

R E P O R T**CHOLLAS CREEK WATER
QUALITY SAMPLING
1999-2000 WET-WEATHER
SEASON**

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Prepared for

City of San Diego
Environmental Protection Division,
Environmental Services Department
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URS Project No. 589553054F.00

October 24, 2000

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Chollas Creek Water Quality Sampling 1999-2000 Wet-Weather Season

SCOPE OF WORK

URS Corporation (URS), under contract to the City of San Diego, conducted two rounds of wet-weather sampling for organophosphate pesticides (diazinon and chlorpyrifos) and metals in the Chollas Creek Watershed. URS' portion of the project was funded by the City of San Diego to provide technical input for developing Total Maximum Daily Loads (TMDLs) for pesticides and metals in Chollas Creek. The San Diego Regional Water Quality Control Board (RWQCB) is in the process of developing the TMDLs, which are scheduled to be finalized by the end of this year. Five sampling sites along the North and South Forks of Chollas Creek were designated for sampling through discussions with the City, the Port of San Diego, the RWQCB, and the Southern California Coastal Water Research Program (SCCWRP) in December 1999. The sampling was conducted on February 12 and 21, 2000, at three sites along branches of the main Chollas Channel and three sites along the south branch of Chollas Creek while rainstorms passed through the San Diego area. The samples were to be analyzed for the parameters listed in Table 1. In addition, Caltrans conducted sampling at a sixth location on Chollas Creek.

Table 1
ANALYSES AND LABORATORIES ⁽¹⁾

Analysis	Diazinon Chlorpyrifos	Physical and Chemical Constituents Total and Dissolved Metals	Toxicity Tests Using <i>Ceriodaphnia dubia</i> and <i>Hyalella azteca</i>
Laboratory	Aqua-Science 17 Arboretum Dr. Davis, CA 95616 (530) 753-5456 Contact: Jeff Miller	Babcock Laboratories 6100 Quail Valley Ct. Riverside, CA 92507 (909) 653-3351 Contact: Cindy Moore	Ogden Environmental 5510 Morehouse Dr. San Diego, CA 92121 (858) 458-9111 Contact: Marilyn Schwartz

⁽¹⁾ Laboratories used for composite samples from SD(8)2, SD(8)3, SD(8)5, and SD(8)6. Samples for SD(8)1 and SD(8)4 were analyzed as part of the San Diego Storm Water Monitoring Program and Caltrans Monitoring, respectively. SD(8)1 samples were analyzed by D-TEK, APPL, and MBC, for metals and nutrients, pesticides, and toxicity, respectively. SD(8)4 samples were analyzed by Pat-Chem Laboratories (PCL).

SAMPLE COLLECTION

Flow-weighted composite samples were collected using automated samplers on February 12 and 21, 2000, by URS field personnel at the three sites on the main channel and two sites on the south tributary of Chollas Creek (Figure 1). The third south Chollas Creek site (SD(8)4) was sampled on February 12 and 23, 2000, by Caltrans. The hydrological requirements were that the storm events generate at least 0.1 inches of rainfall within the watershed, were preceded by at least 72 hours of dry weather, and the forecasted storm volume was within 50% of the average storm volume and duration for the region. The sampling sites are as follows:

- **SD(8)1 Main Chollas Channel** – A mass loading station for the San Diego Storm Water Monitoring Project, SD(8)1 is located in a concrete-lined channel at the end of Durant Street.
- **SD(8)2 Wabash Avenue (I-15) Branch of the Main Chollas Channel** – This is a City of San Diego field screening site and is located just north of the SR 94 and I-15 interchange. The site is a natural channel which follows next to I-15 through the I-805 interchange where it splits and follows each freeway up to approximately Landis Street.

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- **SD(8)3 Home Avenue Branch of the Main Chollas Channel** - This is a City of San Diego field screening site and is located next to the San Diego Police Department Canine Training Field. It is a channelized portion of the creek with a natural bottom.
- **SD(8)4 South Branch of Chollas Creek (Caltrans monitoring site)** - This is a City of San Diego field screening site and is located at the 38th Street bridge over Chollas Creek just north of Beta Street. It is a channelized portion of the creek with a natural bottom and is just upstream of the South Branch confluence with the Main Chollas Creek Channel.
- **SD(8)5 Federal Boulevard Branch of South Chollas Creek** - This site is located where the creek crosses Federal Blvd., next to SR 94 and discharges from Lemon Grove and La Mesa.
- **SD(8)6 Jamacha Road Branch of South Chollas Creek** - This site is just downstream from a City of San Diego field screening site located along a natural stream within a residential area. The site is located south of Jamacha Road at the 69th Street crossing of Chollas Creek.

The flow-weighted samples were collected following the storm and stored on ice during transportation from the monitoring locations. The samples were delivered to the Environmental Engineering Lab (EEL) at the RWQCB for compositing prior to shipment to the analytical labs (except for SD(8)1 which went to D-TEK for compositing and to the San Diego Storm Water Monitoring Program Laboratories for analysis). Water samples for toxicity tests using *Ceriodaphnia dubia* and *Hyaella azteca* were delivered on the same day to Odgen Environmental (toxicity samples for SD(8)1 were shipped to MBC). Water samples for general constituents and metals, and pesticides analyses from SD(8)2, SD(8)3, SD(8)5, and SD(8)6 were shipped via Federal Express for next day delivery in styrofoam coolers packed with Blue Ice to Babcock Laboratories and Aqua-Science, respectively. Water samples from SD(8)1 were analyzed by the laboratories under contract with the San Diego Storm Water Monitoring Program (D-TEK, APPL, and MBC). Water samples for SD(8)4 were collected by Caltrans and delivered to Pat-Chem Laboratories for analysis.

HYDROLOGY

The storm event requirements were that the storm events generate at least 0.1 inches of rainfall within the watershed, were preceded by at least 72 hours of dry weather, and the forecasted storm volume was within +/- 50% of the average storm volume and duration for the region. The hydrographs for February 12 and 21 flows at the sampling stations are provided in Appendix A for all stations except SD(8)4 which was monitored by Caltrans. The hydrologic data from SD(8)4 are also provided in Appendix A. Note that the second storm monitored by Caltrans occurred on February 23, 2000, rather than February 21, 2000 at the other five sampling sites.

RESULTS

Physical, Chemical, and Metals Constituents

A large suite of constituents was analyzed for in the composite samples from Chollas Creek. The results from the three analytical laboratories were compiled and are presented in Tables 2 and 3. Table 2 presents the physical and general constituents, as well as the nutrients. Table 3 presents the total and dissolved metals results for the six sampling locations. The following subsections describe the range of values for each of the analyses. Quality assurance/quality control protocols (QA/QC) were followed by the laboratories to reduce the potential for contamination, as well as to validate the findings. The laboratory reports for sampling stations SD(8)2, SD(8)3, SD(8)5, and SD(8)6 are provided in Appendix B.

General

The pH was measured for eight samples and ranged from 6.9 to 8.3. Specific conductance (conductivity) was measured for seven samples and ranged from 140 to 510 umho/cm.

Results for turbidity from eight samples ranged from 27 to 310 NTU.

Results for TSS ranged from 22 to 946 mg/l. Results for TDS at mass loading stations ranged from 100 to 320 mg/l.

COD is measured over 24 hours and represents the oxygen consumed in the breakdown of chemical constituents during that time period. Results for COD ranged from 36 to 104 mg/l.

Oil and grease results were detected in four of the eight samples analyzed and ranged from 1.92 to 19 mg/l. Surfactants (MBAS) were detected in five of the six samples analyzed and ranged from 0.05 to 0.35 mg/l.

Total hardness ranged from 36.0 to 120.0 mg/l CaCO₃. Calcium and magnesium were detected in all samples analyzed in concentrations ranging from 10 to 26 µg/l and 3.0 to 13.0 µg/l, respectively.

Nutrients

Total Kjeldahl nitrogen (TKN) ranged from 1.2 to 3.1 mg/l. Nitrate concentrations ranged from 0.4 to 3.22 mg/l. Nitrite was detected in three of the eight samples, in concentrations ranging from 0.05 to 0.09 mg/l. Ammonia (reported as nitrogen) was detected in seven of the twelve samples from mass loading stations in concentrations ranging from 0.08 to 3.6 mg/l. Total phosphorus was detected in all of the samples in concentrations ranging from 0.33 to 4 mg/l, and dissolved phosphorus was also detected in all eight samples analyzed in concentrations ranging from 0.26 to 0.38 mg/l.

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Table 2. Physical and General Constituents, Chollas Creek Water Monitoring

Constituent	Units	February 12, 2000						February 21, 2000 ⁽¹⁾					
		SD(8)1	SD(8)2	SD(8)3	SD(8)4	SD(8)5	SD(8)6	SD(8)1	SD(8)2	SD(8)3	SD(8)4	SD(8)5	SD(8)6
Physical/General													
pH	s.u.	7.52	8.3	8.1	7.7	7.5	7.4	6.9	N/A	N/A	8	N/A	N/A
Specific Conductance	umho/cm	186	N/A	N/A	234	N/A	N/A	187	190	140	202	220	510
TDS	mg/l	120	140	100	190	220	310	111	140	110	232	180	320
TSS	mg/l	457	220	270	946	520	170	62	110	110	416	280	22
Turbidity	NTU	50	120	81	157	240	68	27	N/A	N/A	310	N/A	N/A
COD	mg/l	41	N/A	N/A	N/A	N/A	N/A	104	96	78	N/A	85	36
Oil & Grease	mg/l	1.92	N/A	N/A	19	N/A	N/A	2.04	<5	<5	7	<5	<5
MBAS	mg/l	0.35	0.05	0.11	N/A	<0.05	0.11	0.22	N/A	N/A	N/A	N/A	N/A
Total Hardness	mg/l	40.9	58	54	N/A	100	120	35.1	47	36	N/A	63	100
Ca	mg/l	N/A	13	14	N/A	21	26	N/A	12	10	N/A	14	24
Mg	mg/l	N/A	6	5	N/A	12	13	N/A	4	3	N/A	7	11
Nutrients													
NH4-N	mg/l	1.65	0.3	0.5	0.13	0.4	0.3	<0.10	<0.1	<0.1	0.08	<0.1	<0.1
NO3-N	mg/l	3.22	1.3	0.9	0.67	1.1	1	1.04	N/A	N/A	0.4	N/A	N/A
NO2-N	mg/l	0.086	<0.1	<0.1	0.09	<0.1	<0.1	<0.05	N/A	N/A	0.05	N/A	N/A
TKN	mg/l	2.98	2.3	2.6	N/A	2.6	2	3.1	2	1.9	N/A	1.4	1.2
Dis P	mg/l	0.33	0.38	0.36	0.3	0.37	0.34	0.26	N/A	N/A	0.35	N/A	N/A
TP	mg/l	0.46	0.66	1.2	0.85	0.95	4	0.33	0.53	0.57	0.44	0.58	0.37
Pesticides													
Diazinon	ug/l	0.27 ⁽⁴⁾	N/A ⁽²⁾	N/A ⁽²⁾	<1	N/A ⁽²⁾	0.3376	0.35 ⁽⁵⁾	0.0337	0.0955	<1	N/A ⁽²⁾	0.0509
Chlorpyrifos	ug/l	<0.5	N/A ⁽²⁾	N/A ⁽²⁾	<1	N/A ⁽²⁾	0.0717	<0.5	0.0433	0.0429	<1	N/A ⁽²⁾	0.034

(1) SD(8)4 sampled on February 23, 2000.

(2) SD(8)5 sample broke inside cooler during delivery to Aqua-Science

(3) Sample not forwarded to Aqua-Science by EEL.

(4) Below quantification level. Value is estimated.

(5) Difference between primary and confirmation columns is greater than 40%.

Note that detection limits varied between the laboratories. Non-detects are reported as less than the reporting limit. N/A - not analyzed.

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Total Metals

Total antimony was not detected in any samples. Total chromium was detected in two of the twelve samples analyzed and was reported at levels of 17.0 and 23.0 µg/l. Total arsenic was detected in three samples in concentrations of 7, 11.0 and 11.0 µg/l. Total cadmium was also detected in three samples in concentrations of 0.7, 1.3 and 2.0 µg/l. Copper was detected in all but one of the samples analyzed in concentrations ranging from 16 to 68 µg/l. Lead was detected all but two samples in concentrations ranging from 15.0 to 83.0 µg/l. Nickel was detected in two of the twelve samples at 10.3 and 18.3 µg/l. Selenium was also detected in two samples at 6.0 and 8.0 µg/l. Zinc was detected in all samples in concentrations ranging from 10.0 to 370.0 µg/l. In general, more total metal constituents were detected above the reporting limits at the SD(8)4 station than at the other stations.

Dissolved Metals

Antimony was not detected in the dissolved form in any of the samples. Dissolved arsenic and dissolved cadmium were detected in one sample in concentrations of 5.0 and 0.3 µg/l, respectively. Dissolved chromium was detected in two samples in concentrations of 2.1 and 9.0 µg/l. Dissolved lead was also detected during both sampling events at station SD(8)4 in concentrations of 3.6 and 10.5 µg/l. Dissolved copper was detected in four samples in concentrations ranging from 5.3 to 37.0 µg/l one Dissolved nickel was detected in two samples in concentrations of 5.0 and 6.1 µg/l. Dissolved zinc was detected in all twelve samples in concentrations ranging from 5.0 to 19.0 µg/l. Dissolved selenium was detected in two samples in concentrations of 6.0 and 8.0 µg/l. In general, more dissolved metal constituents were detected above the reporting limits at the SD(8)4 station than at the other stations.

Diazinon & Chlorpyrifos

The organophosphate pesticides, diazinon and chlorpyrifos were analyzed in three of the six February 12 samples and five of the six February 21 samples (Table 2). Aqua-Science did not receive the composited sample water from the analytical laboratory (EEL) for SD(8)2, SD(8)3, and SD(8)5 from the February 12 storm event. In addition, the SD(8)5 sample from February 21 broke within the cooler during transportation to the analytical lab. Of the samples analyzed, diazinon ranged from non-detect to 0.35 µg/l, and chlorpyrifos ranged from non-detect to 0.072 µg/l. Note that laboratory reporting limits varied between the studies, and that these ranges may be misleading considering the range in the reporting limits. Specifically, the reporting limit of 1.0 µg/l used by Caltrans' contract laboratory is above the detection level for diazinon and chlorpyrifos commonly observed in urban runoff. QA/QC was followed by the laboratories to prohibit contamination, as well as to validate the findings. The laboratory reports for sampling stations SD(8)2, SD(8)3, SD(8)5, and SD(8)6 are provided in Appendix C.

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Table 3. Total and Dissolved Metals, Chollas Creek Water Quality Monitoring

	February 12, 2000						February 21, 2000 ⁽¹⁾					
	SD(8)1	SD(8)2	SD(8)3	SD(8)4	SD(8)5	SD(8)6	SD(8)1	SD(8)2	SD(8)3	SD(8)4	SD(8)5	SD(8)6
Total Metals												
An	<1.5	<10	<10	<1	<10	<10	<1.5	<10	<10	<1	<10	<10
As	<1.0	<5	<5	N/A	11	<5	7	<5	<5	N/A	11	<5
Cd	<0.25	<2	<2	1.3	<2	<2	2	<2	<2	0.7	<2	<2
Cr	<5.0	<20	<20	23	<20	<20	<5.0	<20	<20	17	<20	<20
Cu	29	68	68	33	43	23	16	23	19	19	27	>10
Pb	15	34	52	83	76	16	<1.0	23	19	25.9	35	>10
Ni	<5.0	<20	<20	18.3	<20	<20	<5.0	<20	<20	10.3	<20	<20
Se	<1.0	<5	<5	<2	<5	6	<1.0	<5	<5	<2	<5	8
Zn	96	160	300	327	370	100	50	180	160	81	10	54
Dissolved Metals												
An	<1.5	<10	<10	<1	<10	<10	<1.5	<10	<10	<1	<10	<10
As	<1.0	<5	<5	N/A	<5	<5	5	<5	<5	N/A	<5	<5
Cd	<0.25	<2	<2	<0.2	<2	<2	<0.25	<2	<2	0.3	<2	<2
Cr	<5.0	<20	<20	2.1	<20	<20	<5.0	<20	<20	9	<20	<20
Cu	<5.0	37	<10	5.3	<10	<10	<5.0	11	<10	9.6	<10	<10
Pb	<1.0	<10	<10	3.6	<10	<10	<1.0	<10	<10	10.5	<10	<10
Ni	<5.0	<20	<20	5	<20	<20	<5.0	<20	<20	6.1	<20	<20
Se	<1.0	<5	<5	<2	<5	6	<1.0	<5	<5	<2	<5	8
Zn	19	45	20	16.8	45	20	28	67	57	42	10	30

(1) SD(8)4 sampled on February 23, 2000.

Note that detection limits varied between the laboratories. Non-detects are reported as less than the reporting limit. N/A - not analyzed.

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Toxicity Tests with *Hyalella azteca* and *Ceriodaphnia dubia*

Toxicity tests on the February 12 and 21 water samples were conducted using the freshwater flea, *Ceriodaphnia dubia*, and the amphipod, *Hyalella azteca* (Table 4). An exception to this protocol was the use of the flathead minnow, *Pimephales promelas*, in place of the amphipod by Caltrans for SD(8)4. In addition, no toxicity tests were performed for February 12 water samples from sampling stations SD(8)4 and SD(8)5. Amphipod bioassays for SD(8)2, SD(8)3, SD(8)5, and SD(8)6 indicated measurable toxicity in the water samples from both sampling events. All water quality measurements recorded during the 96-hour exposure were within the range defined as acceptable by the test protocol and mean control survival exceeded the ASTM control survival acceptability criterion of 90 percent. Detailed information on the toxicity tests for sampling stations SD(8)2, SD(8)3, SD(8)5, and SD(8)6, can be found in the Ogden Environmental Supplemental Storm Water Toxicity Monitoring of Chollas Creek 1999-2000 Wet-Season dated June 2000. Likewise, detailed information on the toxicity tests for sampling station SD(8)1 can be found in the 1999-2000 City of San Diego and Co-Permittee NPDES Storm Water Monitoring Program Report prepared by URS, dated August 2000.

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Table 4. Toxicity Testing, Chollas Creek Water Quality Monitoring

Sample	96 hour				LT50 hours	7 day			
	Mean % Survival Control	Mean % Survival (in 100% Sample)	LC50 (% Sample)	LOEC (% Sample)		LC50 (%sample)	NOEC Survival (%sample)	NOEC Repro/Growth (%sample)	TUc Survival/ Sublethal
Ceriodaphnia - February 12, 2000									
sd(8)1	N/A	N/A	>100	N/A	168	78.5	67	44	1.49/2.27
sd(8)2	100	100	>100	>100	N/A	N/A	N/A	N/A	N/A
sd(8)3	100	65	>100	>100	N/A	N/A	N/A	N/A	N/A
sd(8)4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
sd(8)5 ⁽⁴⁾	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
sd(8)6	100	80	>100	>100	N/A	N/A	N/A	N/A	N/A
Ceriodaphnia - February 21, 2000 ⁽¹⁾									
sd(8)1	N/A	N/A	>100	N/A	>192	>100	100	100	1/1
sd(8)2	100	100	>100	>100	N/A	N/A	N/A	N/A	N/A
sd(8)3	100	100	>100	>100	N/A	N/A	N/A	N/A	N/A
sd(8)4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
sd(8)5	100	100	>100	>100	N/A	N/A	N/A	N/A	N/A
sd(8)6	95	100	>100	>100	N/A	N/A	N/A	N/A	N/A
Hyalella - February 12, 2000 ⁽²⁾									
sd(8)1	N/A	N/A	>100	N/A	125	81.8	100	100 ⁽³⁾	1/1 ⁽³⁾
sd(8)2	94	8	49	<50	N/A	N/A	N/A	N/A	N/A
sd(8)3	94	4	30	<50	N/A	N/A	N/A	N/A	N/A
sd(8)5 ⁽⁴⁾	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
sd(8)6	94	34	74	<50	N/A	N/A	N/A	N/A	N/A
Hyalella - February 21, 2000									
sd(8)1	N/A	N/A	>100	N/A	>168	>100	100	100 ⁽³⁾	1/1 ⁽³⁾
sd(8)2	98	12	65	<50	N/A	N/A	N/A	N/A	N/A
sd(8)3	98	10	34	<50	N/A	N/A	N/A	N/A	N/A
sd(8)5	98	32	77	<50	N/A	N/A	N/A	N/A	N/A
sd(8)6	98	52	>100	<50	N/A	N/A	N/A	N/A	N/A
Pimephales promelas - February 23, 2000 ⁽²⁾									
sd(8)4	N/A	N/A	>100	N/A	N/A	N/A	100 ⁽⁵⁾	100 ⁽⁵⁾	1/1 ⁽⁵⁾

(1) SD(8)4 sample taken during February 23, 2000 storm

(2) Caltrans used Pimelas promelas in place of Hyaella for SD(8)4. There were no February 12, 2000 toxicity tests for SD(8)4.

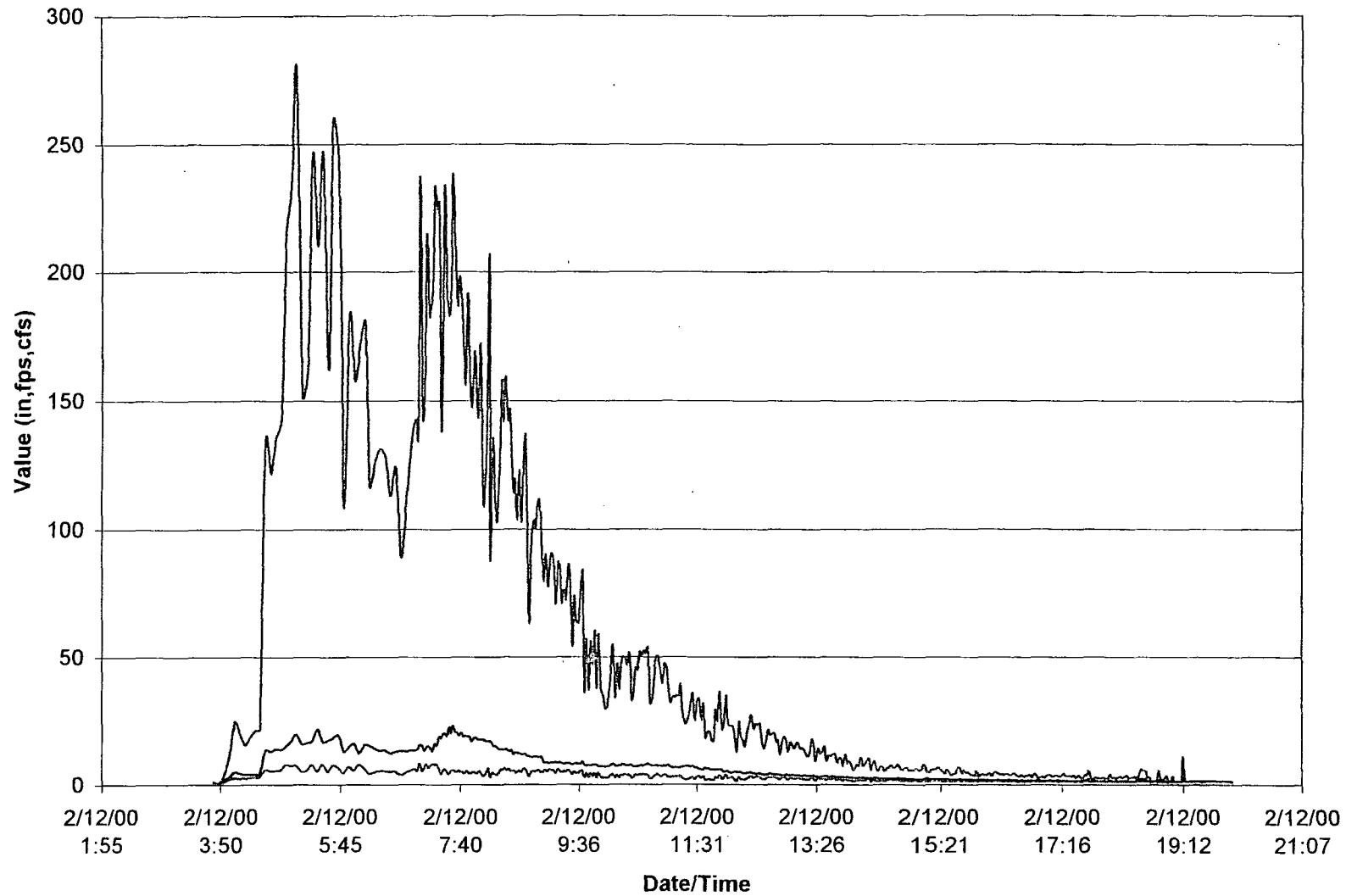
(3) Results qualified as estimates. Some dilution results were identified as outliers and were not included in the calculation.

(4) No SD(8)5 samples were delivered to lab for toxicity testing from the February 12 storm event.

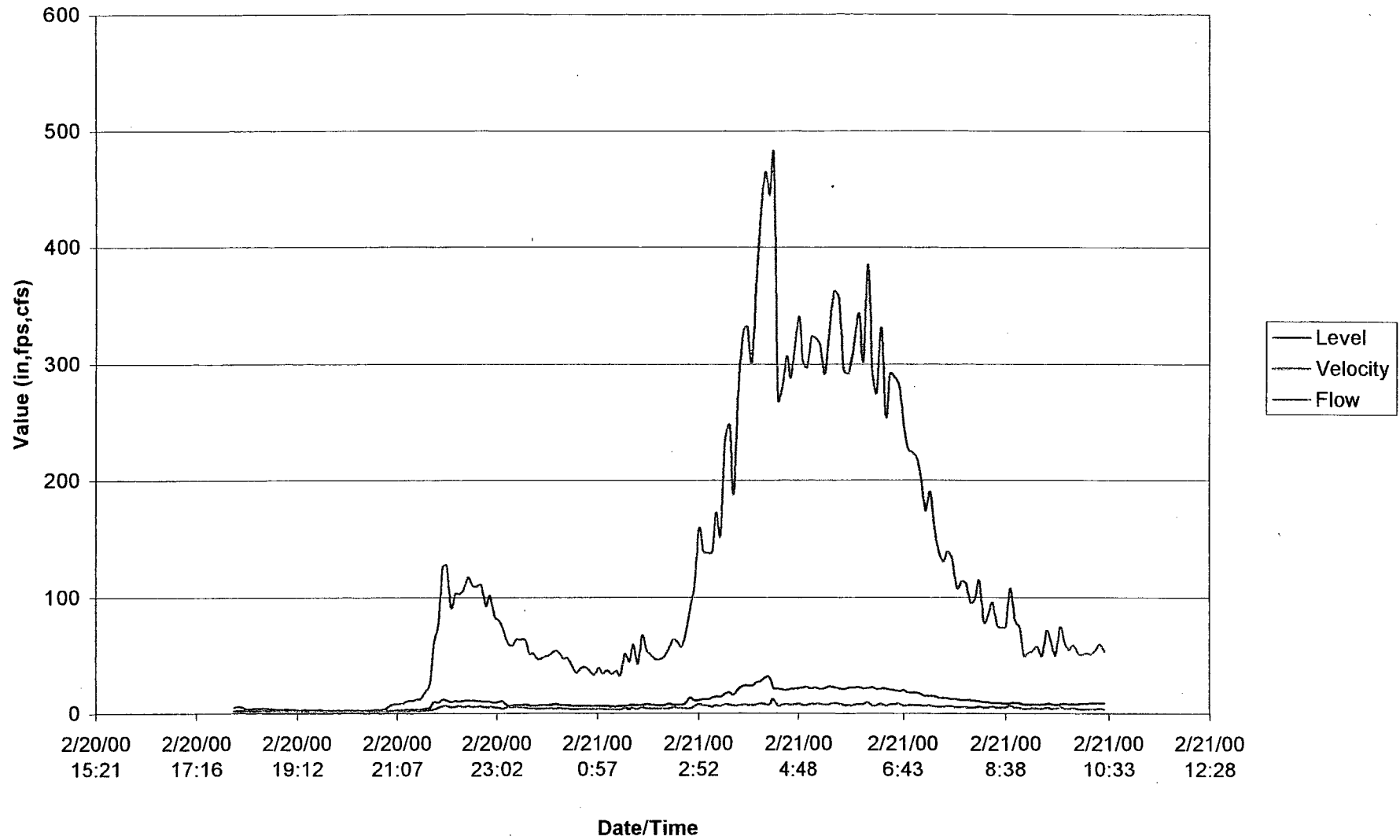
(5) 96-toxicity test.

NOEC = No Observed Effect Concentration. LOEC = Lowest Observed Effect Concentration. LT50 = Time for 50% mortality in 100% sample. LC50 = Concentration for 50% mortality. TUc = Chronic Toxicity Units, which equal 100/NOEC. Tuc of 1 indicates no toxicity observed.

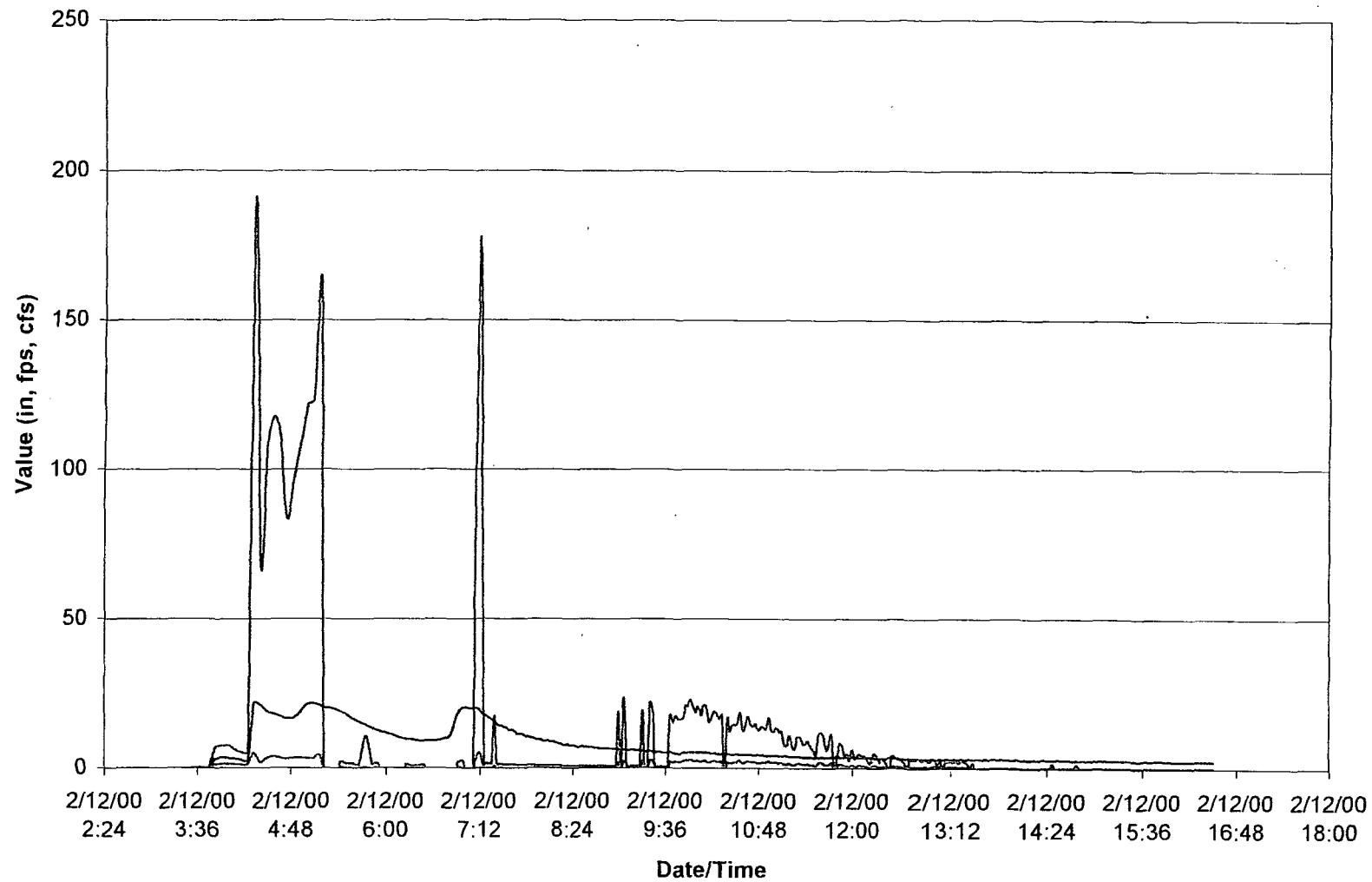
SD(8)1 Main Chollas Channel
February 12, 2000



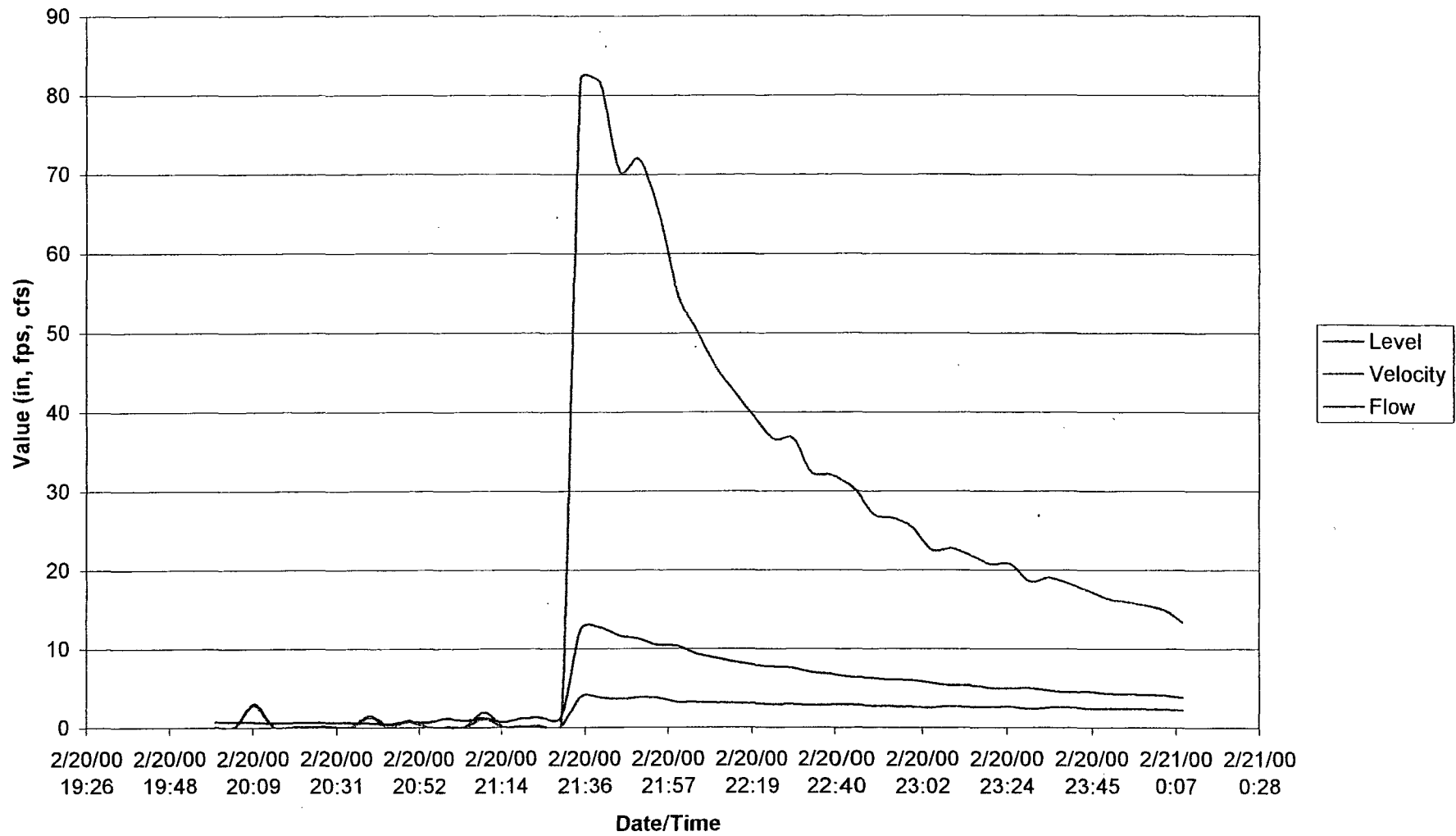
SD(8)1 Main Chollas Channel
February 20, 2000



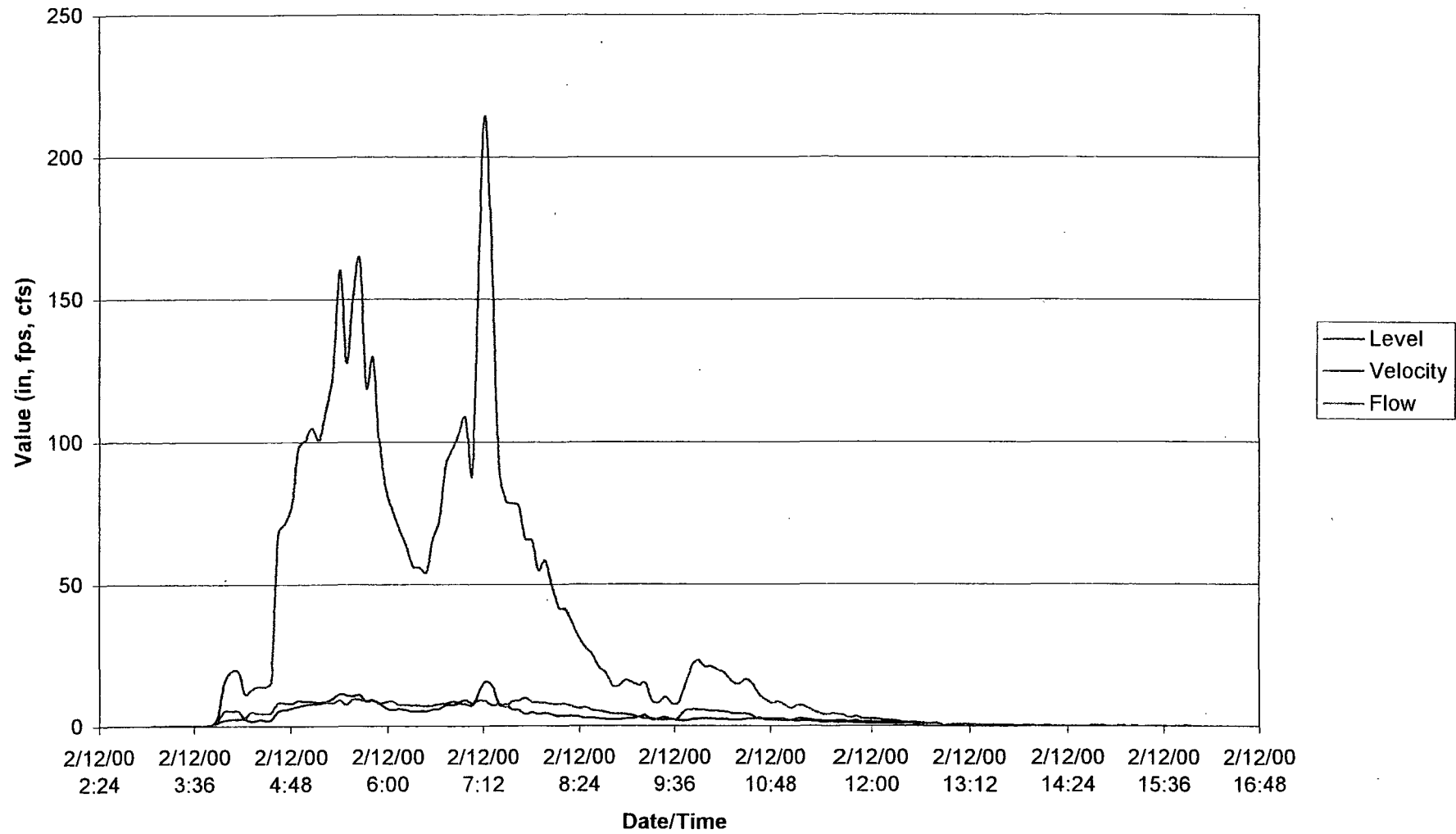
SD(8)2 Wabash/I-15
February 12, 2000



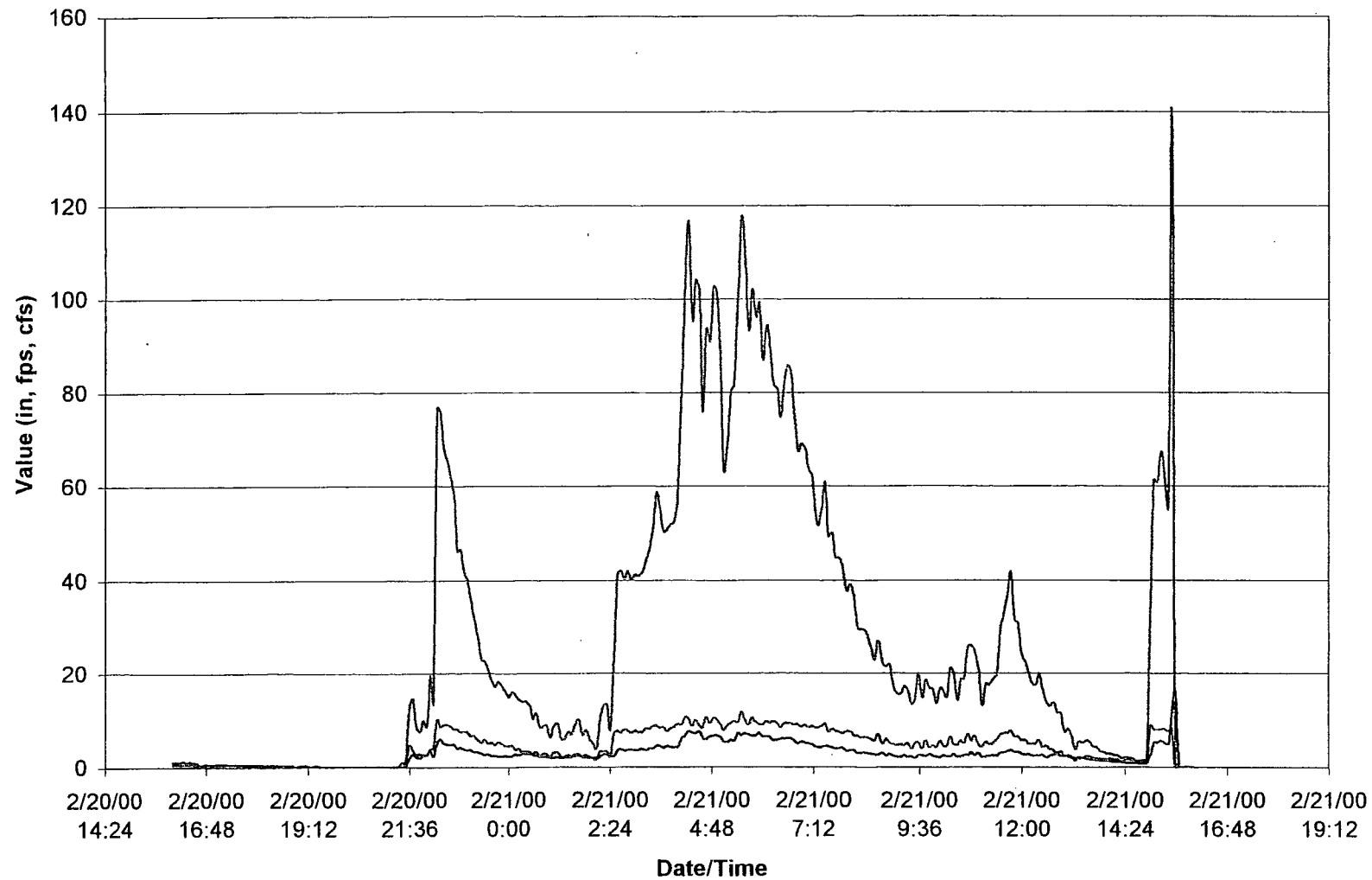
SD(8)2 Wabash/I-15
February 20, 2000



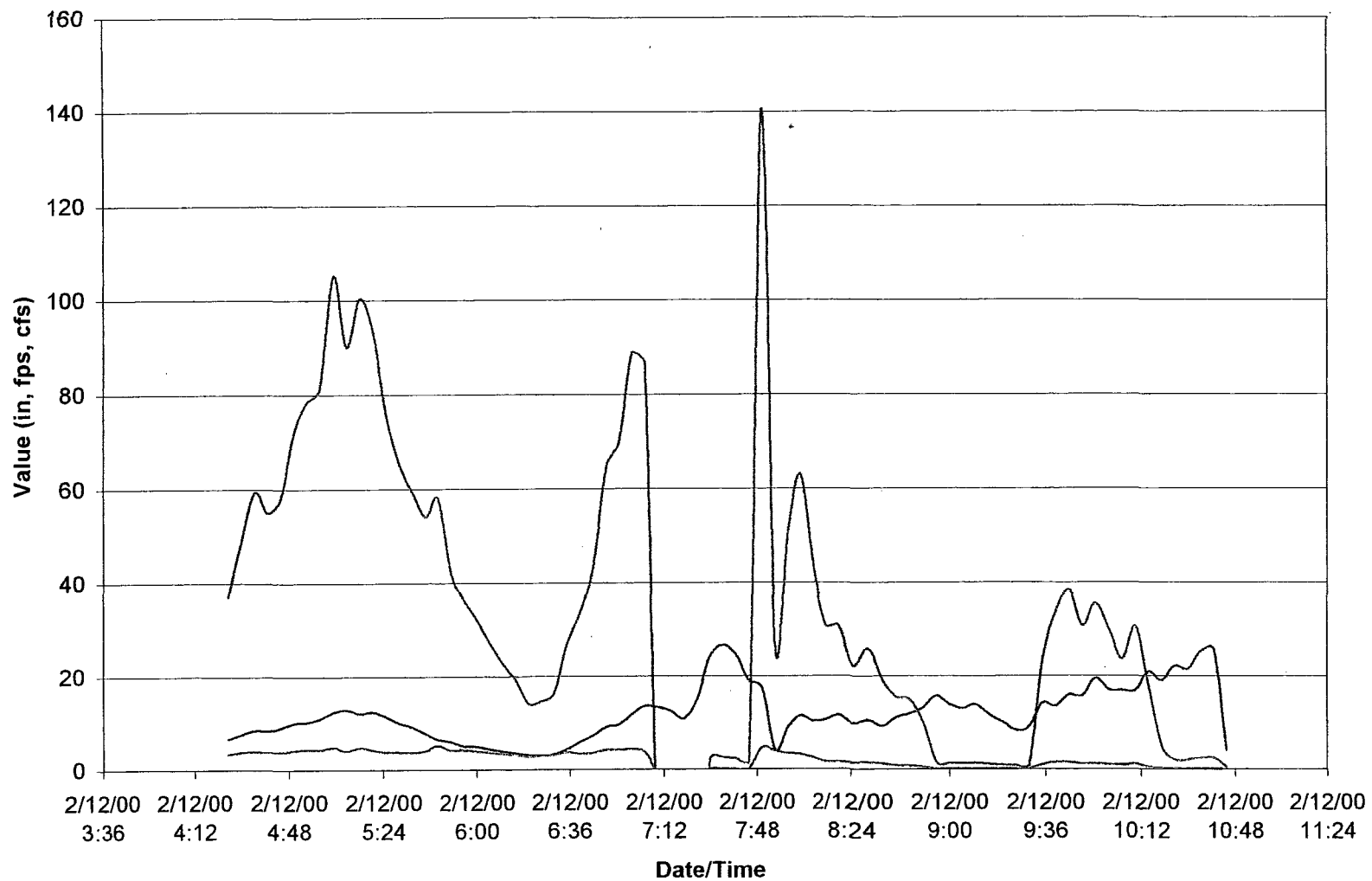
SD(8)3 Federal/Home
February 12, 2000



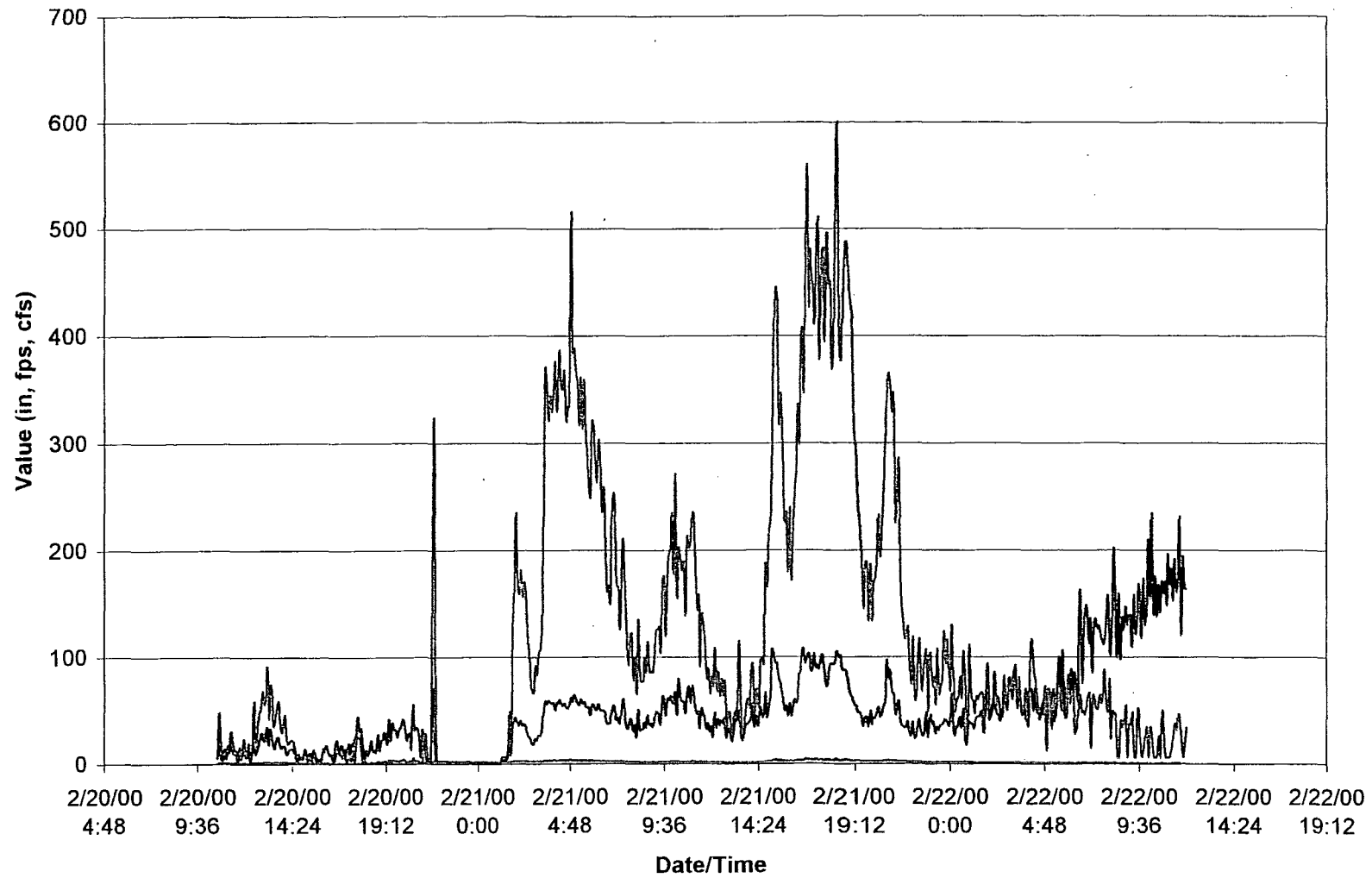
SD(8)3 Federal/Home
February 20, 2000



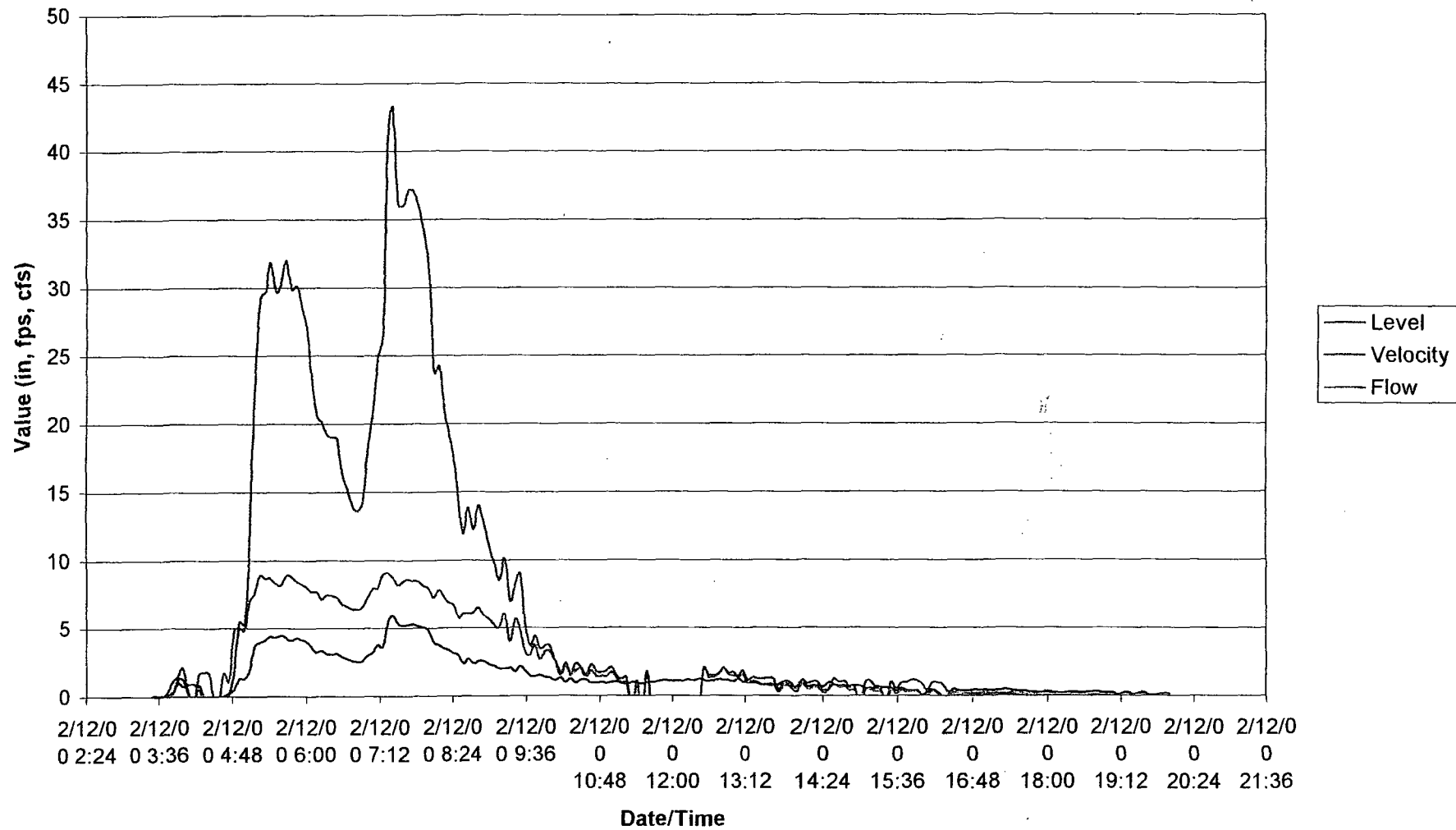
SD(8)5 Federal/94
February 12, 2000



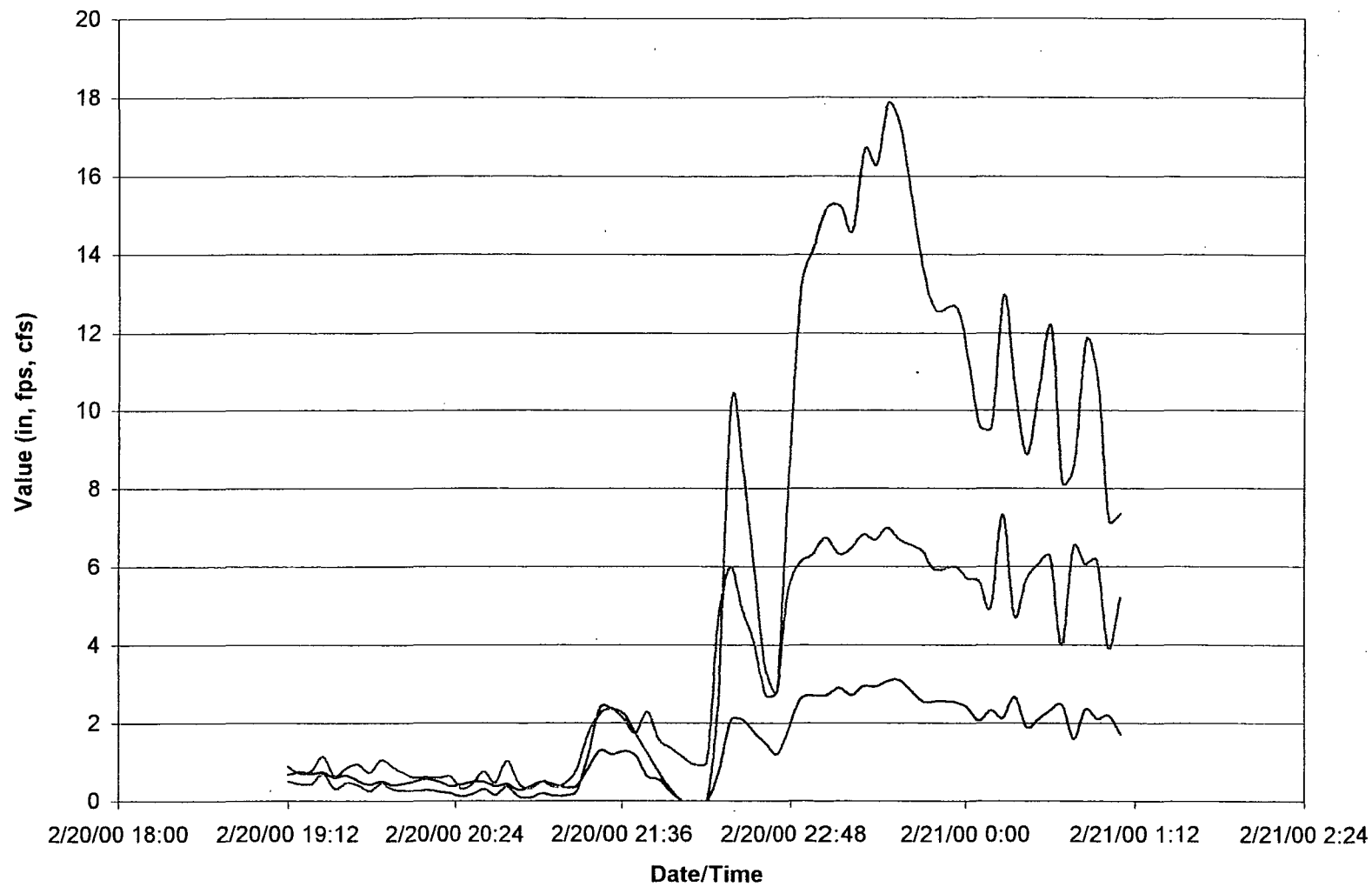
SD(8)5 Federal/94
February 20, 2000



SD(8)6 69th
February 12, 2000



SD(8)6 69th
February 20, 2000



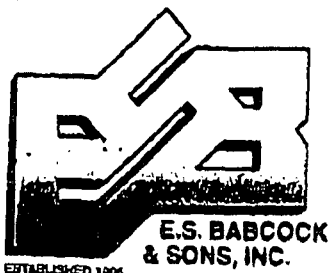
SD(8)4 South Branch Hydrological Data (Caltrans)

Chollas Creek South Fork Storm
2/12/2000 Field Data Log Summary

Measurement Number	Sample Time	Depth (inches)	Flow Rate (cfs)	pH	Temperature (°C)	Conductivity (µmhos/cm)
1	0420	17.5	913	7.35	14.7	460
2	0440	19.75	1066	7.32	15.0	180
3	0500	20.5	1145	7.29	14.7	270
4	0520	22.0	1226	7.31	14.5	350
5	0540	23.0	1308	7.58	15.0	430
6	0600	20.0	1066	7.68	15.6	250
7	0620	16.0	765	7.53	15.3	260
8	0640	16.0	765	7.61	16.3	240
9	0700	17.0	838	7.68	16.0	230
10	0720	22.0	1226	7.62	13.9	210
11	0740	27.0	1647	7.72	14.4	190
12	0800	26.0	1561	7.78	14.5	170
13	0820	26.0	1561	7.75	14.6	190
14	0840	25.0	1475	7.75	14.7	200
15	0900	12.0	495	7.74	14.8	200
16	0920	10.0	373	7.74	15.9	210
17	0940	10.0	373	7.73	15.8	210
18	1000	8.0	264	7.67	16.5	240
19	1020	8.0	264	7.71	16.5	250
20	1040	8.0	264	7.69	15.9	270
21	1100	8.0	264	7.71	16.9	300

Chollas Creek South Fork Storm
2/23/2000 Field Data Log Summary

Measurement Number	Sample Time	Depth (inches)	Flow Rate (cfs)	pH	Temperature (°C)	Conductivity (µmhos/cm)
1	1615	0.25	2	8.63	16.5	510
2	1635	1.0	9	8.01	15.9	360
3	1655	3.0	55	7.80	15.5	560
4	1715	9.0	317	7.93	15.5	290
5	1735	18.0	913	7.72	15.6	410
6	1755	24.0	1391	7.92	16.0	270
7	1815	26.0	1561	8.08	14.2	240
8	1835	19.0	989	8.06	14.7	170
9	1855	16.0	765	8.04	14.2	130
10	1915	11.0	433	8.04	14.1	130
11	1935	7.0	214	7.90	13.9	150
12	1955	5.0	125	7.86	13.8	170



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www.babcockdabs.com

3117-1

Client:

Calif. Reg. WQCB, San Diego
Diane S. Welch
9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: SAMPLE #81

Site: URSGWC

Description: Delevan - SD(8)2

Matrix: wastewater

Page: 1 of 1
Lab No.: L65635-001

Date Reported: 02/23/00

Collected By:

Date: 02/12/00

Time: 1025

Submitted By: Courier

Date: 02/15/00

Time: 1045

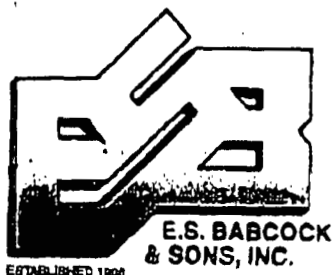
Constituent	Result	Method	RL	Date / Analyst
Total Hardness	58. mg/L	EPA 200.7	3.	000218/LT
Calcium	13. mg/L	EPA 200.7	1.	000218/LT
Magnesium	6. mg/L	EPA 200.7	1.	000218/LT
Ammonia-Nitrogen	0.3 mg/L	SM4500-NH3 H	0.1	000218/KS
Nitrate-Nitrogen	1.2 mg/L	EPA 300.0	0.2	000215/KOS
pH	8.3 units	EPA 150.1	1.	000215/DO
Total Dissolved Solids	140 mg/L	EPA 160.1	10	000218/SF
Total Suspended Solids	220 mg/L	EPA 160.2	5.	000218/SL
MBAS	0.05 mg/L	EPA 425.1	0.05	000216/CW
Total Dissolved Phosphorus	0.38 mg/L	SM 4500-PH	0.05	000215/RK
Total Phosphorus	0.66 mg/L	SM 4500-PB4E	0.05	000215/RK
Nitrite-Nitrogen	ND mg/L	EPA 154.1	0.1	000215/TF
Kjeldahl Nitrogen	2.3 mg/L	EPA 351.2	0.1	000221/TF
Turbidity	120 NTU	EPA 180.1	0.05	000216/LA
Antimony	ND ug/L	EPA 200.8	10	000221/DA
Arsenic	ND ug/L	EPA 200.8	5.	000221/DA
Cadmium	ND ug/L	EPA 200.8	2.	000221/DA
Total Chromium	ND ug/L	EPA 200.8	20	000221/DA
Copper	68. ug/L	EPA 200.8	10	000221/DA
Lead	34. ug/L	EPA 200.8	10	000221/DA
Nickel	ND ug/L	EPA 200.8	20	000221/DA
Selenium	ND ug/L	EPA 200.8	5.	000221/DA
Zinc	160 ug/L	EPA 200.8	10	000221/DA

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

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5102



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3117-1

Client:

Calif. Reg. WQCB, San Diego
Diane S. Welch
9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: SAMPLE #81 DISSOLVED
Site: URSGWC
Description: Delevan SD(8)2

Matrix: wastewater

Page: 1 of 1
Lab No.: L65635-002

Date Reported: 02/23/00

Collected By:
Date: 02/12/00
Time: 1025
Submitted By: Courier
Date: 02/15/00
Time: 1045

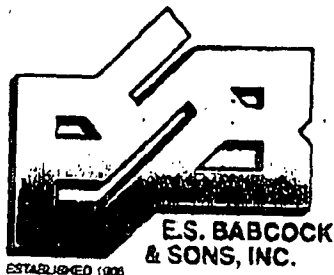
Constituent	Result	Method	RL	Date / Analyst
Antimony	ND ug/L	EPA 200.8	10	000221/DA
Arsenic	ND ug/L	EPA 200.8	5	000221/DA
Cadmium	ND ug/L	EPA 200.8	2	000221/DA
Total Chromium	ND ug/L	EPA 200.8	20	000221/DA
Copper	37. ug/L	EPA 200.8	10	000221/DA
Lead	ND ug/L	EPA 200.8	10	000221/DA
Nickel	ND ug/L	EPA 200.8	20	000221/DA
Selenium	ND ug/L	EPA 200.8	5	000221/DA
Zinc	45. ug/L	EPA 200.8	10	000221/DA

ND = None detected at RL (Reporting Limit). RL units same as result.

Sample filtered prior to metals analysis.

cc:

E.S. Babcock & Sons Inc.



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3117-1

Client:

Calif. Reg. WQCB, San Diego
 Diane S. Welch
 9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: DELEVAN SD(8)2

Site:

Description: Stormwater

Matrix: wastewater

Page: 1 of 1
 Lab No.: L65995-003

Date Reported: 03/08/00

Collected By:

Date: 02/21/00

Time: 0725

Submitted By: UPS

Date: 02/23/00

Time: 0915

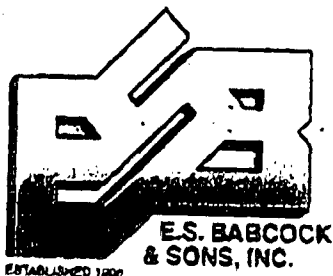
Constituent	Result		Method	RL	Date / Analyst
Total Hardness	47.	mg/L	EPA 200.7	3.	000229/LT
Calcium	12.	mg/L	EPA 200.7	1.	000229/LT
Magnesium	4.	mg/L	EPA 200.7	1.	000229/LT
Ammonia-Nitrogen	ND	mg/L	SM4500-NH3 H	0.1	000225/KS
Specific Conductance	190	umho/cm	EPA 120.1	1.0	000223/DU
Total Dissolved Solids	140	mg/L	EPA 160.1	10	000225/BW
Total Suspended Solids	110	mg/L	EPA 160.2	5.	000228/KMS
Chemical Oxygen Demand	96.	mg/L	EPA 410.4	10	000227/KOS
Oil & Grease	ND	mg/L	EPA 1664	5.	000304/JKB
Total Phosphorus	0.53	ug/L	SM 4500-PP4B	0.05	000225/RK
Kjeldahl Nitrogen	2.0	mg/L	EPA 351.2	0.1	000301/BW
Antimony	ND	ug/L	EPA 200.8	10	000228/LT
Arsenic	ND	ug/L	EPA 200.8	5.	000228/LT
Cadmium	ND	ug/L	EPA 200.8	2.	000228/LT
Total Chromium	ND	ug/L	EPA 200.8	20	000228/LT
Copper	23.	ug/L	EPA 200.8	10	000228/LT
Lead	23.	ug/L	EPA 200.8	10	000228/LT
Nickel	ND	ug/L	EPA 200.8	20	000228/LT
Selenium	ND	ug/L	EPA 200.8	5.	000228/LT
Zinc	180	ug/L	EPA 200.8	10	000228/LT

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E. S. Babcock & Sons Inc.

SD(8)2



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3117-1

Client:

Calif. Reg. WQCB, San Diego
 Diane S. Welch
 9771 Claremont Mesa Blvd., Ste A
 San Diego, CA 92124-1324

Client I.D.: DELEVAN SD(8)2
 Site:
 Description: Stormwater-Dissolved

Matrix: wastewater

Page: 1 of 1
 Lab No.: L65995-007

Date Reported: 03/08/00

Collected By:
 Date: 02/21/00
 Time: 0725
 Submitted By: UPS
 Date: 02/23/00
 Time: 0915

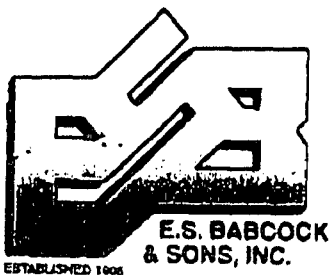
Constituent	Result	Method	RL	Date / Analyst
Antimony	ND ug/L	EPA 200.8	10	000228/LT
Arsenic	ND ug/L	EPA 200.8	5	000228/LT
Cadmium	ND ug/L	EPA 200.8	2	000228/LT
Total Chromium	ND ug/L	EPA 200.8	20	000228/LT
Copper	11. ug/L	EPA 200.8	10	000228/LT
Lead	ND ug/L	EPA 200.8	10	000228/LT
Nickel	ND ug/L	EPA 200.8	20	000228/LT
Selenium	ND ug/L	EPA 200.8	5	000228/LT
Zinc	67. ug/L	EPA 200.8	10	000228/LT

ND = None detected at RL (Reporting Limit). RL units same as result.

Sample filtered for dissolved metals.

cc:

E. S. Babcock & Sons Inc.



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3117-1

Client:

Calif. Reg. WQCB, San Diego
Diane S. Welch
9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: SAMPLE #82

Site: URSGWC

Description: Federal @ Home SD(8)3

Matrix: wastewater

Page: 1 of 1
Lab No.: L65635-003

Date Reported: 02/23/00

Collected By:

Date: 02/12/00

Time: 0905

Submitted By: Courier

Date: 02/15/00

Time: 1045

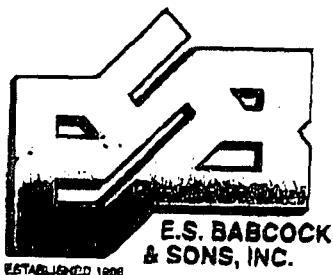
Constituent	Result	Method	RL	Date / Analyst
Total Hardness	54. mg/L	EPA 200.7	3.	000218/LT
Calcium	14. mg/L	EPA 200.7	1.	000218/LT
Magnesium	5. mg/L	EPA 200.7	1.	000218/LT
Ammonia-Nitrogen	0.5 mg/L	SM4500-NH3 H	0.1	000218/KS
Nitrate-Nitrogen	0.9 mg/L	EPA 300.0	0.2	000215/KOS
pH	8.1 units	EPA 150.1	1.	000215/DU
Total Dissolved Solids	100 mg/L	EPA 160.1	10	000218/SF
Total Suspended Solids	270 mg/L	EPA 160.2	5.	000218/SI
MBAS	0.11 mg/L	EPA 425.1	0.05	000216/CW
Total Dissolved Phosphorus	0.36 mg/L	SM 4500-PE	0.05	000215/RK
Total Phosphorus	1.2 mg/L	SM 4500-PB4E	0.05	000215/RK
Nitrite-Nitrogen	ND mg/L	EPA 354.1	0.1	000215/TF
Kjeldahl Nitrogen	2.6 mg/L	EPA 351.2	0.1	000221/TF
Turbidity	81 NTU	EPA 180.1	0.05	000216/LA
Antimony	ND ug/L	EPA 200.8	10	000221/DA
Arsenic	ND ug/L	EPA 200.8	5.	000221/DA
Cadmium	ND ug/L	EPA 200.8	2.	000221/DA
Total Chromium	ND ug/L	EPA 200.8	20	000221/DA
Copper	68. ug/L	EPA 200.8	10	000221/DA
Lead	52. ug/L	EPA 200.8	10	000221/DA
Nickel	ND ug/L	EPA 200.8	20	000221/DA
Selenium	ND ug/L	EPA 200.8	5.	000221/DA
Zinc	300 ug/L	EPA 200.8	10	000221/DA

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

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SD(8)3



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www.babcocklabs.com

3117-1

Client:

Calif. Reg. WQCB, San Diego
Diane S. Welch
9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: SAMPLE #82 DISSOLVED

Site: URSGWC

Description: Federal @ Home *SB(8)3*

Matrix: wastewater

Page: 1 of 1
Lab No.: L65635-004

Date Reported: 02/23/00

Collected By:

Date: 02/12/00

Time: 0905

Submitted By: Courier

Date: 02/15/00

Time: 1045

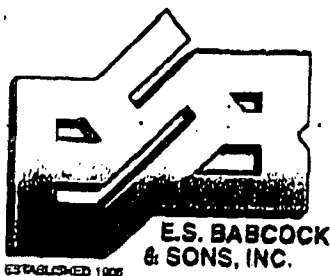
Constituent	Result	Method	RL	Date / Analyst
Antimony	ND ug/L	EPA 200.8	10	000221/DA
Arsenic	ND ug/L	EPA 200.8	5	000221/DA
Cadmium	ND ug/L	EPA 200.8	2	000221/DA
Total Chromium	ND ug/L	EPA 200.8	20	000221/DA
Copper	ND ug/L	EPA 200.8	10	000221/DA
Lead	ND ug/L	EPA 200.8	10	000221/DA
Nickel	ND ug/L	EPA 200.8	20	000221/DA
Selenium	ND ug/L	EPA 200.8	5	000221/DA
Zinc	20. ug/L	EPA 200.8	10	000221/DA

ND = None detected at RL (Reporting Limit). RL units same as result.

Sample filtered prior to metals analysis.

cc:

E. S. Babcock & Sons Inc.



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3117-1

Client:

Calif. Reg. WQCB, San Diego
 Diane S. Welch
 9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: FEDERAL @ HOME

Site:

Description: Stormwater

Matrix: wastewater

Page: 1 of 1

Lab No.: 165995-002

Date Reported: 03/08/00

Collected By:

Date: 02/21/00

Time: 1650

Submitted By: UPS

Date: 02/23/00

Time: 0915

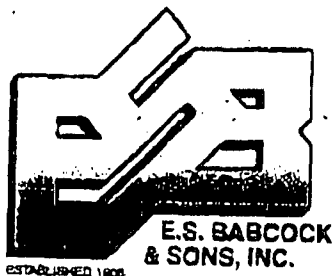
Constituent	Result	Method	RL	Date / Analyst
Total Hardness	36. mg/L	EPA 200.7	3.	000229/LT
Calcium	10. mg/L	EPA 200.7	1.	000229/LT
Magnesium	3. mg/L	EPA 200.7	1.	000229/LT
Ammonia-Nitrogen	ND	SM4500-NH3 H	0.1	000225/KS
Specific Conductance	140 umho/cm	EPA 120.1	1.0	000223/DU
Total Dissolved Solids	110 mg/L	EPA 160.1	10	000225/BW
Total Suspended Solids	110 mg/L	EPA 160.2	5.	000228/KMS
Chemical Oxygen Demand	78 mg/L	EPA 410.4	10	000225/KOS
Oil & Grease	ND	EPA 1664	5.	000304/JKB
Total Phosphorus	0.57 mg/L	SM 4500-PP4E	0.05	000225/RK
Kjeldahl Nitrogen	1.9 mg/L	EPA 351.2	0.1	000301/BW
Antimony	ND	EPA 200.8	10	000228/LT
Arsenic	ND	EPA 200.8	5.	000228/LT
Cadmium	ND	EPA 200.8	2.	000228/LT
Total Chromium	ND	EPA 200.8	20	000228/LT
Copper	19. ug/L	EPA 200.8	10	000228/LT
Lead	19. ug/L	EPA 200.8	10	000228/LT
Nickel	ND	EPA 200.8	20	000228/LT
Selenium	ND	EPA 200.8	5.	000228/LT
Zinc	160 ug/L	EPA 200.8	10	000228/LT

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E.S. Babcock & Sons Inc.

55. (2) 7



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e-mail: esbsales@aol.com
www.babcocklabs.com

3117-1

Client:

Calif. Reg. WQCB, San Diego
Diane S. Welch
9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: FEDERAL @ HOME SD (8) 3

Site:

Description: Stormwater-Dissolved

Matrix: wastewater

Page: 1 of 1
Lab No.: L65995-006

Date Reported: 03/08/00

Collected By:

Date: 02/21/00

Time: 1650

Submitted By: UPS

Date: 02/23/00

Time: 0915

Constituent	Result	Method	RL	Date / Analyst
Antimony	ND ug/L	EPA 200.8	10	000228/LT
Arsenic	ND ug/L	EPA 200.8	5	000228/LT
Cadmium	ND ug/L	EPA 200.8	2	000228/LT
Total Chromium	ND ug/L	EPA 200.8	20	000228/LT
Copper	ND ug/L	EPA 200.8	10	000228/LT
Lead	ND ug/L	EPA 200.8	10	000228/LT
Nickel	ND ug/L	EPA 200.8	20	000228/LT
Selenium	ND ug/L	EPA 200.8	5	000228/LT
Zinc	57. ug/L	EPA 200.8	10	000228/LT

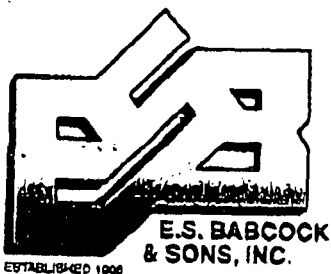
ND = None detected at RL (Reporting Limit). RL units same as result.

Sample filtered for dissolved metals.

cc:

E. S. Babcock & Sons Inc.

5/3/3



Environmental Laboratory Certification #1158
 6100 Quail Valley Court Riverside, CA 92507-0704
 P.O. Box 432 Riverside, CA 92502-0432
 PH (909) 653-3351 FAX (909) 653-1882
 e-mail: esbsales@aol.com
 www.babcocklabs.com

3117-1

Client:

Calif. Reg. WQCB, San Diego
 Diane S. Welch
 9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: SAMPLE #83

Site: URSGWC

Description: Federal @ 94

Matrix: wastewater

Page: 1 of 1
 Lab No.: L65635-005

Date Reported: 02/23/00

Collected By:

Date: 02/12/00

Time: 1045

Submitted By: Courier

Date: 02/15/00

Time: 1045

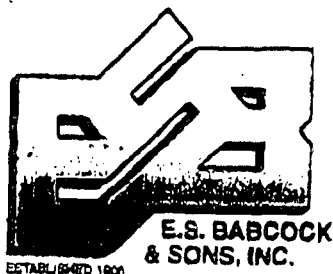
Constituent	Result	Method	RL	Date / Analyst
Total Hardness	100 mg/L	EPA 200.7	3.	000218/LT
Calcium	21. mg/L	EPA 200.7	1.	000218/LT
Magnesium	12. mg/L	EPA 200.7	1.	000218/LT
Ammonia-Nitrogen	0.4 mg/L	SM4500-NH3 H	0.1	000218/KS
Nitrate-Nitrogen	1.1 mg/L	EPA 300.0	0.2	000215/KOS
pH	7.5 units	EPA 150.1	1.	000215/DO
Total Dissolved Solids	220 mg/L	EPA 160.1	10	000218/SF
Total Suspended Solids	520 mg/L	EPA 160.2	5	000218/SF
MBAS	ND mg/L	EPA 425.1	0.05	000216/CW
Total Dissolved Phosphorus	0.37 mg/L	SM 4500-PE	0.05	000215/RK
Total Phosphorus	0.95 mg/L	SM 4500-PB4E	0.05	000215/RK
Nitrite-Nitrogen	ND mg/L	EPA 354.1	0.1	000215/TF
Kjeldahl Nitrogen	2.6 mg/L	EPA 351.2	0.1	000221/TF
Turbidity	240 NTU	EPA 180.1	0.05	000216/LA
Antimony	ND ug/L	EPA 200.8	10	000221/DA
Arsenic	11 ug/L	EPA 200.8	5	000221/DA
Cadmium	ND ug/L	EPA 200.8	2	000221/DA
Total Chromium	ND ug/L	EPA 200.8	20	000221/DA
Copper	43 ug/L	EPA 200.8	10	000221/DA
Lead	76 ug/L	EPA 200.8	10	000221/DA
Nickel	ND ug/L	EPA 200.8	20	000221/DA
Selenium	ND ug/L	EPA 200.8	5	000221/DA
Zinc	370 ug/L	EPA 200.8	10	000221/DA

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E. S. Babcock & Sons Inc.

5-16-05



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www.babcocklabs.com

3117-1

Client:

Calif. Reg. WQCB, San Diego
Diane S. Welch
9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: SAMPLE #83 DISSOLVED

Site: URSGWC

Description: Federal @ 94 SP(8)S

Matrix: wastewater

Page: 1 of 1
Lab No.: L65635-006

Date Reported: 02/23/00

Collected By:

Date: 02/12/00

Time: 1045

Submitted By: Courier

Date: 02/15/00

Time: 1045

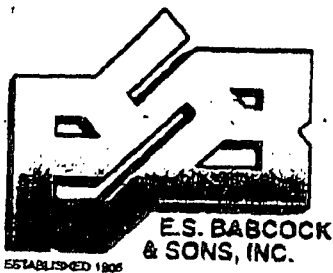
Constituent	Result	Method	RL	Date / Analyst
Antimony	ND ug/L	EPA 200.8	10	000221/DA
Arsenic	ND ug/L	EPA 200.8	5	000221/DA
Cadmium	ND ug/L	EPA 200.8	2	000221/DA
Total Chromium	ND ug/L	EPA 200.8	20	000221/DA
Copper	ND ug/L	EPA 200.8	10	000221/DA
Lead	ND ug/L	EPA 200.8	10	000221/DA
Nickel	ND ug/L	EPA 200.8	20	000221/DA
Selenium	ND ug/L	EPA 200.8	5	000221/DA
Zinc	45. ug/L	EPA 200.8	10	000221/DA

ND = None detected at RL (Reporting Limit). RL units same as result.

Sample filtered prior to metals analysis.

cc:

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 www.babcocklabs.com

3117-1

Client:

Calif. Reg. WQCB, San Diego
 Diane S. Welch
 9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: FEDERAL @ 94TH

Site:

Description: Stormwater

Matrix: wastewater

Page: 1 of 1
 Lab No.: L65995-001

Date Reported: 03/08/00

Collected By:

Date: 02/21/00

Time: 1330

Submitted By: UPS

Date: 02/23/00

Time: 0915

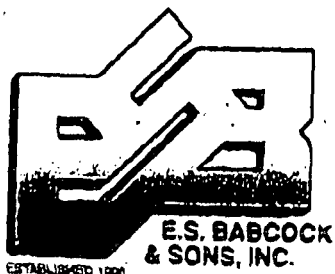
Constituent	Result	Method	RL	Date / Analyst
Total Hardness	63. mg/L	EPA 200.7	3.	000229/LT
Calcium	14. mg/L	EPA 200.7	1.	000229/LT
Magnesium	7. mg/L	EPA 200.7	1.	000229/LT
Ammonia-Nitrogen	ND mg/L	SM 4500-NH3 H	0.1	000225/KS
Specific Conductance	220 umho/cm	EPA 120.1	1.0	000223/DO
Total Dissolved Solids	100 mg/L	EPA 160.1	10	000225/BW
Total Suspended Solids	280 mg/L	EPA 160.2	5.	000228/KMS
Chemical Oxygen Demand	85. mg/L	EPA 410.4	10	000227/KOS
Oil & Grease	ND mg/L	EPA 1664	5.	000304/JKB
Total Phosphorus	0.58 mg/L	SM 4500-PB4P	0.05	000225/RK
Kjeldahl Nitrogen	1.4 mg/L	EPA 351.2	0.1	000301/BW
Antimony	ND ug/L	EPA 200.8	10	000228/LT
Arsenic	11. ug/L	EPA 200.8	5.	000228/LT
Cadmium	ND ug/L	EPA 200.8	2.	000228/LT
Total Chromium	ND ug/L	EPA 200.8	20	000228/LT
Copper	27. ug/L	EPA 200.8	10	000228/LT
Lead	35. ug/L	EPA 200.8	10	000228/LT
Nickel	ND ug/L	EPA 200.8	20	000228/LT
Selenium	ND ug/L	EPA 200.8	5.	000228/LT
Zinc	220 ug/L	EPA 200.8	10	000228/LT

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

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57(8)5



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3117-1

Client:

Calif. Reg. WQCB, San Diego
 Diane S. Welch
 9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: FEDERAL @ 94TH SD(8)5
 Site:
 Description: Stormwater-Dissolved

Matrix: wastewater

Page: 1 of 1
 Lab No.: L65995-005

Date Reported: 03/08/00

Collected By:
 Date: 02/21/00
 Time: 1330
 Submitted By: UPS
 Date: 02/23/00
 Time: 0915

Constituent	Result	Method	RL	Date / Analyst
Antimony	ND ug/L	EPA 200.8	10	000228/LT
Arsenic	ND ug/L	EPA 200.8	5	000228/LT
Cadmium	ND ug/L	EPA 200.8	2	000228/LT
Total Chromium	ND ug/L	EPA 200.8	20	000228/LT
Copper	ND ug/L	EPA 200.8	10	000228/LT
Lead	ND ug/L	EPA 200.8	10	000228/LT
Nickel	ND ug/L	EPA 200.8	20	000228/LT
Selenium	ND ug/L	EPA 200.8	5	000228/LT
Zinc	32. ug/L	EPA 200.8	10	000228/LT

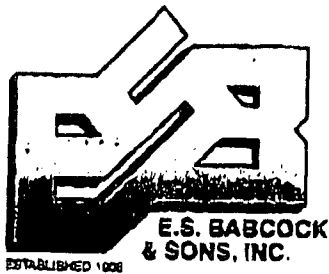
ND = None detected at RL (Reporting Limit). RL units same as result.

Sample filtered for dissolved metals.

cc:

E. S. Babcock & Sons Inc.

SD(8)5



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3117-1

Client:

Calif. Reg. WQCB, San Diego
 Diane S. Welch
 9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: SAMPLE #84

Site: URSGWC

Description: 69th

SD(8)6

Matrix: wastewater

Page: 1 of 1
 Lab No.: L65635-007

Date Reported: 02/23/00

Collected By:

Date: 02/12/00

Time: 1055

Submitted By: Courier

Date: 02/15/00

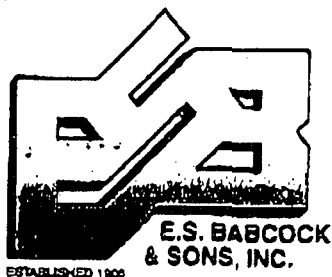
Time: 1045

Constituent	Result	Method	RL	Date / Analyst
Total Hardness	120 mg/L	EPA 200.7	3.	000218/LT
Calcium	26 mg/L	EPA 200.7	1.	000218/LT
Magnesium	13 mg/L	EPA 200.7	1.	000218/LT
Ammonia-Nitrogen	0.3 mg/L	SM 4500-NH3 H	0.1	000218/KS
Nitrate-Nitrogen	1 mg/L	EPA 300.0	0.2	000215/KOS
pH	7.4 units	EPA 150.1	1.	000215/DU
Total Dissolved Solids	310 mg/L	EPA 160.1	10	000218/SF
Total Suspended Solids	170 mg/L	EPA 160.2	5.	000218/SL
MBAS	0.11 mg/L	EPA 425.1	0.05	000216/CW
Total Dissolved Phosphorus	0.34 mg/L	SM 4500-PE	0.05	000216/RK
Total Phosphorus	4.0 mg/L	SM 4500-PB4E	0.05	000216/RK
Nitrite-Nitrogen	ND mg/L	EPA 354.1	0.1	000215/TP
Kjeldahl Nitrogen	2.0 mg/L	EPA 351.2	0.1	000221/TP
Turbidity	58 NTU	EPA 180.1	0.05	000215/LA
Antimony	ND ug/L	EPA 200.8	10	000221/DA
Arsenic	ND ug/L	EPA 200.8	5.	000221/DA
Cadmium	ND ug/L	EPA 200.8	2.	000221/DA
Total Chromium	ND ug/L	EPA 200.8	20	000221/DA
Copper	23 ug/L	EPA 200.8	10	000221/DA
Lead	16 ug/L	EPA 200.8	10	000221/DA
Nickel	ND ug/L	EPA 200.8	20	000221/DA
Selenium	6 ug/L	EPA 200.8	5.	000221/DA
Zinc	100 ug/L	EPA 200.8	10	000221/DA

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

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3117-1

Client:

Calif. Reg. WQCB, San Diego
Diane S. Welch
9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: SAMPLE #84 DISSOLVED
Site: URSGWC
Description: 69th SD(8)6

Matrix: wastewater

Page: 1 of 1
Lab No.: L65635-008

Date Reported: 02/23/00

Collected By:

Date: 02/12/00

Time: 1055

Submitted By: Courier

Date: 02/15/00

Time: 1045

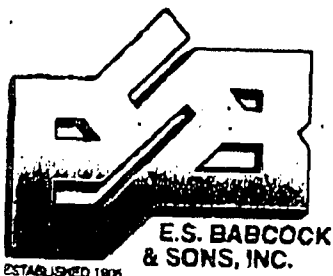
Constituent	Result	Method	RL	Date / Analyst
Antimony	ND ug/L	EPA 200.8	10	000221/DA
Arsenic	ND ug/L	EPA 200.8	5	000221/DA
Cadmium	ND ug/L	EPA 200.8	2	000221/DA
Total Chromium	ND ug/L	EPA 200.8	20	000221/DA
Copper	ND ug/L	EPA 200.8	10	000221/DA
Lead	ND ug/L	EPA 200.8	10	000221/DA
Nickel	ND ug/L	EPA 200.8	20	000221/DA
Selenium	6 ug/L	EPA 200.8	5	000221/DA
Zinc	20. ug/L	EPA 200.8	10	000221/DA

ND = None detected at RL (Reporting Limit). RL units same as result.

Sample filtered prior to metals analysis.

cc:

E. S. Babcock & Sons Inc.



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3117-1

Client:

Calif. Reg. WQCB, San Diego
 Diane S. Welch
 9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: 69TH

Site:

Description: Stormwater

Matrix: wastewater

Page: 1 of 1
 Lab No.: L65995-004

Date Reported: 03/08/00

Collected By:

Date: 02/21/00

Time: 1335

Submitted By: UPS

Date: 02/23/00

Time: 0915

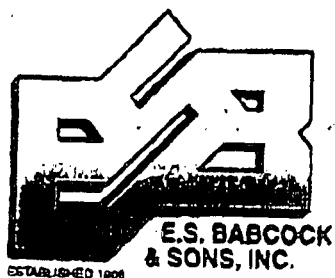
Constituent	Result	Method	RL	Date / Analyst
Total Hardness	100	mg/L	EPA 200.7	3. 000229/LT
Calcium	24.	mg/L	EPA 200.7	1. 000229/LT
Magnesium	11.	mg/L	EPA 200.7	1. 000229/LT
Ammonia-Nitrogen	ND	mg/L	SM4500-NH3 H	0.1 000225/KS
Specific Conductance	510	umho/cm	EPA 120.1	1.0 000223/DU
Total Dissolved Solids	320	mg/L	EPA 160.1	10 000225/BW
Total Suspended Solids	22.	mg/L	EPA 160.2	5. 000228/KMS
Chemical Oxygen Demand	36.	mg/L	EPA 410.4	10 000227/KOS
Oil & Grease	ND	mg/L	EPA 1664	5. 000304/JKB
Total Phosphorus	0.37	mg/L	SM 4500-PB4E	0.05 000225/RK
Kjeldahl Nitrogen	1.2	mg/L	EPA 351.2	0.1 000301/BW
Antimony	ND	ug/L	EPA 200.8	10 000228/LT
Arsenic	ND	ug/L	EPA 200.8	5. 000228/LT
Cadmium	ND	ug/L	EPA 200.8	2. 000228/LT
Total Chromium	ND	ug/L	EPA 200.8	20 000228/LT
Copper	ND	ug/L	EPA 200.8	10 000228/LT
Lead	ND	ug/L	EPA 200.8	10 000228/LT
Nickel	ND	ug/L	EPA 200.8	20 000228/LT
Selenium	8.	ug/L	EPA 200.8	5. 000228/LT
Zinc	54.	ug/L	EPA 200.8	10 000228/LT

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E. S. Babcock & Sons Inc.

5-13-0



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3117-1

Client:

Calif. Reg. WQCB, San Diego
Diane S. Welch
9771 Claremont Mesa Blvd., Ste A

San Diego, CA 92124-1324

Client I.D.: 69TH SD(e)6
Site:
Description: Stormwater-Dissolved

Matrix: wastewater

Page: 1 of 1
Lab No.: L65995-008

Date Reported: 03/08/00

Collected By:

Date: 02/21/00

Time: 1335

Submitted By: UPS

Date: 02/23/00

Time: 0915

Constituent	Result	Method	RL	Date / Analyst
Antimony	ND ug/L	EPA 200.8	10	000228/LT
Arsenic	ND ug/L	EPA 200.8	5	000228/LT
Cadmium	ND ug/L	EPA 200.8	2	000228/LT
Total Chromium	ND ug/L	EPA 200.8	20	000228/LT
Copper	ND ug/L	EPA 200.8	10	000228/LT
Lead	ND ug/L	EPA 200.8	10	000228/LT
Nickel	ND ug/L	EPA 200.8	20	000228/LT
Selenium	8 ug/L	EPA 200.8	5	000228/LT
Zinc	30 ug/L	EPA 200.8	10	000228/LT

ND = None detected at RL (Reporting Limit). RL units same as result.

Sample filtered for dissolved metals.

cc:

E. S. Babcock & Sons Inc.

Storm Water Quality Data

SD(8)1

STATION	METHOD	PARAMETER	UNITS	SAMPLE DATE		
				2/12/00	2/20/00	3/5/00
GRAB SAMPLES						
GENERAL/PHYSICAL/ORGANIC						
SD8		Field pH	UNITS	7.9	8.6	8.3
SD8	EPA 413.2	OIL AND GREASE	MG/L	1.92	2.04	1.48
SD8	SM 2510-B	ELECTRICAL CONDUCTIVITY	UMHOS/CM	186	187	185
BACTERIOLOGICAL						
SD8	SM 9223	TOTAL COLIFORM	MPN/100ML	500	> 1600	> 1600
SD8	SM 9221	FECAL COLIFORM	MPN/100ML	< 2.0	> 1600	> 1600
SD8	SM 9230	FECAL STREPTOCOCCI	MPN/100ML	< 2.0	> 1600	> 1600
COMPOSITE SAMPLES						
INORGANIC - WET CHEM						
SD8	SM 4500 NH ₃ -C	AMMONIA AS NITROGEN	MG/L	1.65	< .1	0.21
SD8	SM 5210-B	BOD	MG/L	7.8	2.54	6.1
SD8	SM 5220-C	CHEMICAL OXYGEN DEMAND	MG/L	41	104	57.0
SD8	SM 4500 P-E	DISSOLVED PHOSPHOROUS	MG/L	0.33	.26	0.22
SD8	SM 4500 P-E	TOTAL PHOSPHORUS	MG/L	0.46	.33	0.6
SD8	SM 4500 NO ₃ -E	NITRATE-N	MG/L	3.22	1.04	3.10
SD8	SM 4500 NO ₂ -B	NITRITE-N	MG/L	0.086	< .05	< 0.05
SD8	SM 4500 H-B	pH	UNITS	7.52	6.9	7.2
SD8	SM 2340-B	TOTAL HARDNESS	MG CaCO3/L	40.9	35.1	45.5
SD8	SM 4500 NH ₃ -C	TOTAL KJELDAHL NITROGEN	MG/L	2.98	3.1	2.36
SD8	SM 2540-C	TOTAL DISSOLVED SOLIDS	MG/L	120	111	140
SD8	SM 2540-D	TOTAL SUSPENDED SOLIDS	MG/L	457	62.0	200
SD8	SM 2130 B	TURBIDITY	NTU	50.0	27.0	38.0
SD8	SM 5540-C	SURFACTANTS (MBAS)	MG/L	0.35	0.22	0.13
INORGANIC - TOTAL METALS						
SD8	EPA 200.7	ANTIMONY	MG/L	< 0.0015	< .0015	< 0.0015
SD8	EPA 206.2	ARSENIC	MG/L	< 0.001	0.007	0.005
SD8	EPA 200.7	CADMIUM	MG/L	< 0.00025	0.002	< 0.00025
SD8	EPA 200.7	CHROMIUM	MG/L	< 0.005	< 0.005	< 0.005
SD8	EPA 200.7	COPPER	MG/L	0.029	0.016	0.014
SD8	EPA 200.7	LEAD	MG/L	0.015	< 0.001	< 0.001
SD8	EPA 200.7	NICKEL	MG/L	< 0.005	< 0.005	< 0.005
SD8	EPA 270.2	SELENIUM	MG/L	< 0.001	< 0.001	< 0.001
SD8	EPA 200.7	ZINC	MG/L	0.096	0.05	0.08
INORGANIC - DISSOLVED METALS						
SD8	EPA 200.7	ANTIMONY	MG/L	< 0.0015	< 0.0015	< 0.0015
SD8	EPA 206.2	ARSENIC	MG/L	< 0.001	0.005	< 0.001
SD8	EPA 200.7	CADMIUM	MG/L	< 0.00025	< 0.00025	< 0.00025
SD8	EPA 200.7	CHROMIUM	MG/L	< 0.005	< 0.005	< 0.005
SD8	EPA 200.7	COPPER	MG/L	< 0.005	< 0.005	< 0.005
SD8	EPA 200.7	LEAD	MG/L	< 0.001	< 0.001	< 0.001
SD8	EPA 200.7	NICKEL	MG/L	< 0.005	< 0.005	< 0.005
SD8	EPA 270.2	SELENIUM	MG/L	< 0.001	< 0.001	< 0.001
SD8	EPA 200.7	ZINC	MG/L	0.019	0.028	0.008
ORGANOPHOSPHATE PESTICIDES						
SD8	EPA 8141	DIAZINON	UG/L	0.27*	0.35**	0.20**
SD8	EPA 8141	CHLORPYRIFOS	UG/L	< 0.50	< 0.50	0.04*

* indicates an estimated value that is below quantification limit.

** indicates the percent difference between primary and confirmation columns is greater than 40%.

SD(8)4 - South Branch (Caltrans Monitoring)			
Constituent	Reporting Limit	2/12/00	2/23/00
Total Metals			
Antimony	1.0 ug/l	<1	<1
Zinc	1.0 ug/l	327	81
Total Nickel	2.0 ug/l	18.3	10.3
Aluminum	25.0 ug/l	17,300	13,800
Iron	20 ug/l	24,100	14,700
Lead	1.0 ug/l	83	25.9J
Manganese	2.0 ug/l	541	235
Cadmium	0.2 ug/l	1.3	0.7
Copper	1.0 ug/l	33	19
Thallium	1.0 ug/l	<1	<1
Selenium	2.0 ug/l	<2	<2
Silver	0.2 ug/l	0.3	<0.2
Chromium	1.0 ug/l	23	17
Mercury	0.2 ug/l	<0.2	0.3
Dissolved Metals			
Antimony	1.0 ug/l	<1	<1
Zinc	1.0 ug/l	16.8	42
Nickel	2.0 ug/l	5	6.1
Aluminum	25.0 ug/l	3,020	7,460
Iron	20.0 ug/l	1,760	6,800
Lead	1.0 ug/l	3.6	10.5J
Manganese	2.0 ug/l	49	77
Cadmium	0.2 ug/l	<0.2	0.3
Copper	1.0 ug/l	5.3	9.6
Thallium	1.0 ug/l	<1	<1
Selenium	2.0 ug/l	<2	<2
Silver	0.2 ug/l	<0.2	<0.2
Chromium	1.0 ug/l	2.1	9
Mercury	0.2 ug/l	<0.2	0.3
Conventionals/ Nutrients			
Ammonia as N	0.01 mg/l	0.13	0.08
Nitrate as N	0.01 mg/l	0.67	0.4
Nitrite as N	0.01 mg/l	0.09	0.05
Dissolved Phosphorus	0.002 mg/l	0.3	0.35
Total Phosphorus	0.002 mg/l	0.85	0.44
Orthophosphate as P	0.002 mg/l	0.25	0.29
Turbidity	1 NTU	157	310
Total Dissolved Solids	10 mg/l	190	232
Total Suspended Solids	1.0 mg/l	946	416
Conductivity	1 umho/cm	234	202
pH	0.1 units	7.7	8
Total Cyanide	0.005 mg/l	<0.005	<0.005
Hydrocarbons			
Oil & Grease	5 mg/l	19	7
Microbiological			
Total Coliform	2 MPN/100m	>160,000	>160,000
Fecal Coliform	2 MPN/100ml	>160,000	160,000
Minerals			
Fluoride	0.02 mg/l	0.18	0.1
Semi Volatile Organics			
2-Chlorophenol	10 ug/l	<10	<10
Phenol	10 ug/l	<10	<10
2-Methylphenol	10 ug/l	<10	<10
4-Methylphenol	10 ug/l	<10	<10
2,4-Dichlorophenol	10 ug/l	<10	<10
2,4-Dimethylphenol	10 ug/l	<10	<10
4-Chloro-3-	10 ug/l	<10	<10

methylpheno			
2,4,6-Trichloropheno	10 ug/l	<10	<10
2,4,5-Trichloropheno	10 ug/l	<10	<10
2,4-Dinitropheno	10 ug/l	<10	<10
4-Nitropheno	10 ug/l	<10	<10
4,6-Dinitro-2-methylpheno	10 ug/l	<10	<10
Pentachloropheno	10 ug/l	<10	<10
Benzo(a)pyrene	2 ug/l	<2	<2
Hexachlorobenzene	2 ug/l	<2	<2
Benzo(a)anthracene	2 ug/l	<2	<2
Chrysene	2 ug/l	<2	<2
bis(2-ethylhexyl)phthalate	2 ug/l	<2	<2
Pesticides, Herbicides			
2,3,7,8-TCDD	1.0 ug/l	<1	<1
Glyphosate	5 ug/l	<5	<5
Thiobencarb	0.5 ug/l	<0.5	<0.5
Bromacil	1.0 ug/l	<1	<1
Diazinon	1.0 ug/l	<1	<1
Chlorpyrifos	1.0 ug/l	<1	<1
Diuron	1.0 ug/l	6.6	3.5
Bioassay			
<i>Corodaphnia dubia</i>	NA	NA	100.00%
NOEC Survival			
Tuc Survival	NA	NA	1:00
LC25 Survival	NA	NA	>100.00%
LC50 Survival	NA	NA	>100.00%
NOEC Reproduction	NA	NA	100.00%
Tuc Reproduction	NA	NA	1:00
LC25 Reproduction	NA	NA	>100.00%
LC50 Reproduction	NA	NA	>100.00%
<i>Pimephales promelas</i>	NA	NA	100.00%
NOEC Survival			
Tuc Survival	NA	NA	1:00
LC25 Survival	NA	NA	>100.00%
LC50 Survival	NA	NA	>100.00%
NOEC Growth	NA	NA	100.00%
Tuc Growth	NA	NA	1:00
LC25 Growth	NA	NA	>100.00%
LC50 Growth	NA	NA	>100.00%

The medians presented above have been evaluated by using a value of ½ the reporting limit for all data reported as equal to or less than the reporting limit_

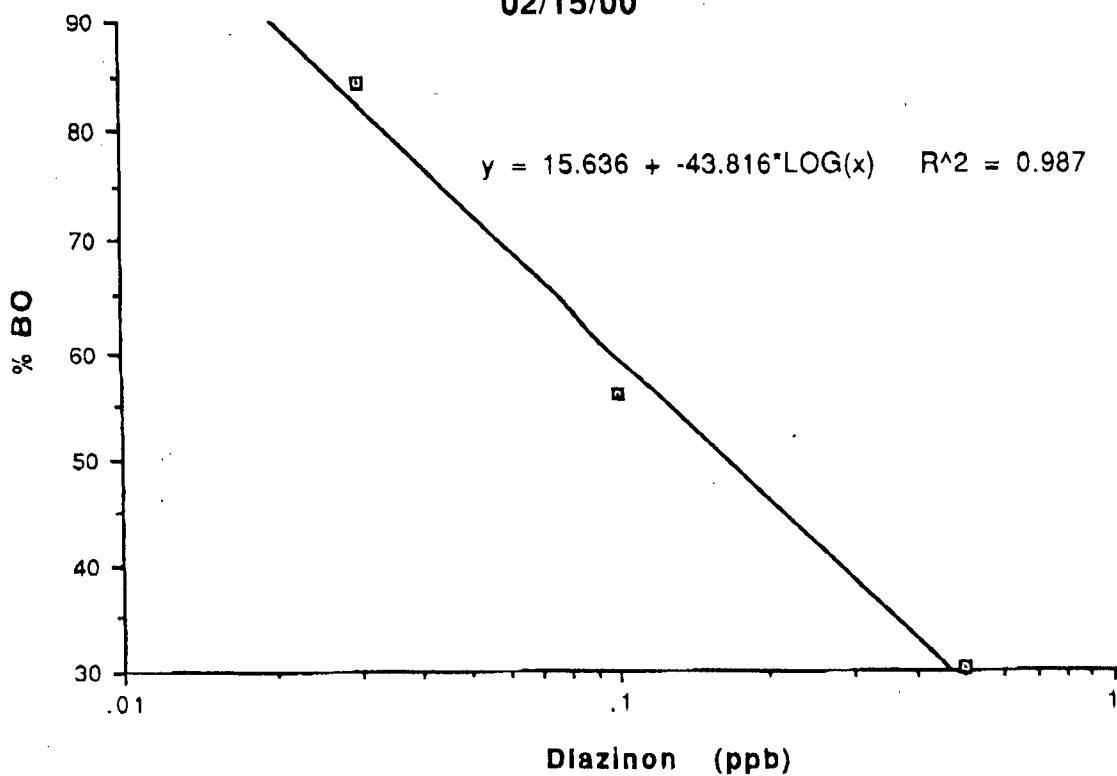
AQUA-Science

Environmental Toxicology Consultants

Enzyme-Linked Immunosorbant Assay (ELISA) ResultsClient: *Woodward Clyde*Project: *Woodward 00-01*Type of ELISA: *Diazinon*Source: *Beacon Analytical*Model: *Insite™ Plate Kit*Lot No.: *#32849*Date: *2/15/00*

STANDARD CURVE	Avg.%Bo	Log ppb	Diazinon (ppb)
0.03 ppb	84.4	-1.5685	0.0270
0.10 ppb	56.0	-0.9203	0.1201
0.50 ppb	30.3	-0.3351	0.4622

Diazinon Std. Curve
02/15/00



MM 2/15/00
J 2/20/00

Enzyme-Linked Immunosorbant Assay (ELISA) Results

4/15/00
J 4/20/00

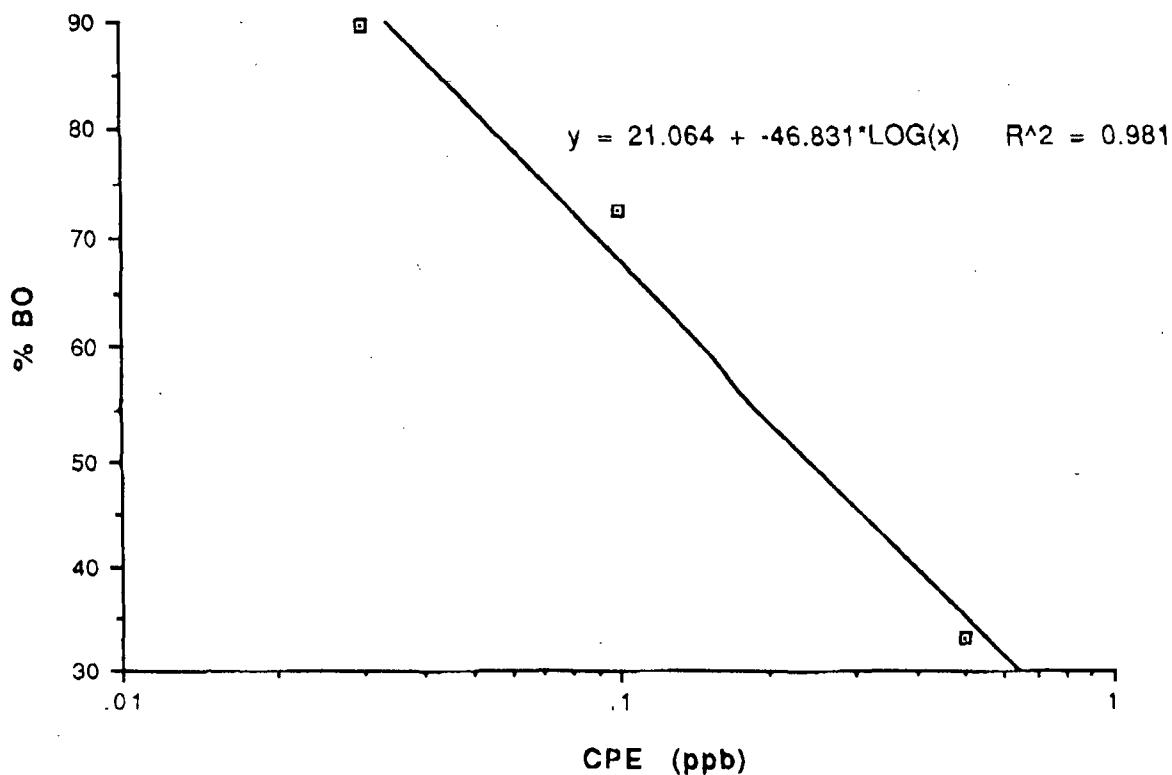
AQUA-Science

Environmental Toxicology Consultants

Enzyme-Linked Immunosorbant Assay (ELISA) ResultsClient: *Woodward Clyde*Project: *Woodward 00-01*Type of ELISA: *Chlorpyrifos*Source: *Beacon Analytical*Model: *Insite™ Plate Kit*Lot No.: *#12499*Date: *2/15/00*

STANDARD CURVE	Avg.%Bo	Log ppb	Chlorpyrifos (ppb)
0.03 ppb	89.7	-1.4660	0.0342
0.10 ppb	72.6	-1.0994	0.0795
0.50 ppb	33.2	-0.2585	0.5514

Chlorpyrifos Std. Curve
02/15/00



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Enzyme-Linked Immunosorbant Assay (ELISA) Results

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AQUA-Science

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Environmental Toxicology Consultants

Enzyme-Linked Immunosorbant Assay Record

Date: 2/15/00 Beacon Analytical
Chlorpyrifos
Client: USR Woodward Clyde Lot #12499
Exp. 6/00
Type of ELISA: Chlorpyrifos, ethyl (CPE)

A1/A2	Ultrapure control	B1/B2	E-STD
A3/A4	0.03 ppb CPE calibrator	B3/B4	SD8 (4)
A5/A6	0.1 ppb CPE calibrator	B5/B6	SD8
A7/A8	0.5 ppb CPE calibrator	B7/B8	SD5

	O.D.	Avg. O.D.	% CV	%Bo		O.D.	Avg. O.D.	% CV	%Bo
A1	1.256	1.250	0.74	100.00	B1	0.596	0.616	4.59	49.30
A2	1.243				B2	0.636			
A3	1.109	1.121	1.51	89.72	B3	0.943	0.933	1.52	74.67
A4	1.133				B4	0.923			
A5	0.900	0.907	1.01	72.55	B5	0.921	0.938	2.56	75.07
A6	0.913				B6	0.955			
A7	0.393	0.415	7.34	33.17	B7	0.878	0.907	4.45	72.55
A8	0.436				B8	0.935			

Technician: MMDate: 2/15/00

Study Director: _____

Date: 2/20/00

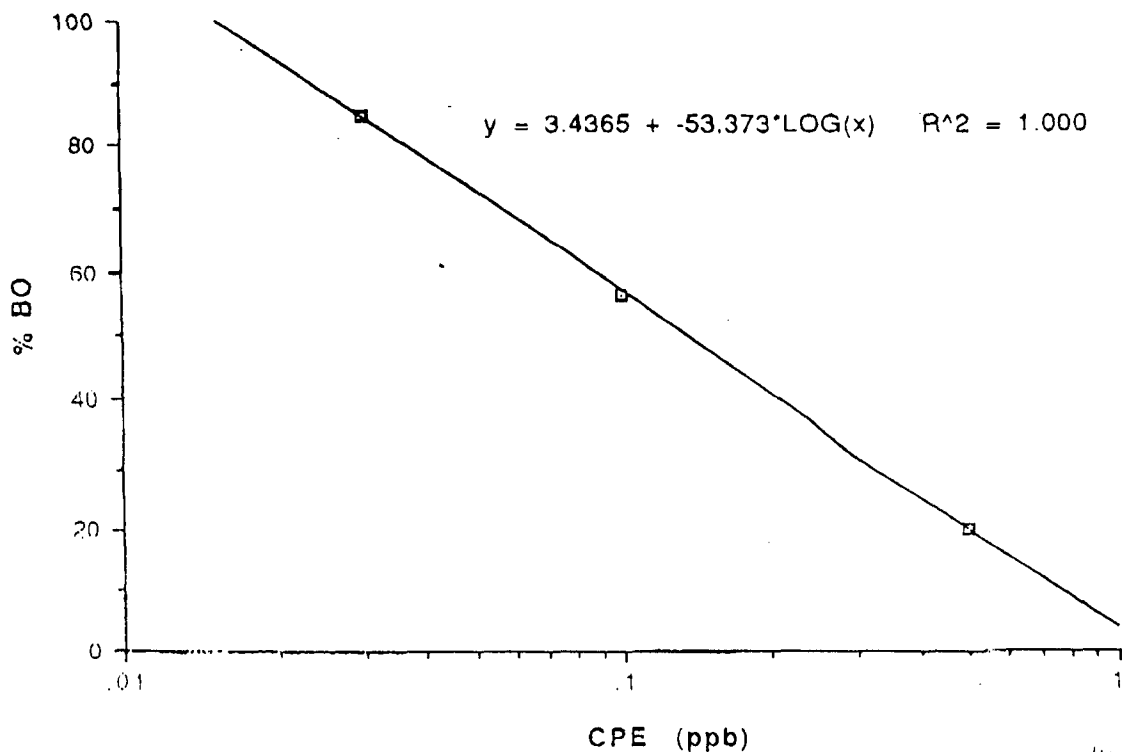
AQUA-Science

Environmental Toxicology Consultants

Enzyme-Linked Immunosorbant Assay (ELISA) ResultsClient: *SWQCB*Project: *Chollas Ck. 00-01*Type of ELISA: *Chlorpyrifos (CPE)*Source: *Beacon Analytical*Model: *Insite™ Plate Kit*Lot No.: *#42849*Date: *2/26/00*

STANDARD CURVE	Avg.%Bo	Log ppb	CPE (ppb)
0.03 ppb	85.0	-1.5286	0.0296
0.10 ppb	56.3	-0.9901	0.1023
0.50 ppb	19.7	-0.3053	0.4951

Chlorpyrifos Std Curve
02/26/00



Wm 02/26/00
J 2/27/00

Environmental Toxicology Consultants

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Date:	2/26/00		Beacon Analytical
			Chlorpyrifos
Client:	SRWQCB		Lot #20340
			Exp. 7/01
Type of ELISA:	Chlorpyrifos,ethyl (CPE)		
A1/A2	Ultrapure control	B1/B2	E-STD
A3/A4	0.03 ppb CPE calibrator	B3/B4	Chollas Ck. -02/21/00 @ Delevan
A5/A6	0.1 ppb CPE calibrator	B5/B8	Chollas Ck. -02/21/00 Federal @ Home
A7/A8	0.5 ppb CPE calibrator	B7/B8	Chollas Ck. -02/21/00 @ 69th

	O.D.	Avg. O.D.	% CV	%Bo		O.D.	Avg. O.D.	% CV	%Bo
A1	1.714	1.655	5.04	100.00	B1	0.860	0.858	0.41	51.81
A2	1.596				B2	0.855			
A3	1.323	1.407	8.44	85.02	B3	1.284	1.262	2.52	76.22
A4	1.491				B4	1.239			
A5	0.987	0.932	8.43	56.28	B5	1.264	1.265	0.11	76.44
A6	0.876				B6	1.266			
A7	0.310	0.327	7.15	19.73	B7	1.246	1.354	11.28	81.81
A8	0.343				B8	1.462			

Technician:

Date: 02/26/00

Study Director:

Date: 2/27/00

AQUA-Science

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Enzyme-Linked Immunosorbant Assay (ELISA) Results

Client: *SWQCB*

Project: *Chollas Ck. 00-01*

Type of ELISA: *Diazinon*

Source: *Beacon Analytical*

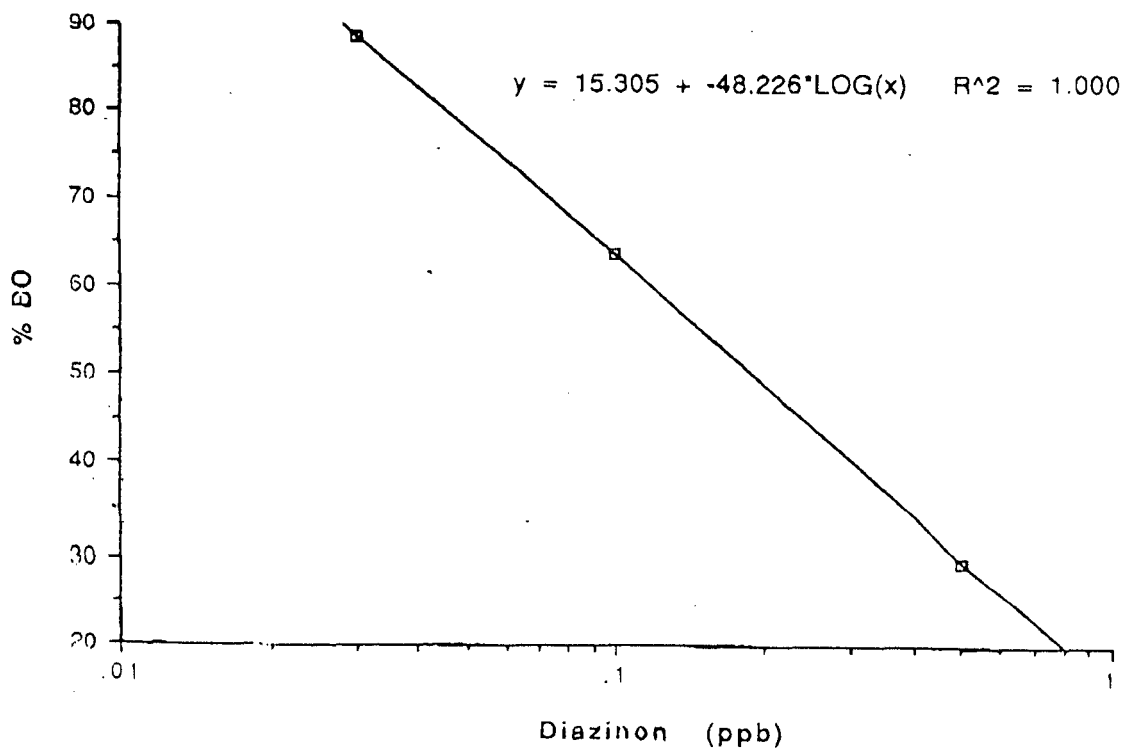
Model: *Insite™ Plate Kit*

Lot No.: *#32849*

Date: *02/26/2000*

STANDARD CURVE	Avg.%Bo	Log ppb	Diazinon (ppb)
0.03 ppb	88.7	-1.5217	0.0301
0.10 ppb	63.6	-1.0021	0.0995
0.50 ppb	29.8	-0.3001	0.5010

Diazinon Std Curve



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2/27/00

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