Xylenes (total)	(ug/L)						
4-Chloro-3-methylphenyl	(ug/L)						1.5 *
2-Chlorophenol	(ug/L)						1.5 *
2,4-Dichorophenol	(ug/L)						1.5 *
2,4-Dimethylphenol	(ug/L)						1.5 *
2,4-Dinitrophenol	(ug/L)						5 *
2-Methyl-4,6-dinitrophenol	(ug/L)						5 *
2-Nitrophenol	(ug/L)						2 *
4-Nitrophenol	(ug/L)						2 *

Appendix 4-1. Laguna de Santa Rosa: Metals, Organics and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Laguna de Santa Rosa					
		Trenton-Healdsburg Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	31-Mar-92
Pentachlorophenol	(ug/L)						5 *
Phenol	(ug/L)						0.5 *
2,4,6-Trichlorophenol	(ug/L)						2.5 *
Acenaphthene	(ug/L)						
Acenaphthylene	(ug/L)						
Anthracene	(ug/L)						
Benzo(a)anthracene	(ug/L)						
Benzo(b)fluoranthene	(ug/L)						
Benzo(k)fluoranthene	(ug/L)						
Benzo(a)pyrene	(ug/L)						
Benzo(g,h,i)perylene	(ug/L)						
Chrysene	(ug/L)						
Dibenzo(a,h)anthracene	(ug/L)						
Fluorathene	(ug/L)						
Fluorene	(ug/L)						
Indeno(1,2,3-cd)pyrene	(ug/L)						
Naphthene	(ug/L)						
Phenanthrene	(ug/L)						
Pyrene	(ug/L)						

Appendix 4-2. Santa Rosa Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Santa Rosa Creek					
		Melita Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	18-Jun-92
Heavy Metals							
Arsenic	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Cadmium	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Chromium (VI)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *	0.0025 *
Chromium (Total)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *	
Copper	(mg/L)	0.0005 *	0.01 *	0.01 *	0.01 *	0.01 *	0.01 *
Lead	(mg/L)						0.001 *
Mercury	(mg/L)	0.0005 *	0.0005 *	0.0005 *	0.0005 *	0.0005 *	0.0001 *
Nickel	(mg/L)						0.0025 *
Selenium	(mg/L)						0.0025 *
Silver	(mg/L)						0.005 *
Zinc	(mg/L)	0.01 *	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *
Nutrients							
Ammonia, as N	(mg/L)		0.025 *	0.07	0.14	0.025 *	
Kjeldahl, as N	(mg/L)	0.05 *	0.6	0.8	0.3	0.12	
Nitrate, as N	(mg/L)	0.23	0.015 *	0.83	0.27	0.78	
Nitrite,as N	(mg/L)	0.003	0.0015 *	0.03	0.0015 *	0.0015 *	
Orthophosphate, as P	(mg/L)	0.06	0.11	0.26	0.09	0.01 *	
Total Phosphorus	(mg/L)	0.08	0.14	0.3	0.1	0.09	
Physical & Chemical Parameters							
Dissolved Solids	(mg/L)	220	260	220	240	190	
pH	units	7.9	7.9	7.9	7.9	8	
Alakalinity, as CaCo3							
Alakalinity,as CaCO3	(mg/L)	170	180	150	160	120	
Turbidity .	NTU	0.6	0.61	1.9	0.25 *	3.3	
Conductance	(umhos/cm)	360	260	280	280	290	
Chloride	(mg/L)	9					
Bacteria							
Total Coliform4	(MPN/100mL)	920	1600	2400 *	2400 *	2400 *	
Fecal Coliform4	(MPN/100mL)	920	350	2400 *	170	49	
Fecal Streptococci4	(MPN/100mL)	430	2400 *	2400 *	1600	1600	
Enterococcus	(col/100mL)	200	280	3000 >	340	250	
Phytoplankton							
Density	(mil cells/L)	0.025	0.38	0.83	0.076	0.15	
Blue Green Algae	%	0	73	52	100	100	
Diatoms	%	0	0	3	0	0	
Green Algae	%	100	27	45	0	0	
Pesticides							
Aldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.01 *
alpha-BHC	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
beta-BHC	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
delta-BHC	(ug/L)		0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
Chlordane	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.2 *
1,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.025 *
1,4'-DDE	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDE	(ug/L)	0.04 *			0.04 *	0.04 *	0.025 *
1,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.025 *
Dieldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan I	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan II	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan Sulfate	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *

Appendix 4-2. Santa Rosa Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Santa Rosa Creek					
		Melita Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	18-Jun-92
Heptachlor	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Heptaclor epoxide	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Hexachlorobenzene	(ug/L)						0.025 *
Lindane	(ug/L)	0.015 *					0.01 *
Methoxyclor	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
Mirex	(ug/L)	0.025 *	0.025 *	0.025 *	0.025 *	0.025 *	1 *
Toxaphene	(ug/L)	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *
PCB,s							
PCB-1016	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1221	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	4 *
PCB-1232	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1.5 *
PCB-1242	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1248	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1254	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1260	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
Bromodichloromethane	(ug/L)						0.2 *
Bromoform	(ug/L)						0.2 *
Bromomethane	(ug/L)						0.2 *
Carbon Tetrachloride	(ug/L)						0.2 *
Chlorobenzene	(ug/L)						0.2 *
Chloroethane	(ug/L)						0.2 *
2-Chloroethylvinyl ether	(ug/L)						0.5 *
Chloroform	(ug/L)						0.2 *
Chloromethane	(ug/L)						0.2 *
Dibromochloromethane	(ug/L)						0.2 *
1,2-Dichlorobenzene	(ug/L)						0.2 *
1,3-Dichlorobenzene	(ug/L)						0.2 *
1,4-Dichlorobenzene	(ug/L)						0.2 *
Dichlorodifluoromethane	(ug/L)						0.2 *
1,1-Dichloroethane	(ug/L)						0.2 *
1,2-Dichloroethane	(ug/L)						0.2 *
1,1-Dichloroethene	(ug/L)						0.2 *
trans-,3-Dichloroethene	(ug/L)						0.2 *
1,2-Dichloropropane	(ug/L)						0.2 *
cis-1,3-Dichloropropene	(ug/L)						0.2 *
trans-1,3-Dichloropropene	(ug/L)						0.2 *
Methelene chloride	(ug/L)						5 *
1,1,2,2-Tetrachloroethane	(ug/L)						0.2 *
Tetrachloroethene	(ug/L)						0.2 *
1,1,1-Trichloroethane	(ug/L)						0.2 *
1,1,2-Trichloroethane	(ug/L)						0.2 *
Trichoroethene	(ug/L)						0.2 *
Trichlorofluoromethane	(ug/L)						0.2 *
Vinyl chloride	(ug/L)						0.2 *
Benzene	(ug/L)						0.25 *
Ethylbenzene	(ug/L)						0.3 *
Toluene	(ug/L)						0.25 *
Xylenes (total)	(ug/L)						0.3 *
4-Chloro-3-methylphenyl	(ug/L)						1.5 *
2-Chlorophenol	(ug/L)						1.5 *
2,4-Dichorophenol	(ug/L)						1.5 *
2,4-Dimethylphenol	(ug/L)						1.5 *
2,4-Dinitrophenol	(ug/L)						5 *
2-Methyl-4,6-dinitrophenol	(ug/L)						5 *
2-Nitrophenol	(ug/L)						2 *
4-Nitrophenol	(ug/L)						2 *

Appendix 4-2. Santa Rosa Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Santa Rosa Creek					
		Melita Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	18-Jun-92
Pentachlorophenol	(ug/L)						5 *
Phenol	(ug/L)						0.5 *
2,4,6-Trichlorophenol	(ug/L)						2.5 *
Acenaphthene	(ug/L)						0.5 *
Acenaphthylene	(ug/L)						0.5 *
Anthracene	(ug/L)						0.5 *
Benzo(a)anthracene	(ug/L)						1 *
Benzo(b)fluoranthene	(ug/L)						1 *
Benzo(k)fluoranthene	(ug/L)						1 *
Benzo(a)pyrene	(ug/L)						1 *
Benzo(g,h,i)perylene	(ug/L)						2.5 *
Chrysene	(ug/L)						1 *
Dibenzo(a,h)anthracene	(ug/L)						2.5 *
Fluorathene	(ug/L)						0.5 *
Fluorene	(ug/L)						0.5 *
Indeno(1,2,3-cd)pyrene	(ug/L)						2.5 *
Naphthene	(ug/L)						0.5 *
Phenanthrene	(ug/L)						0.5 *
Pyrene	(ug/L)						0.5 *

Appendix 4-2. Santa Rosa Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Santa Rosa Creek					
		Stony Point Road					Fulton Rd.
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	18-Jun-92
Heavy Metals							
Arsenic	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Cadmium	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Chromium (VI)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *	0.0025 *
Chromium (Total)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *	
Copper	(mg/L)	0.0005 *	0.01 *	0.01 *	0.01 *	0.01 *	0.01 *
Lead	(mg/L)						0.001 *
Mercury	(mg/L)	0.0005 *	0.0005 *	0.0005 *	0.0005 *	0.0005 *	0.0001 *
Nickel	(mg/L)						0.0025 *
Selenium	(mg/L)						0.0025 *
Silver	(mg/L)						0.005 *
Zinc	(mg/L)	0.01 *	0.005 *	0.005 *	0.01	0.005 *	0.005 *
Nutrients							
Ammonia, as N	(mg/L)		0.025 *	0.025 *	0.11	0.05	
Kjeldahl, as N	(mg/L)	0.3	0.5	0.2	0.3	0.37	
Nitrate, as N	(mg/L)	0.03	0.015 *	0.89	0.24	0.5	
Nitrite,as N	(mg/L)	0.005	0.005	0.03	0.004	0.007	
Orthophosphate, as P	(mg/L)	0.05	0.07	0.21	0.07	0.09	
Total Phosphorus	(mg/L)	0.06	0.08	0.22	0.09	0.14	
Physical & Chemical Parameters							
Dissolved Solids	(mg/L)	320	320	190	310	220	
pH	units	8.2	8.3	7.6	8.1	8	
Alakalinity, as CaCo3							
Alakalinity,as CaCO3	(mg/L)	240	250	120	240	150	
Turbidity .	NTU	5.4	1.4	2.6	0.2	11	
Conductance	(umhos/cm)	510	360	240	400	320	
Chloride	(mg/L)	18					
Bacteria							
Total Coliform4	(MPN/100mL)	920	2400 *	2400 *	350	2400 *	
Fecal Coliform4	(MPN/100mL)	280	350	2400 *	170	2400 *	
Fecal Streptococci4	(MPN/100mL)	180	54	2400 *	350	2400 *	
Enterococcus	(col/100mL)	200	10	3000 >	32	3000 >	
Phytoplankton							
Density	(mil cells/L)	0.076	0.1	0.4	0.18	0.08	
Blue Green Algae	%	0	50	56	14	100	
Diatoms	%	33	0	6	0	0	
Green Algae	%	67	50	38	86	0	
Pesticides							
Aldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.01 *
alpha-BHC	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
beta-BHC	(ug/L)	0.015 *	0.015 *	1.1	0.015 *	0.015 *	0.0025 *
delta-BHC	(ug/L)		0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
Chlordane	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.2 *
1,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.025 *
1,4'-DDE	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDE	(ug/L)	0.04 *			0.04 *	0.04 *	0.025 *
1,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.025 *
Dieldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan I	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan II	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan Sulfate	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *

Appendix 4-2. Santa Rosa Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Santa Rosa Creek					
		Stony Point Road					Fulton Rd.
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	18-Jun-92
Heptachlor	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Heptaclor epoxide	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Hexachlorobenzene	(ug/L)						0.025 *
Lindane	(ug/L)	0.015 *					0.01 *
Methoxyclor	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
Mirex	(ug/L)	0.025 *	0.025 *	0.025 *	0.025 *	0.025 *	1 *
Toxaphene	(ug/L)	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *
PCB,s							
PCB-1016	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1221	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	4 *
PCB-1232	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1.5 *
PCB-1242	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1248	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1254	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1260	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
Bromodichloromethane	(ug/L)						0.2 *
Bromoform	(ug/L)						0.2 *
Bromomethane	(ug/L)						0.2 *
Carbon Tetrachloride	(ug/L)						0.2 *
Chlorobenzene	(ug/L)						0.2 *
Chloroethane	(ug/L)						0.2 *
2-Chloroethylvinyl ether	(ug/L)						0.5 *
Chloroform	(ug/L)						0.2 *
Chloromethane	(ug/L)						0.2 *
Dibromochloromethane	(ug/L)						0.2 *
1,2-Dichlorobenzene	(ug/L)						0.2 *
1,3-Dichlorobenzene	(ug/L)						0.2 *
1,4-Dichlorobenzene	(ug/L)						0.2 *
Dichlorodifluoromethane	(ug/L)						0.2 *
1,1-Dichloroethane	(ug/L)						0.2 *
1,2-Dichloroethane	(ug/L)						0.2 *
1,1-Dichloroethene	(ug/L)						0.2 *
trans-,3-Dichloroethene	(ug/L)						0.2 *
1,2-Dichloropropane	(ug/L)						0.2 *
cis-1,3-Dichloropropene	(ug/L)						0.2 *
trans-1,3-Dichloropropene	(ug/L)						0.2 *
Methelene chloride	(ug/L)						5 *
1,1,2,2-Tetrachloroethane	(ug/L)						0.2 *
Tetrachloroethene	(ug/L)						0.2 *
1,1,1-Trichloroethane	(ug/L)						0.2 *
1,1,2-Trichloroethane	(ug/L)						0.2 *
Trichoroethene	(ug/L)						0.2 *
Trichlorofluoromethane	(ug/L)						0.2 *
Vinyl chloride	(ug/L)						0.2 *
Benzene	(ug/L)						0.25 *
Ethylbenzene	(ug/L)						0.3 *
Toluene	(ug/L)						0.25 *
Xylenes (total)	(ug/L)						0.3 *
4-Chloro-3-methylphenyl	(ug/L)						1.5 *
2-Chlorophenol	(ug/L)						1.5 *
2,4-Dichorophenol	(ug/L)						1.5 *
2,4-Dimethylphenol	(ug/L)						1.5 *
2,4-Dinitrophenol	(ug/L)						5 *
2-Methyl-4,6-dinitrophenol	(ug/L)						5 *
2-Nitrophenol	(ug/L)						2 *
4-Nitrophenol	(ug/L)						2 *

Appendix 4-2. Santa Rosa Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Santa Rosa Creek					
		Stony Point Road					Fulton Rd.
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	18-Jun-92
Pentachlorophenol	(ug/L)						5 *
Phenol	(ug/L)						0.5 *
2,4,6-Trichlorophenol	(ug/L)						2.5 *
Acenaphthene	(ug/L)						0.5 *
Acenaphthylene	(ug/L)						0.5 *
Anthracene	(ug/L)						0.5 *
Benzo(a)anthracene	(ug/L)						1 *
Benzo(b)fluoranthene	(ug/L)						1 *
Benzo(k)fluoranthene	(ug/L)						1 *
Benzo(a)pyrene	(ug/L)						1 *
Benzo(g,h,i)perylene	(ug/L)						2.5 *
Chrysene	(ug/L)						1 *
Dibenzo(a,h)anthracene	(ug/L)						2.5 *
Fluorathene	(ug/L)						0.5 *
Fluorene	(ug/L)						0.5 *
Indeno(1,2,3-cd)pyrene	(ug/L)						2.5 *
Naphthene	(ug/L)						0.5 *
Phenanthrene	(ug/L)						0.5 *
Pyrene	(ug/L)						0.5 *

Appendix 4-2. Santa Rosa Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Santa Rosa Creek				
		Upstream of Confluence with Laguna				
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86
Heavy Metals						
Arsenic	(mg/L)	0.0025 *	0.005 *	0.0025 *	0.0025 *	0.0025 *
Cadmium	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Chromium (VI)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *
Chromium (Total)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *
Copper	(mg/L)	0.0005 *	0.01 *	0.01 *	0.01 *	0.01 *
Lead	(mg/L)					
Mercury	(mg/L)	0.0005 *	0.0005 *	0.0005 *	0.0005 *	0.0005 *
Nickel	(mg/L)					
Selenium	(mg/L)					
Silver	(mg/L)					
Zinc	(mg/L)	0.01 *	0.005 *	0.01 *	0.005 *	0.005 *
Nutrients						
Ammonia, as N	(mg/L)		0.025 *	0.025 *	0.13	0.05
Kjeldahl, as N	(mg/L)	0.2	0.2	0.3	0.2	0.44
Nitrate, as N	(mg/L)	0.015 *	0.015 *	0.83	0.015 *	0.98
Nitrite,as N	(mg/L)	0.0015 *	0.0015 *	0.03	0.0015 *	0.007
Orthophosphate, as P	(mg/L)	0.14	0.1	0.15	0.07	0.12
Total Phosphorus	(mg/L)	0.17	0.12	0.17	0.13	0.21
Physical & Chemical Parameters						
Dissolved Solids	(mg/L)	300	340	190	410	230
pH	units	7.9	8.3	7.7	7.8	8
Alakalinity, as CaCo3						
Alakalinity,as CaCO3	(mg/L)	240	270	120	270	150
Turbidity .	NTU	2.4	0.68	4.4	1	6.4
Conductance	(umhos/cm)	450	420	250	590	350
Chloride	(mg/L)	25				
Bacteria						
Total Coliform4	(MPN/100mL)	70	2400 *	2400 *	280	1600
Fecal Coliform4	(MPN/100mL)	49	220	2400 *	95	1600
Fecal Streptococci4	(MPN/100mL)	70	350	2400 *	350	1600
Enterococcus	(col/100mL)	27	108	2000	18	360
Phytoplankton						
Density	(mil cells/L)	0.025	0.56	0.38	0.48	0.05
Blue Green Algae	%	0	41	73	58	100
Diatoms	%	100	23	0	0	0
Green Algae	%	0	36	27	42	0
Pesticides						
Aldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
alpha-BHC	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
beta-BHC	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
delta-BHC	(ug/L)		0.015 *	0.015 *	0.015 *	0.015 *
Chlordane	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
1,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
4,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
1,4'-DDE	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
4,4'-DDE	(ug/L)	0.04 *			0.04 *	0.04 *
1,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
4,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
Dieldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endosulfan I	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endosulfan II	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endosulfan Sulfate	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Endrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *

Appendix 4-2. Santa Rosa Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Santa Rosa Creek				
		Upstream of Confluence with Laguna				
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86
Heptachlor	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Heptaclor epoxide	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *
Hexachlorobenzene	(ug/L)					
Lindane	(ug/L)	0.015 *				
Methoxyclor	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
Mirex	(ug/L)	0.025 *	0.025 *	0.025 *	0.025 *	0.025 *
Toxaphene	(ug/L)	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *
PCB,s						
PCB-1016	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1221	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1232	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1242	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1248	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1254	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1260	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
Bromodichloromethane	(ug/L)					
Bromoform	(ug/L)					
Bromomethane	(ug/L)					
Carbon Tetrachloride	(ug/L)					
Chlorobenzene	(ug/L)					
Chloroethane	(ug/L)					
2-Chloroethylvinyl ether	(ug/L)					
Chloroform	(ug/L)					
Chloromethane	(ug/L)					
Dibromochloromethane	(ug/L)					
1,2-Dichlorobenzene	(ug/L)					
1,3-Dichlorobenzene	(ug/L)					
1,4-Dichlorobenzene	(ug/L)					
Dichlorodifluoromethane	(ug/L)					
1,1-Dichloroethane	(ug/L)					
1,2-Dichloroethane	(ug/L)					
1,1-Dichloroethene	(ug/L)					
trans-,3-Dichloroethene	(ug/L)					
1,2-Dichloropropane	(ug/L)					
cis-1,3-Dichloropropene	(ug/L)					
trans-1,3-Dichloropropene	(ug/L)					
Methelene chloride	(ug/L)					
1,1,2,2-Tetrachloroethane	(ug/L)					
Tetrachloroethene	(ug/L)					
1,1,1-Trichloroethane	(ug/L)					
1,1,2-Trichloroethane	(ug/L)					
Trichoroethene	(ug/L)					
Trichlorofluoromethane	(ug/L)					
Vinyl chloride	(ug/L)					
Benzene	(ug/L)					
Ethylbenzene	(ug/L)					
Toluene	(ug/L)					
Xylenes (total)	(ug/L)					
4-Chloro-3-methylphenyl	(ug/L)					
2-Chlorophenol	(ug/L)					
2,4-Dichorophenol	(ug/L)					
2,4-Dimethylphenol	(ug/L)					
2,4-Dinitrophenol	(ug/L)					
2-Methyl-4,6-dinitrophenol	(ug/L)					
2-Nitrophenol	(ug/L)					
4-Nitrophenol	(ug/L)					

Appendix 4-2. Santa Rosa Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Santa Rosa Creek				
		Upstream of Confluence with Laguna				
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86
Pentachlorophenol	(ug/L)					
Phenol	(ug/L)					
2,4,6-Trichlorophenol	(ug/L)					
Acenaphthene	(ug/L)					
Acenaphthylene	(ug/L)					
Anthracene	(ug/L)					
Benzo(a)anthracene	(ug/L)					
Benzo(b)fluoranthene	(ug/L)					
Benzo(k)fluoranthene	(ug/L)					
Benzo(a)pyrene	(ug/L)					
Benzo(g,h,i)perylene	(ug/L)					
Chrysene	(ug/L)					
Dibenzo(a,h)anthracene	(ug/L)					
Fluorathene	(ug/L)					
Fluorene	(ug/L)					
Indeno(1,2,3-cd)pyrene	(ug/L)					
Naphthene	(ug/L)					
Phenanthrene	(ug/L)					
Pyrene	(ug/L)					

Appendix 4-3. Mark West Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Mark West Creek					
		Slusser Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	31-Mar-92
Heavy Metals							
Arsenic	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Cadmium	(mg/L)	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *	0.0025 *
Chromium (VI)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *	0.0025 *
Chromium (Total)	(mg/L)	0.005 *	0.005 *	0.005 *	0.005 *	0.005 *	
Copper	(mg/L)	0.0005 *	0.01 *	0.01 *	0.01 *	0.01 *	0.01 *
Lead	(mg/L)						0.001 *
Mercury	(mg/L)	0.001 *	0.0005 *	0.0005 *	0.0005 *	0.0005 *	0.0001 *
Nickel	(mg/L)						0.0025 *
Selenium	(mg/L)						0.0025 *
Silver	(mg/L)						0.005 *
Zinc	(mg/L)	0.01 *	0.005 *	0.01 *	0.005 *	0.005 *	0.005 *
Nutrients							
Ammonia, as N	(mg/L)		0.07	0.1	0.025 *	0.025 *	
Kjeldahl, as N	(mg/L)	0.2	0.3	5.4	0.1	0.37	
Nitrate, as N	(mg/L)	0.15	0.015 *	0.19	0.015 *	0.48	
Nitrite,as N	(mg/L)	0.0015 *	0.0015 *	0.012	0.0015 *	0.005	
Orthophosphate, as P	(mg/L)	0.07	0.07	0.54	0.05	0.06	
Total Phosphorus	(mg/L)	0.09	0.08	0.96	0.07	0.13	
Physical & Chemical Parameters							
Dissolved Solids	(mg/L)	210	240	280	220	140	
pH	units	7.6	7.7	7.6	7.7	7.6	
Alakalinity, as CaCo3							
Alakalinity,as CaCO3	(mg/L)	150	180	130	170	84	
Turbidity .	NTU	0.6	0.23	4.5	0.1	16	
Conductance	(umhos/cm)	340	280	290	290	180	
Chloride	(mg/L)	10					
Bacteria							
Total Coliform4	(MPN/100mL)	540	2400 *	2400 *	160	2400 *	
Fecal Coliform4	(MPN/100mL)	540	20	350	60	70	
Fecal Streptococci4	(MPN/100mL)	22	2400 *	920	1300	920	
Enterococcus	(col/100mL)	100	170	200	100	120	
Phytoplankton							
Density	(mil cells/L)	0.05	0.15	1.6	0.1	0.18	
Blue Green Algae	%	50	50	10	0	100	
Diatoms	%	50	0	50	0	0	
Green Algae	%	0	50	40	100	0	
Pesticides							
Aldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.01 *
alpha-BHC	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
beta-BHC	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
delta-BHC	(ug/L)		0.015 *	0.015 *	0.015 *	0.015 *	0.0025 *
Chlordane	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.2 *
1,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDD	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.025 *
1,4'-DDE	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDE	(ug/L)	0.04 *			0.04 *	0.04 *	0.025 *
1,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	
4,4'-DDT	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.025 *
Dieldrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan I	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan II	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endosulfan Sulfate	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Endrin	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *

Appendix 4-3. Mark West Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Mark West Creek					
		Slusser Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	31-Mar-92
Heptachlor	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Heptaclor epoxide	(ug/L)	0.015 *	0.015 *	0.015 *	0.015 *	0.015 *	0.025 *
Hexachlorobenzene	(ug/L)						0.025 *
Lindane	(ug/L)	0.015 *					0.01 *
Methoxyclor	(ug/L)	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *	0.04 *
Mirex	(ug/L)	0.025 *	0.025 *	0.025 *	0.025 *	0.025 *	1 *
Toxaphene	(ug/L)	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *	0.5 *
PCB,s							
PCB-1016	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1221	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	4 *
PCB-1232	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1.5 *
PCB-1242	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1248	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	1 *
PCB-1254	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
PCB-1260	(ug/L)	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *	0.25 *
Bromodichloromethane	(ug/L)						
Bromoform	(ug/L)						
Bromomethane	(ug/L)						
Carbon Tetrachloride	(ug/L)						
Chlorobenzene	(ug/L)						
Chloroethane	(ug/L)						
2-Chloroethylvinyl ether	(ug/L)						
Chloroform	(ug/L)						
Chloromethane	(ug/L)						
Dibromochloromethane	(ug/L)						
1,2-Dichlorobenzene	(ug/L)						
1,3-Dichlorobenzene	(ug/L)						
1,4-Dichlorobenzene	(ug/L)						
Dichlorodifluoromethane	(ug/L)						
1,1-Dichloroethane	(ug/L)						
1,2-Dichloroethane	(ug/L)						
1,1-Dichloroethene	(ug/L)						
trans-,3-Dichloroethene	(ug/L)						
1,2-Dichloropropane	(ug/L)						
cis-1,3-Dichloropropene	(ug/L)						
trans-1,3-Dichloropropene	(ug/L)						
Methelene chloride	(ug/L)						
1,1,2,2-Tetrachloroethane	(ug/L)						
Tetrachloroethene	(ug/L)						
1,1,1-Trichloroethane	(ug/L)						
1,1,2-Trichloroethane	(ug/L)						
Trichoroethene	(ug/L)						
Trichlorofluoromethane	(ug/L)						
Vinyl chloride	(ug/L)						
Benzene	(ug/L)						
Ethylbenzene	(ug/L)						
Toluene	(ug/L)						
Xylenes (total)	(ug/L)						
4-Chloro-3-methylphenyl	(ug/L)						1.5 *
2-Chlorophenol	(ug/L)						1.5 *
2,4-Dichorophenol	(ug/L)						1.5 *
2,4-Dimethylphenol	(ug/L)						1.5 *
2,4-Dinitrophenol	(ug/L)						5 *
2-Methyl-4,6-dinitrophenol	(ug/L)						5 *
2-Nitrophenol	(ug/L)						2 *
4-Nitrophenol	(ug/L)						2 *

Appendix 4-3. Mark West Creek: Metals, Organics, and Other Chemical and Biological Constituents, 1985-1992 (RWQCB data).
*after a constituent indicates that it was below the detection limit; number shown is one-half the detection limit.

		Mark West Creek					
		Slusser Road					
Parameter	Units	28-Jun-85	11-Oct-85	25-Oct-85	8-Nov-85	8-Jan-86	31-Mar-92
Pentachlorophenol	(ug/L)						5 *
Phenol	(ug/L)						0.5 *
2,4,6-Trichlorophenol	(ug/L)						2.5 *
Acenaphthene	(ug/L)						
Acenaphthylene	(ug/L)						
Anthracene	(ug/L)						
Benzo(a)anthracene	(ug/L)						
Benzo(b)fluoranthene	(ug/L)						
Benzo(k)fluoranthene	(ug/L)						
Benzo(a)pyrene	(ug/L)						
Benzo(g,h,i)perylene	(ug/L)						
Chrysene	(ug/L)						
Dibenzo(a,h)anthracene	(ug/L)						
Fluorathene	(ug/L)						
Fluorene	(ug/L)						
Indeno(1,2,3-cd)pyrene	(ug/L)						
Naphthene	(ug/L)						
Phenanthrene	(ug/L)						
Pyrene	(ug/L)						