
Groundwater Monitoring and Progress Report September 2005 Sampling Event

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Prepared for:

Sierra Pacific Industries

October 28, 2005

Project No. 9329.000, Task 28



October 28, 2005
Project 9329.000, Task 28

Executive Officer
California Regional Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, California 95403

Attention: Kasey Ashley

Subject: Groundwater Monitoring and Progress Report
September 2005 Sampling Event
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Dear Ms. Ashley:

As requested by Sierra Pacific Industries, we have enclosed a copy of the subject report.

Sincerely yours,
GEOMATRIX CONSULTANTS, INC.



Mike Keim
Senior Environmental Scientist



Edward P. Conti, CEG, CHG
Principal Geologist

RAS/EPC/abr
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Enclosure

cc: Bob Ellery, Sierra Pacific Industries (with enclosure)
Gordie Amos, Sierra Pacific Industries (with enclosure)
Fred Evenson, Law Offices of Frederic Evenson (with enclosure)
Jim Lamport, Ecological Rights Foundation (with enclosure)

Groundwater Monitoring and Progress Report September 2005 Sampling Event

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Prepared for:

Sierra Pacific Industries

Prepared by:

Geomatrix Consultants, Inc.
2101 Webster Street, 12th Floor
Oakland, California 94612
(510) 663-4100

October 28, 2005

Project No. 9329.000, Task 28



PROFESSIONAL CERTIFICATION

**GROUNDWATER MONITORING AND
PROGRESS REPORT
SEPTEMBER 2005 SAMPLING EVENT**

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

October 28, 2005
Project No. 9329.000, Task 28

This report was prepared by Geomatrix Consultants, Inc., under the professional supervision of Edward P. Conti. The findings, recommendations, specifications and/or professional opinions presented in this report were prepared in accordance with generally accepted professional hydrogeologic practice, and within the scope of the project. There is no other warranty, either express or implied.



Edward P. Conti, CEG, CHG
Principal Geologist

TABLE OF CONTENTS

	Page
1.0 INTRODUCTION	1
2.0 SITE BACKGROUND	2
2.1 HISTORY	2
2.2 LITHOLOGY	3
2.3 HYDROGEOLOGY	3
3.0 SEPTEMBER 2005 MONITORING REPORT	4
3.1 FIELD METHODS	4
3.2 LABORATORY METHODS	5
3.3 LABORATORY DATA QUALITY REVIEW	5
3.4 RESULTS OF GROUNDWATER MONITORING	6
3.4.1 Occurrence and Movement of Groundwater	6
3.4.2 Groundwater Analytical Results	6
4.0 PILOT STUDY PROGRESS REPORT	7
4.1 CONFIRMATION GROUNDWATER SAMPLING	7
4.2 GROUNDWATER ANALYTICAL RESULTS	8
4.3 LABORATORY DATA QUALITY REVIEW	8
5.0 WASTEWATER DISPOSAL	9
6.0 FUTURE MONITORING AND SAMPLING SCHEDULE	9
7.0 REFERENCES	10

TABLE OF CONTENTS

(Continued)

TABLES

Table 1	Monitoring Well Construction Details
Table 2	Summary of Water Level Measurements
Table 3	Summary of Water Quality Parameters
Table 4	Laboratory Analytical Results for Chlorinated Phenols (Canadian Pulp Method)
Table 5	Laboratory Analytical Results for Chlorinated Phenols and Phenol (8270 SIM Method)

FIGURES

Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Former Green Chain Area Plan
Figure 4	Potentiometric Surface Map of Shallow Groundwater, September 7, 2005
Figure 5	Potentiometric Surface Map of Deep Groundwater, September 7, 2005
Figure 6	PCP Analytical Results for Shallow Groundwater, September 7, 2005

APPENDICES

Appendix A	Field Documentation
Appendix B	Laboratory Reports and Chain-of-Custody Records for Groundwater Samples
Appendix C	Laboratory Data Quality Review

GROUNDWATER MONITORING AND PROGRESS REPORT SEPTEMBER 2005 SAMPLING EVENT

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

1.0 INTRODUCTION

This report presents the methods and results of the September 2005 groundwater monitoring event and a progress report for remediation pilot study activities also performed during September 2005 at the Sierra Pacific Industries (SPI) Arcata Division Sawmill located in Arcata, California (the site, Figure 1). The groundwater monitoring event was performed in accordance with Monitoring and Reporting Program (MRP) No. R1-2003-0127, which was revised and reissued by the California Regional Water Quality Control Board, North Coast Region (RWQCB) on March 4, 2005. This revised MRP requires semi-annual or annual sampling of selected groundwater monitoring wells and semi-annual reporting. The progress report for remediation pilot study activities was prepared in accordance with the *Pilot Study Work Plan for Implementation of Proposed Remedial Action* (Geomatrix, 2004b). Geomatrix Consultants, Inc. (Geomatrix) has prepared this report on behalf of SPI.

During the March 2005 pilot study monitoring event, pentachlorophenol (PCP) was unexpectedly detected at a concentration of 2 µg/l in groundwater samples collected from monitoring wells MW-1, MW-2, MW-3, MW-5, and MW-14 (Geomatrix, 2005). Therefore, confirmation sampling of these five wells was performed during the September 2005 groundwater sampling event. The progress report for remediation pilot study activities presents a summary of the confirmation sampling activities performed.

This report is organized as follows: site background, including a discussion of site history, subsurface lithology, and hydrogeology (Section 2.0); September 2005 groundwater monitoring methods and results (Section 3.0); progress report for remediation pilot study activities and results (Section 4.0); wastewater disposal (Section 5.0); schedule for future monitoring and sampling activities (Section 6.0); and references (Section 7.0).

2.0 SITE BACKGROUND

This section provides background information regarding the site setting and history and discusses subsurface conditions at the site, including lithology and hydrogeology. Subsurface lithologic and hydrogeologic conditions at the site were previously investigated and described by EnviroNet (EnviroNet, 2002a).

2.1 HISTORY

The approximately 68-acre site is located on the Samoa Peninsula, along the northern shoreline of Humboldt Bay and approximately 4 miles west of the town of Arcata, California. The site is bounded to the east by the Mad River Slough, to the northwest by an old railroad grade, and to the south by New Navy Base Road and mud flats of Humboldt Bay (Figure 1).

The site is currently an active sawmill; features are shown on Figure 2. The sawmill has operated at the site since approximately 1950. Prior to construction of the mill facilities, the site consisted of undeveloped sand dunes and mud flats. During construction of mill facilities in the 1950s and 1960s, portions of the Mad River Slough on the eastern, northern, and southern sides of the site were filled. The current mill facility consists of an administrative building, a main sawmill building, numerous wood-processing buildings, log storage areas, milled lumber storage areas, and loading/unloading areas. A 140-foot-deep water supply well (Feature 48 on Figure 2) provides water for log sprinkling. An older, shallow water supply well is located adjacent to the 140-foot well, but has not been used since it began to produce sand.

Wood surface protection activities historically conducted at the site included the use of an anti-stain solution containing chlorinated phenols, including pentachlorophenol (PCP) and tetrachlorophenol, to control sap stain and mold on a small amount of milled lumber. The anti-stain solution was applied in an aboveground dip tank located in the middle of the former green chain, which was located immediately south of the eastern end of the current sorter building (Feature 49 on Figure 2). Use of the solution containing chlorinated phenols in the former green chain area of the site reportedly commenced in the early to mid-1960s and was discontinued in 1985 (EnviroNet, 2002b). At the direction of the RWQCB, SPI stopped purchasing anti-stain solution containing chlorinated phenols in 1985 and commenced a process of relocating the remaining solution containing chlorinated phenols to a new dip tank facility for recycling (MFG, 2003a). Due to the difficulty of disposing of the old solution containing chlorinated phenols, the remaining solution from the old dip tank was mixed with a new anti-stain solution that did not contain chlorinated phenols at the new dip tank facility

(Feature 21 on Figure 2). Recycling of the solution containing chlorinated phenols in the new dip tank continued until 1987, at which time the drip basin adjacent to the old dip tank was cleaned out, filled with sand, and capped with 3 to 4 inches of concrete (MFG, 2003b). The new dip tank has been cleaned three times since 1987.

The potential effects of wood surface protection activities on soil and groundwater have been investigated to depths of approximately 20 feet below ground surface (bgs). In 2002, investigation activities included the installation of 19 monitoring wells at the site: 15 monitoring wells (MW-1 through MW-12, MW-14, MW-17, and MW-18) were constructed to monitor shallow groundwater between depths of approximately 2 and 8 feet bgs, and four monitoring wells (MW-13D, MW-15D, MW-16D, and MW-19D) were constructed to monitor deeper groundwater between depths of approximately 15 and 20 feet bgs (EnviroNet, 2003). Two additional monitoring wells (MW-20 and MW-21) were installed in January and February 2004 to monitor shallow groundwater (Geomatrix, 2004a). Monitoring well locations are illustrated on Figure 3. Monitoring well construction details are included in Table 1.

2.2 LITHOLOGY

The site is located adjacent to the Mad River Slough near the northern shoreline of Humboldt Bay. The eastern, northern, and southern portions of the site were filled in the 1950s and 1960s.

Based on observations made during investigation activities at the site, subsurface lithology within the shallow zone (less than 8 feet bgs) is predominantly fine- to medium-grained sand of apparent sand dune origin. Wood and fill material was locally observed in this shallow zone during activities such as the installation of monitoring wells MW-13D and MW-15D. Soil beneath the fine- to medium-grained sand consisted of more sand and locally of fine-grained material, classified as “bay mud.” The fine-grained material was encountered during the installation of monitoring wells MW-3, MW-10, MW-15D, MW-16D, and MW-17 at depths of approximately 6 to 8 feet bgs and during the installation of monitoring well MW-15 at a depth of approximately 15 feet bgs. Soil described during the installation of a water supply well at the site (Feature 48 on Figure 2) suggests that subsurface soil between the ground surface and 140 feet bgs is predominately composed of sand (EnviroNet, 2001).

2.3 HYDROGEOLOGY

The groundwater surface measured in 21 site monitoring wells has ranged between approximately 0.5 and 5 feet bgs in the 17 shallow wells (i.e., screened from 2 to 8 feet bgs)

and between approximately 4 and 6 feet bgs in the four deeper wells (i.e., screened from 15 to 20 feet bgs). In the eastern portion of the site, groundwater flow generally is to the east, toward the Mad River Slough (MFG and Geomatrix, 2003). In the southwestern portion of the site, groundwater likely flows to the south-southeast, toward Humboldt Bay (MFG and Geomatrix, 2003).

Tidal fluctuations in the Mad River Slough and nearby Humboldt Bay influence groundwater levels at the site in the vicinity of the slough. A 2002 tidal influence study conducted at the site by EnviroNet suggested that tidal effects become negligible at distances greater than 100 feet from the slough shore (EnviroNet, 2003).

3.0 SEPTEMBER 2005 MONITORING REPORT

This section presents field and laboratory methods and results of groundwater monitoring activities conducted during this period, as required by the MRP.

3.1 FIELD METHODS

Prior to groundwater sampling activities, depth to water was measured in site monitoring wells MW-1 through MW-21 (Figure 3) and at a monitoring point in the Mad River Slough on September 7, 2005 using an electronic sounder (Table 2). Depth to water in the monitoring wells was measured from a surveyed point along the top of the well casing, in a sequence from lowest expected concentrations of constituents of concern (first) to highest expected concentrations (last), based on laboratory analytical results from the previous sampling event. Field personnel cleaned the electronic sounder using an Alconox® detergent solution followed by a distilled water rinse prior to use at each monitoring well location.

Seven monitoring wells (MW-2, MW-6 through MW-9, MW-20, and MW-21) were purged and sampled on September 7, 2005, in accordance with the site MRP. In monitoring wells MW-6 through MW-9 and MW-20, Geomatrix field personnel used dedicated, disposable Teflon® bailers to remove water from the well casings. For monitoring wells MW-2 and MW-21, Geomatrix field personnel removed water from the well casings using low-flow purging/sampling techniques incorporating a peristaltic pump and disposable tubing. Field personnel measured and recorded readings of temperature, pH, specific conductance, and total dissolved solids (TDS) on field sampling records during groundwater bailer purging activities. For bailer-purged wells, the purging activities were ceased when a minimum of three well casing volumes of water had been removed and water quality parameters stabilized to within 10 percent of specific conductance, 0.05 pH units for pH, and 1 degree Celsius for temperature.

For low-flow peristaltic-pump-purged wells, purging activities were ceased when water quality parameters stabilized according to the same criteria for bailer-purged wells. Copies of the field records for groundwater monitoring and sampling activities are included in Appendix A.

After purging, groundwater samples were collected using the dedicated Teflon® bailers or a peristaltic pump and dedicated tubing. A field sample of groundwater was monitored for temperature, pH, specific conductance, and TDS just prior to collecting the groundwater sample to record the water quality parameters of the groundwater being sampled. These field parameters are summarized in Table 3. Historical laboratory analytical results for TDS also are included in this table.

Groundwater collected from each of the seven monitoring wells was placed in two 125-milliliter (ml) glass vials that were sealed with Teflon®-lined screw caps. After filling, the vials were labeled and placed in an ice-cooled, insulated chest for transport to the laboratory for analysis. Chain-of-custody records were completed for the samples and accompanied the samples until received by the laboratory. Copies of the chain-of-custody records for the groundwater samples are included in Appendix B.

An additional groundwater sample was collected from monitoring well MW-7 and submitted to the laboratory as a blind duplicate sample, labeled BD-02-200509. This sample was placed in two additional 125-ml glass vials sealed with Teflon®-lined screw caps and sent to the laboratory as described above.

3.2 LABORATORY METHODS

Groundwater samples collected from monitoring wells MW-2, MW-6 through MW-9, MW-20, and MW-21 were analyzed at Alpha Analytical Laboratories, Inc. (Alpha), of Ukiah, California, a California Department of Health Services-certified analytical laboratory. The samples were analyzed for chlorinated phenols (including PCP; 2,3,5,6-tetrachlorophenol; 2,3,4,6-tetrachlorophenol; 2,3,4,5-tetrachlorophenol; and 2,4,6-trichlorophenol) in accordance with the Canadian Pulp method.

3.3 LABORATORY DATA QUALITY REVIEW

Geomatrix reviewed the quality of laboratory data generated for the groundwater sampling as discussed in Appendix C. Based on the procedures and data quality review, the analytical data quality is satisfactory and the sample results appear to be representative.

3.4 RESULTS OF GROUNDWATER MONITORING

Monitoring and sampling results from site wells include groundwater elevation measurements, field measurements of water quality parameters, and laboratory analysis of groundwater samples. Groundwater elevation data provide information on subsurface hydraulic conditions, discussed below as occurrence and movement of groundwater. Groundwater quality is evaluated based on the laboratory analysis of chlorinated phenols. The results are presented below.

3.4.1 Occurrence and Movement of Groundwater

The groundwater surface measured in shallow monitoring wells at the site (i.e., screened from approximately 2 to 8 feet bgs) ranged from 1.27 to 5.36 feet below the measuring point, with associated groundwater elevations ranging from 4.25 to 9.31 feet relative to the North American Vertical Datum of 1988. Groundwater elevation data from these monitoring wells indicate that the lateral direction of shallow groundwater flow is generally to the east northeast (Figure 4). The magnitude of the lateral hydraulic gradient ranges from approximately 0.006 foot/foot in the former green chain vicinity to as much as approximately 0.03 foot/foot beneath the sawmill and maintenance buildings. Groundwater elevations within 100 feet of the Mad River Slough shoreline are subject to tidal fluctuations (EnviroNet, 2003) and as such, were not used to evaluate the direction or magnitude of the shallow groundwater gradient.

The groundwater surface measured in deep monitoring wells at the site (i.e., screened from approximately 15 to 20 feet bgs) ranged from 4.23 to 5.83 feet below the measuring point, with associated groundwater elevations ranging from 5.36 to 6.47 feet relative to the North American Vertical Datum of 1988. Groundwater elevation data from these monitoring wells indicate that the lateral direction of deep groundwater flow is generally to the east (Figure 5) at a lateral hydraulic gradient of approximately 0.006 foot/foot.

3.4.2 Groundwater Analytical Results

Seven groundwater monitoring wells were sampled during this period (MW-2, MW-6 through MW-9, MW-20, and MW-21). Laboratory analytical reports and sample chain-of-custody records are included in Appendix B. The results for the chlorinated phenol analyses are presented in Table 4. PCP results also are illustrated on Figure 6 (shallow groundwater).

PCP and tetrachlorophenols (TCPs) were detected in groundwater samples from two of the seven monitoring wells (MW-7 and MW-21; Table 4; PCP results are also shown on Figure 6). PCP was detected at concentrations of 16,000 micrograms per liter ($\mu\text{g/L}$) and 13,000 $\mu\text{g/L}$ in

the primary and blind duplicate samples, respectively, collected from MW-7 and at 4,900 µg/L in the sample collected from well MW-21. 2,3,5,6-TCP was detected at concentrations of 19 µg/L and 17 µg/L in the primary and blind duplicate samples, respectively, collected from well MW-7 and at 11 µg/L in the sample collected from well MW-21. 2,3,4,6-TCP was detected at concentrations of 280 µg/L and 230 µg/L in the primary and blind duplicate samples, respectively, collected from well MW-7 and at 170 µg/L in the sample collected from well MW-21. 2,3,4,5-TCP was detected at concentrations of 16 µg/L and 14 µg/L in the primary and blind duplicate samples, respectively, collected from well MW-7 and at 4.8 µg/L in the sample collected from well MW-21.

4.0 PILOT STUDY PROGRESS REPORT

The pilot study includes three groundwater sampling and analyses events from selected site monitoring wells. The objectives of the pilot study are to:

- Demonstrate that in situ destruction of contaminants is occurring in the subsurface through natural attenuation processes.
- Demonstrate that discharges of wood surface protection chemicals to surface water have been abated.
- Implement risk management measures to protect current and future personnel working at the site from participating in activities that would result in exposure to unacceptable risk.

During the March 2005 monitoring event, which was the second sampling event of the pilot study, PCP, analyzed using EPA Method 8270C SIM, was unexpectedly detected at a concentration of 2 µg/l in groundwater samples collected from monitoring wells MW-1, MW-2, MW-3, MW-5, and MW-14 (Geomatrix, 2005). No PCP had been detected in these wells since 2002. Although the analytical laboratory reported no errors in their analyses, additional confirmation sampling of these five wells was warranted due to their long history of no detections. This section presents a summary of confirmation sampling activities performed in response to the March 2005 detections of PCP.

4.1 CONFIRMATION GROUNDWATER SAMPLING

Geomatrix collected confirmation groundwater samples from the five monitoring wells with anomalous detections. Monitoring wells MW-1, MW-2, MW-3, MW-5, and MW-14 were purged and sampled on September 7, 2005, in conjunction with the semi-annual groundwater monitoring event (Section 3.0). Geomatrix field personnel used a peristaltic pump and dedicated tubing to purge groundwater using low-flow techniques, at a rate of approximately

0.2 gallon per minute. Measurements of temperature, pH, specific conductance, TDS, and reduction-oxidation potential were collected during purging and recorded on field sampling records, included in Appendix A; field measurements for temperature, pH, specific conductance, and TDS are summarized in Table 3.

Field personnel collected groundwater samples from the five monitoring wells after the stabilization of monitored water quality parameters including: measurements of specific conductance to within 10 percent; measurements of pH to within 0.05 pH units; and measurements of temperature to within 1 degree Celsius. An additional groundwater sample was collected from monitoring well MW-1 and submitted to the laboratory as a blind duplicate sample, labeled BD-01-200509. Groundwater was sampled from the peristaltic pump and tubing in laboratory-supplied containers, which were labeled and placed in an ice-cooled, insulated chest for transport to the laboratory for analysis. Chain-of-custody records were completed for the samples and accompanied the samples until received by the laboratory. Copies of the chain-of-custody records for the groundwater samples are included in Appendix B.

Groundwater samples collected from the monitoring wells were analyzed at Friedman & Bruya, Inc. (Friedman & Bruya), of Seattle, Washington, a California Department of Health Services-certified analytical laboratory. Groundwater samples were analyzed for pentachlorophenol by EPA Method 8270C SIM.

4.2 GROUNDWATER ANALYTICAL RESULTS

Laboratory analytical reports and chain-of-custody records for pilot study groundwater samples are included in Appendix B.

PCP was not detected at or above the laboratory reporting limit of 1 ug/l in any of the confirmation samples from the five monitoring wells (MW-1, MW-2, MW-3, MW-5, and MW-14). Pilot study analytical results are tabulated in Table 5. PCP results are also shown on Figure 6.

4.3 LABORATORY DATA QUALITY REVIEW

Geomatrix reviewed the laboratory data generated for the pilot study groundwater sampling as discussed in Appendix C. Based on our review, the data generated during this period for the pilot study sampling event appear to be accurate and representative.

5.0 WASTEWATER DISPOSAL

The purge water and equipment wash water generated by the environmental activities conducted during September 2005 and discussed herein were placed in two steel, 55-gallon drums and labeled. The drums, which were not completely filled during these activities, are being temporarily stored at the site and, once completely filled with purge water from subsequent sampling events, will be disposed of by SPI in accordance with applicable regulations.

6.0 FUTURE MONITORING AND SAMPLING SCHEDULE

The next semi-annual groundwater monitoring event will be performed in February or March 2006. The next and last scheduled pilot study groundwater sampling event will also be performed in February or March 2006 in conjunction with the semi-annual groundwater monitoring event. The overall progress of the pilot study will be evaluated after the last scheduled pilot study sampling event has been conducted.

7.0 REFERENCES

- EnviroNet Consulting (EnviroNet), 2001, *Report on Hydrogeologic Investigations at Sierra-Pacific Industries*, Arcata Division Sawmill, Arcata, California, October 23.
- EnviroNet, 2002a, *Report on Recent Hydrogeologic Investigation at Sierra-Pacific Industries*, Arcata Division Sawmill, Arcata, California, April 19.
- EnviroNet, 2002b, *Interim Feasibility Study to Remediate Chlorophenols in Soil and Groundwater*, Arcata Division Sawmill, prepared for Sierra Pacific Industries, Arcata, California, May 1.
- EnviroNet, 2003, *Results of the Remedial Investigation for Sierra Pacific Industries*, Arcata Division Sawmill, Arcata, California, May 1.
- Geomatrix, 2004a, *Monitoring Wells MW-20 and MW-21 Installation and Soil Sampling Report*, Arcata Division Sawmill, prepared for Sierra Pacific Industries, Arcata, California, April 7.
- Geomatrix, 2004b, *Pilot Study Work Plan for Implementation of Proposed Remedial Action*, Arcata Division Sawmill, prepared for Sierra Pacific Industries, Arcata, California, April 29.
- Geomatrix, 2005, *Groundwater Monitoring and Progress Report, March 2005 Sampling Event*, Arcata Division Sawmill, prepared for Sierra Pacific Industries, Arcata, California, April 29.
- MFG, Inc. (MFG), 2003a, *Plywood Covered Ditch Investigation Report*, Sierra Pacific Industries, Arcata Division Sawmill, June 9.
- MFG, 2003b, *Interim Remedial Measures Report*, Arcata Division Sawmill, prepared for Sierra Pacific Industries, Arcata, California, June 10.
- MFG and Geomatrix, 2003, *Third Quarter 2003 Groundwater Monitoring Report*, Arcata Division Sawmill, prepared for Sierra Pacific Industries, Arcata, California, November 3.
- U.S. Environmental Protection Agency, 1999, *Contract Laboratory Program National Functional Guidelines for Organic Data Review*, Office of Emergency and Remedial Response, October.

TABLES

TABLE 1

MONITORING WELL CONSTRUCTION DETAILS ¹

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Well No.	Date Installed	Total Boring Depth (ft bgs)	Total Well Depth (ft bgs)	Well Diameter (inches)	Latitude ²	Longitude ²	Ground Level Elevation ² (ft msl)	Top of Casing Elevation ² (ft msl)	Screened Interval (ft bgs)	Screen Slot Size (inches)	Filter Pack Interval (ft bgs)	Bentonite Seal Interval (ft bgs)	Surface Seal Interval ³ (ft bgs)
Shallow Wells													
MW-1	5-Mar-02	8	8	2	40.8661595	124.1521395	10.12	9.69	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-2	5-Mar-02	9	8	2	40.8661024	124.1525276	10.41	9.61	2.0 – 8.0	0.01	1.5 – 9.0	1.0 – 1.5	0 – 1.0
MW-3	5-Mar-02	8.5	8	2	40.8662689	124.1530739	11.67	11.22	2.0 – 8.0	0.01	1.5 – 8.5	1.0 – 1.5	0 – 1.0
MW-4	5-Mar-02	8	8	2	40.8662303	124.1533599	11.17	10.74	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-5	7-Mar-02	8	8	2	40.8660945	124.1536734	11.26	10.74	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-6	7-Mar-02	8	8	2	40.8660710	124.1531061	10.13	9.83	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-7	7-Mar-02	8	8	2	40.8659980	124.1531187	10.09	9.74	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-8	8-Mar-02	8	8	2	40.8657492	124.1535343	10.55	10.33	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-9	8-Mar-02	8	8	2	40.8657520	124.1532218	10.36	9.91	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-10	11-Nov-02	9.5	8	2	40.8656910	124.1530670	10.08	9.85	2.0 – 8.0	0.01	1.5 – 9.5	1.0 – 1.5	0 – 1.0
MW-11	12-Nov-02	8.5	8	2	40.8655740	124.1533817	10.51	10.28	2.0 – 8.0	0.01	1.5 – 8.5	1.0 – 1.5	0 – 1.0
MW-12	12-Nov-02	9.5	8	2	40.8656625	124.1537231	11.01	10.76	2.0 – 8.0	0.01	1.5 – 9.5	1.0 – 1.5	0 – 1.0
MW-14	13-Nov-02	8	8	2	40.8657622	124.1523580	9.60	9.15	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-17	14-Nov-02	9	8	2	40.8656690	124.1526420	9.46	9.16	2.0 – 8.0	0.01	1.5 – 9.0	1.0 – 1.5	0 – 1.0
MW-18	13-Nov-02	9.5	8	4	40.8657448	124.1531649	10.12	9.92	2.0 – 8.0	0.01	1.5 – 9.5	1.0 – 1.5	0 – 1.0
MW-20 ⁴	23-Jan-04	8	7	4	40.8658416	124.1532563	10.92	11.87	3.2 – 6.8	0.01	2.0 – 7.0	1.0 – 2.0	0 – 1.0
MW-21	12-Feb-04	8.3	8.3	0.75	40.8660161	124.1530089	10.11	12.89	2.1 – 8.1	0.01	1.5 – 8.3	1.0 – 1.5	0 – 1.0
Deep Wells													
MW-13D	12-Nov-02	21	20	2	40.8660809	124.1525231	10.26	9.96	15.0 – 20.0	0.01	13.5 – 21.0	12.0 – 13.5	0 – 12.0
MW-15D	13-Nov-02	21	20	2	40.8662658	124.1528255	11.59	11.19	15.0 – 20.0	0.01	14.0 – 21.0	12.0 – 14.0	0 – 12.0
MW-16D	14-Nov-02	21.5	20	2	40.8655571	124.1530363	10.13	9.83	15.0 – 20.0	0.01	14.0 – 21.5	12.0 – 14.0	0 – 12.0
MW-19D	14-Nov-02	21.5	20	2	40.8662419	124.1532744	11.21	11.06	15.0 – 20.0	0.01	14.0 – 21.0	12.0 – 14.0	0 – 12.0

Notes:

- Construction details for wells MW-1 through MW-9 were obtained from Report on Recent Hydrogeologic Investigations at Sierra-Pacific Industries, Arcata Division Sawmill, dated April 19, 2002 prepared by Environet Consulting. Construction details for wells MW-10 through MW-19D were obtained from Results of the Remedial Investigation for Sierra Pacific Industries – Arcata Division Sawmills, Arcata, California, dated January 30, 2003, prepared by EnviroNet Consulting. Installation of wells MW-20 and MW-21 documented in this report.
- Monitoring wells were resurveyed by Omsberg Suvayors and Company of Eureka California on February 13, 2004; latitude and longitude were surveyed relative to North American Datum (NAD) of 1983 and elevations were surveyed relative to National Geodetic Vertical Datum (NGVD) of 1929. Elevations shown have been adjusted by 3.35 feet and presented as North American Vertical Datum (NAVD) of 1988 elevations.
- Surface seal interval consists of the concrete surface completion and a neat cement sanitary seal, if applicable.
- Well installed on a raised concrete pad of the former green chain. Depth measurements (ft bgs) are relative to the local ground surface of the concrete pad, which is approximately 1 foot above the grade of the surrounding ground surface.

Abbreviations:

ft bgs = feet below ground surface

ft msl = feet mean sea level

TABLE 2



SUMMARY OF WATER LEVEL MEASUREMENTS

Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Well No.	Measurement ¹ Date	MP Elevation ² (ft NAVD 88)	Depth to Water (ft bMP)	Water Level Elevation (ft NAVD 88)
Shallow Wells				
MW-1	14-Mar-02	9.56	5.31	4.25
	18-Jul-02	9.56	4.52	5.04
	16-Sep-02	9.56	4.37	5.19
	02-Dec-02	9.56	4.18	5.38
	18-Mar-03	9.56	4.09	5.47
	31-Mar-03	9.56	4.48	5.08
	21-May-03	9.56	4.66	4.90
	27-Aug-03	9.56	4.55	5.01
	03-Nov-03	9.56	4.20	5.36
	23-Mar-04	9.69	4.47	5.22
	17-May-04	9.69	4.57	5.12
	30-Aug-04	9.69	4.55	5.14
	14-Dec-04	9.69	4.30	5.39
	09-Mar-05	9.69	4.13	5.56
07-Sep-05	9.69	4.58	5.11	
MW-2	14-Mar-02	9.49	4.52	4.97
	18-Jul-02	9.49	5.43	4.06
	16-Sep-02	9.49	5.28	4.21
	02-Dec-02	9.49	5.17	4.32
	18-Mar-03	9.49	5.16	4.33
	31-Mar-03	9.49	5.43	4.06
	21-May-03	9.49	5.45	4.04
	27-Aug-03	9.49	5.09	4.40
	03-Nov-03	9.49	5.17	4.32
	23-Mar-04	9.61	5.31	4.30
	17-May-04	9.61	5.43	4.18
	30-Aug-04	9.61	5.07	4.54
	14-Dec-04	9.61	5.10	4.51
	09-Mar-05	9.61	5.22	4.39
07-Sep-05	9.61	5.36	4.25	
MW-3	14-Mar-02	11.14	2.19	8.95
	18-Jul-02	11.14	2.79	8.35
	16-Sep-02	11.14	2.96	8.18
	02-Dec-02	11.14	2.75	8.39
	18-Mar-03	11.14	2.30	8.84
	31-Mar-03	11.14	1.96	9.18
	21-May-03	11.14	2.19	8.95
	27-Aug-03	11.14	2.08	9.06
	03-Nov-03	11.14	2.35	8.79
	23-Mar-04	11.22	2.24	8.98
	17-May-04	11.22	2.25	8.97
	30-Aug-04	11.22	2.42	8.80
	14-Dec-04	11.22	2.79	8.43
	09-Mar-05	11.22	2.77	8.45
07-Sep-05	11.22	2.98	8.24	

TABLE 2**SUMMARY OF WATER LEVEL MEASUREMENTS**

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Well No.	Measurement¹ Date	MP Elevation² (ft NAVD 88)	Depth to Water (ft BMP)	Water Level Elevation (ft NAVD 88)
MW-4	14-Mar-02	10.71	1.52	9.19
	18-Jul-02	10.71	1.84	8.87
	16-Sep-02	10.71	2.04	8.67
	02-Dec-02	10.71	1.80	8.91
	18-Mar-03	10.71	1.52	9.19
	31-Mar-03	10.71	0.93	9.78
	21-May-03	10.71	1.18	9.53
	27-Aug-03	10.71	1.36	9.35
	03-Nov-03	10.71	1.64	9.07
	23-Mar-04	10.74	1.17	9.57
	17-May-04	10.74	1.17	9.57
	30-Aug-04	10.74	1.37	9.37
	14-Dec-04	10.74	2.21	8.53
	09-Mar-05	10.74	1.95	8.79
07-Sep-05	10.74	2.08	8.66	
MW-5	14-Mar-02	10.69	0.95	9.74
	18-Jul-02	10.69	1.26	9.43
	16-Sep-02	10.69	1.35	9.34
	02-Dec-02	10.69	1.23	9.46
	18-Mar-03	10.69	0.87	9.82
	31-Mar-03	10.69	0.63	10.06
	21-May-03	10.69	0.69	10.00
	27-Aug-03	10.69	0.84	9.85
	03-Nov-03	10.69	0.92	9.77
	23-Mar-04	10.74	0.62	10.12
	17-May-04	10.74	0.78	9.96
	30-Aug-04	10.74	0.71	10.03
	14-Dec-04	10.74	1.50	9.24
	09-Mar-05	10.74	1.40	9.34
07-Sep-05	10.74	1.43	9.31	
MW-6	14-Mar-02	9.77	0.85	8.92
	18-Jul-02	9.77	1.27	8.50
	16-Sep-02	9.77	1.51	8.26
	02-Dec-02	9.77	1.30	8.47
	18-Mar-03	9.77	0.89	8.88
	31-Mar-03	9.77	0.37	9.40
	21-May-03	9.77	0.60	9.17
	27-Aug-03	9.77	0.70	9.07
	03-Nov-03	9.77	1.21	8.56
	23-Mar-04	9.83	0.69	9.14
	17-May-04	9.83	0.78	9.05
	30-Aug-04	9.83	0.99	8.84
	14-Dec-04	9.83	1.25	8.58
	09-Mar-05	9.83	1.17	8.66
07-Sep-05	9.83	1.47	8.36	

TABLE 2**SUMMARY OF WATER LEVEL MEASUREMENTS**

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Well No.	Measurement¹ Date	MP Elevation² (ft NAVD 88)	Depth to Water (ft BMP)	Water Level Elevation (ft NAVD 88)
MW-7	14-Mar-02	9.68	0.73	8.95
	18-Jul-02	9.68	1.15	8.53
	16-Sep-02	9.68	1.37	8.31
	02-Dec-02	9.68	1.19	8.49
	18-Mar-03	9.68	0.75	8.93
	31-Mar-03	9.68	0.26	9.42
	21-May-03	9.68	0.45	9.23
	27-Aug-03	9.68	0.61	9.07
	03-Nov-03	9.68	1.13	8.55
	23-Mar-04	9.74	0.44	9.30
	17-May-04	9.74	0.50	9.24
	30-Aug-04	9.74	0.84	8.90
	14-Dec-04	9.74	1.04	8.70
	09-Mar-05	9.74	0.96	8.78
07-Sep-05	9.74	1.32	8.42	
MW-8	14-Mar-02	10.30	0.92	9.38
	18-Jul-02	10.30	1.24	9.06
	16-Sep-02	10.30	1.52	8.78
	02-Dec-02	10.30	1.34	8.96
	18-Mar-03	10.30	0.95	9.35
	31-Mar-03	10.30	0.29	10.01
	21-May-03	10.30	0.49	9.81
	27-Aug-03	10.30	0.91	9.39
	03-Nov-03	10.30	1.36	8.94
	23-Mar-04	10.33	0.57	9.76
	17-May-04	10.33	0.54	9.79
	30-Aug-04	10.33	0.94	9.39
	14-Dec-04	10.33	1.29	9.04
	09-Mar-05	10.33	1.07	9.26
07-Sep-05	10.33	1.41	8.92	
MW-9	14-Mar-02	9.86	0.71	9.15
	18-Jul-02	9.86	1.13	8.73
	16-Sep-02	9.86	1.40	8.46
	02-Dec-02	9.86	1.18	8.68
	18-Mar-03	9.86	0.79	9.07
	31-Mar-03	9.86	0.11	9.75
	21-May-03	9.86	0.30	9.56
	27-Aug-03	9.86	0.81	9.05
	03-Nov-03	9.86	1.19	8.67
	23-Mar-04	9.91	0.40	9.51
	17-May-04	9.91	0.38	9.53
	30-Aug-04	9.91	0.89	9.02
	14-Dec-04	9.91	1.05	8.86
	09-Mar-05	9.91	0.85	9.06
07-Sep-05	9.91	1.27	8.64	

TABLE 2



SUMMARY OF WATER LEVEL MEASUREMENTS

Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Well No.	Measurement¹ Date	MP Elevation² (ft NAVD 88)	Depth to Water (ft BMP)	Water Level Elevation (ft NAVD 88)
MW-10	02-Dec-02	9.80	1.35	8.45
	18-Mar-03	9.80	0.95	8.85
	31-Mar-03	9.80	0.30	9.50
	21-May-03	9.80	0.52	9.28
	27-Aug-03	9.80	1.02	8.78
	03-Nov-03	9.80	1.43	8.37
	23-Mar-04	9.85	0.70	9.15
	17-May-04	9.85	0.61	9.24
	30-Aug-04	9.85	1.13	8.72
	14-Dec-04	9.85	1.24	8.61
	09-Mar-05	9.85	1.05	8.80
07-Sep-05	9.85	1.43	8.42	
MW-11	02-Dec-02	10.26	1.55	8.71
	18-Mar-03	10.26	1.12	9.14
	31-Mar-03	10.26	0.40	9.86
	21-May-03	10.26	0.64	9.62
	27-Aug-03	10.26	1.19	9.07
	03-Nov-03	10.26	1.56	8.70
	23-Mar-04	10.28	0.75	9.53
	17-May-04	10.28	0.69	9.59
	30-Aug-04	10.28	1.20	9.08
	14-Dec-04	10.28	1.44	8.84
	09-Mar-05	10.28	1.14	9.14
07-Sep-05	10.28	1.57	8.71	
MW-12	02-Dec-02	10.73	1.56	9.17
	18-Mar-03	10.73	1.15	9.58
	31-Mar-03	10.73	0.55	10.18
	21-May-03	10.73	0.70	10.03
	27-Aug-03	10.73	1.12	9.61
	03-Nov-03	10.73	1.68	9.05
	23-Mar-04	10.76	0.87	9.89
	17-May-04	10.76	0.76	10.00
	30-Aug-04	10.76	1.13	9.63
	14-Dec-04	10.76	1.55	9.21
	09-Mar-05	10.76	1.27	9.49
07-Sep-05	10.76	1.57	9.19	
MW-14	02-Dec-02	9.02	2.40	6.62
	18-Mar-03	9.02	2.21	6.81
	31-Mar-03	9.02	1.77	7.25
	21-May-03	9.02	1.69	7.33
	27-Aug-03	9.02	2.27	6.75
	03-Nov-03	9.02	2.52	6.50
	23-Mar-04	9.15	2.08	7.07
	17-May-04	9.15	2.15	7.00
	30-Aug-04	9.15	2.48	6.67
	14-Dec-04	9.15	2.30	6.85
	09-Mar-05	9.15	2.10	7.05
07-Sep-05	9.15	2.37	6.78	

TABLE 2



SUMMARY OF WATER LEVEL MEASUREMENTS

Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Well No.	Measurement ¹ Date	MP Elevation ² (ft NAVD 88)	Depth to Water (ft BMP)	Water Level Elevation (ft NAVD 88)
MW-17	02-Dec-02	8.98	1.27	7.71
	18-Mar-03	8.98	0.94	8.04
	31-Mar-03	8.98	0.32	8.66
	21-May-03	8.98	0.58	8.40
	27-Aug-03	8.98	1.06	7.92
	03-Nov-03	8.98	1.30	7.68
	23-Mar-04	9.16	0.83	8.33
	17-May-04	9.16	0.74	8.42
	30-Aug-04	9.16	1.21	7.95
	14-Dec-04	9.16	1.17	7.99
	09-Mar-05	9.16	1.00	8.16
07-Sep-05	9.16	1.35	7.81	
MW-18	02-Dec-02	9.53	0.94	8.59
	18-Mar-03	9.53	0.52	9.01
	31-Mar-03	9.53	-- ³	NC
	21-May-03	9.53	0.05	9.48
	27-Aug-03	9.53	0.55	8.98
	03-Nov-03	9.53	0.95	8.58
	23-Mar-04	9.92	0.52	9.40
	17-May-04	9.92	0.47	9.45
	30-Aug-04	9.92	0.98	8.94
	14-Dec-04	9.92	1.13	8.79
	09-Mar-05	9.92	0.94	8.98
	07-Sep-05	9.92	1.36	8.56
MW-20	23-Mar-04	11.87	2.36	9.51
	17-May-04	11.87	2.35	9.52
	30-Aug-04	11.87	2.70	9.17
	14-Dec-04	11.87	2.80	9.07
	09-Mar-05	11.87	2.72	9.15
	07-Sep-05	11.87	3.06	8.81
MW-21	23-Mar-04	12.89	3.97	8.92
	17-May-04	12.89	3.99	8.90
	30-Aug-04	12.89	4.23	8.66
	14-Dec-04	12.89	4.36	8.53
	09-Mar-05	12.89	4.35	8.54
	07-Sep-05	12.89	4.65	8.24
Deep Wells				
MW-13D	02-Dec-02	9.84	4.18	5.66
	18-Mar-03	9.84	4.21	5.63
	31-Mar-03	9.84	4.26	5.58
	21-May-03	9.84	4.52	5.32
	27-Aug-03	9.84	4.45	5.39
	03-Nov-03	9.84	4.30	5.54
	23-Mar-04	9.96	4.42	5.54
	17-May-04	9.96	4.54	5.42
	30-Aug-04	9.96	4.57	5.39
	14-Dec-04	9.96	4.56	5.40
	09-Mar-05	9.96	4.26	5.70
	07-Sep-05	9.96	4.55	5.41

TABLE 2**SUMMARY OF WATER LEVEL MEASUREMENTS**

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Well No.	Measurement¹ Date	MP Elevation² (ft NAVD 88)	Depth to Water (ft BMP)	Water Level Elevation (ft NAVD 88)
MW-15D	02-Dec-02	11.08	5.31	5.77
	18-Mar-03	11.08	5.44	5.64
	31-Mar-03	11.08	5.46	5.62
	21-May-03	11.08	5.74	5.34
	27-Aug-03	11.08	5.71	5.37
	03-Nov-03	11.08	5.51	5.57
	23-Mar-04	11.19	5.66	5.53
	17-May-04	11.19	5.77	5.42
	30-Aug-04	11.19	5.83	5.36
	14-Dec-04	11.19	5.75	5.44
	09-Mar-05	11.19	5.48	5.71
07-Sep-05	11.19	5.83	5.36	
MW-16D	02-Dec-02	9.80	3.99	5.81
	18-Mar-03	9.80	4.17	5.63
	31-Mar-03	9.80	3.91	5.89
	21-May-03	9.80	4.11	5.69
	27-Aug-03	9.80	3.95	5.85
	03-Nov-03	9.80	4.26	5.54
	23-Mar-04	9.83	4.01	5.82
	17-May-04	9.83	4.13	5.70
	30-Aug-04	9.83	4.13	5.70
	14-Dec-04	9.83	4.38	5.45
	09-Mar-05	9.83	4.22	5.61
07-Sep-05	9.83	4.23	5.60	
MW-19D	02-Dec-02	11.00	4.31	6.69
	18-Mar-03	11.00	4.23	6.77
	31-Mar-03	11.00	4.02	6.98
	21-May-03	11.00	4.22	6.78
	27-Aug-03	11.00	4.26	6.74
	03-Nov-03	11.00	4.61	6.39
	23-Mar-04	11.06	4.13	6.93
	17-May-04	11.06	4.63	6.43
	30-Aug-04	11.06	4.60	6.46
	14-Dec-04	11.06	4.82	6.24
	09-Mar-05	11.06	4.46	6.60
07-Sep-05	11.06	4.59	6.47	

TABLE 2**SUMMARY OF WATER LEVEL MEASUREMENTS**

Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Well No.	Measurement¹ Date	MP Elevation² (ft NAVD 88)	Depth to Water (ft bMP)	Water Level Elevation (ft NAVD 88)
Mad River Slough ⁴	31-Mar-03	15.70	15.15	0.55
	31-Mar-03	15.70	15.84	-0.14
	21-May-03	15.70	17.23	-1.53
	21-May-03	15.70	16.75	-1.05
	27-Aug-03	15.70	16.20	-0.50
	27-Aug-03	15.70	12.60	3.10
	03-Nov-03	15.70	9.63	6.07
	03-Nov-03	15.70	10.53	5.17
	23-Mar-04	15.70	15.00	0.70
	23-Mar-04	15.70	12.16	3.54
	17-May-04	15.70	14.48	1.22
	17-May-04	15.70	12.50	3.20
	30-Aug-04	15.70	15.17	0.53
	30-Aug-04	15.70	12.20	3.50
	14-Dec-04	15.70	12.05	3.65
	14-Dec-04	15.70	9.90	5.80
	09-Mar-05	15.70	9.31	6.39
09-Mar-05	15.70	8.43	7.27	
07-Sep-05	15.70	16.35	-0.65	
07-Sep-05	15.70	12.95	2.75	

Notes:

1. Data prior to March 18, 2003 were obtained from Results of the Remedial Investigation for Sierra Pacific Industries - Arcata Division Sawmill, Arcata, California, dated January 30, 2003, prepared by Environet Consulting.
2. Monitoring wells surveyed by Omsberg & Company of Eureka, California. Wells were resurveyed on February 13, 2004; elevations shown are relative to the Northern American Vertical Datum of 1988.
3. Water level was above the top of casing measuring point.
4. Mad River Slough measuring point on railroad bridge. Water level measurements are obtained before and after the water level measurements in the monitoring wells.

Abbreviations:

ft NAVD 88 = feet above North American Vertical Datum of 1988

ft bMP = feet below measuring point

-- = not measured or sample not collected for analysis

NC = not calculated

TABLE 3
SUMMARY OF WATER QUALITY PARAMETERS

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Well No.	Date Sampled	Field Measurements ¹				Laboratory Measurement ²
		Temperature (°C)	Specific Conductance (µmohs/cm)	pH (pH Units)	TDS (mg/L)	TDS (mg/L)
Shallow Wells						
MW-1	20-Mar-03	14	2,600	6.5	--	--
	22-May-03	14	2,700	6.7	--	1,400
	27-Aug-03	18	2,500	6.7	1,800	1,400
	04-Nov-03	17	2,400	6.6	1,800	1,300
	17-May-04	15	2,600	6.3	1,900	1,400
	15-Dec-04	15	3,800	6.6	2,500	--
	11-Mar-05	14	2,100	6.5	1,400	--
	07-Sep-05	18	2,400	6.5	1,700	--
MW-2	20-Mar-03	13	2,100	6.2	--	--
	22-May-03	14	1,700	6.4	1,100	860
	27-Aug-03	18	1,500	6.6	1,100	760
	03-Nov-03	16	1,590	6.3	1,100	760
	24-Mar-04	13	1,390	6.3	970	740
	17-May-04	15	1,400	6.2	980	730
	30-Aug-04	19	1,200	-- ³	850	680
	15-Dec-04	14	1,100	6.4	740	--
	11-Mar-05	13	1,200	6.2	790	--
	07-Sep-05	18	1,300	6.4	900	--
MW-3	20-Mar-03	13	1,100	6.4	--	--
	22-May-03	15	1,000	6.4	630	510
	27-Aug-03	20	1,000	6.5	720	470
	03-Nov-03	16	980	6.6	--	410
	17-May-04	16	1,100	6.2	750	510
	15-Dec-04	13	700	6.4	460	--
	10-Mar-05	13	600	6.4	390	--
		07-Sep-05	19	810	6.4	810
MW-4	20-Mar-03	14	830	6.5	--	--
	22-May-03	16	730	6.4	440	420
	27-Aug-03	21	730	6.5	500	340
	03-Nov-03	18	760	6.6	520	310
	17-May-04	18	880	6.2	590	360
	15-Dec-04	14	640	6.4	410	--
MW-5	20-Mar-03	14	670	6.6	--	--
	22-May-03	14	690	6.6	410	360
	27-Aug-03	18	670	6.7	450	360
	03-Nov-03	17	660	6.6	450	380
	17-May-04	15	660	6.3	440	360
	15-Dec-04	15	470	6.4	310	--
	10-Mar-05	14	570	6.3	390	--
		07-Sep-05	18	660	6.5	450

TABLE 3
SUMMARY OF WATER QUALITY PARAMETERS

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Well No.	Date Sampled	Field Measurements ¹				Laboratory Measurement ²
		Temperature (°C)	Specific Conductance (µmohs/cm)	pH (pH Units)	TDS (mg/L)	TDS (mg/L)
MW-6	20-Mar-03	11	950	6.6	--	--
	22-May-03	14	1,000	6.3	620	430
	27-Aug-03	17	890	6.4	620	410
	04-Nov-03	13	920	6.6	630	430
	24-Mar-04	11	920	6.5	640	410
	17-May-04	14	930	6.3	640	420
	30-Aug-04	17	880	-- ³	610	430
	15-Dec-04	11	700	6.4	460	--
	11-Mar-05	11	900	6.7	620	--
07-Sep-05	16	900	6.4	610	--	
MW-7	20-Mar-03	11	910	6.6	--	--
	22-May-03	11	960	6.5	--	460
	27-Aug-03	14	840	6.6	580	400
	03-Nov-03	12	870	6.6	600	460
	24-Mar-04	11	960	6.4	--	440
	18-May-04	12	730	6.6	490	370
	30-Aug-04	14	840	-- ³	580	410
	15-Dec-04	11	700	6.4	460	--
	09-Mar-05	11	850	6.3	580	--
07-Sep-05	13	920	6.4	630	--	
MW-8	18-Mar-03	14	730	6.4	--	--
	21-May-03	16	740	6.3	460	390
	27-Aug-03	21	730	6.2	500	370
	04-Nov-03	17	740	6.4	510	380
	24-Mar-04	14	780	6.2	530	400
	17-May-04	18	800	6.1	530	390
	30-Aug-04	21	760	-- ³	520	390
	14-Dec-04	14	650	6.3	420	--
	11-Mar-05	13	800	6.5	550	--
07-Sep-05	20	810	6.4	540	--	
MW-9	18-Mar-03	14	820	6.4	--	--
	23-May-03	16	870	6.6	550	400
	27-Aug-03	20	830	6.2	570	350
	04-Nov-03	17	820	6.6	560	350
	24-Mar-04	14	880	6.4	600	380
	17-May-04	16	930	6.1	620	380
	30-Aug-04	20	860	-- ³	550	440
	14-Dec-04	13	800	6.4	520	--
	11-Mar-05	13	900	6.7	620	--
07-Sep-05	19	920	6.4	620	--	

TABLE 3
SUMMARY OF WATER QUALITY PARAMETERS

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Well No.	Date Sampled	Field Measurements ¹				Laboratory Measurement ²
		Temperature (°C)	Specific Conductance (µmohs/cm)	pH (pH Units)	TDS (mg/L)	TDS (mg/L)
MW-10	18-Mar-03	14	920	6.4	--	--
	23-May-03	17	970	6.7	--	460
	27-Aug-03	22	860	6.3	600	400
	04-Nov-03	18	880	6.6	600	430
	17-May-04	19	920	6.2	610	420
	14-Dec-04	14	700	6.4	450	--
MW-11	20-Mar-03	14	870	6.4	--	--
	21-May-03	17	890	6.4	560	460
	27-Aug-03	23	870	6.2	600	440
	04-Nov-03	19	880	6.6	600	450
	17-May-04	18	880	6.2	590	430
	14-Dec-04	15	740	6.4	480	--
MW-12	18-Mar-03	15	830	6.3	--	--
	21-May-03	18	840	6.1	--	460
	27-Aug-03	23	870	6.2	600	480
	04-Nov-03	18	920	6.5	630	480
	17-May-04	20	900	6.0	600	490
	14-Dec-04	14	710	6.4	460	--
MW-14	20-Mar-03	14	3,200	6.7	--	--
	22-May-03	15	3,400	6.6	--	2,100
	27-Aug-03	20	3,600	6.6	2,300	1,900
	04-Nov-03	16	3,300	6.6	2,500	2,100
	17-May-04	17	2,800	6.4	2,000	1,800
	15-Dec-04	14	2,500	6.6	1,300	--
	09-Mar-05	13	2,400	6.6	1,600	--
	07-Sep-05	20	2,700	6.4	2,000	--
MW-17	20-Mar-03	13	980	6.4	--	--
	22-May-03	15	1,000	6.5	--	450
	27-Aug-03	19	860	7.0	600	420
	04-Nov-03	15	920	6.6	640	450
	17-May-04	15	940	6.5	620	440
	14-Dec-04	12	830	6.4	540	--
MW-18	18-Mar-03	14	1,000	6.5	--	--
	23-May-03	17	980	6.6	610	640
	27-Aug-03	23	1,100	6.3	780	520
	04-Nov-03	17	1,100	6.6	760	490
	17-May-04	19	1,000	6.3	670	430
	14-Dec-04	13	860	6.5	560	--

TABLE 3
SUMMARY OF WATER QUALITY PARAMETERS

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Well No.	Date Sampled	Field Measurements ¹				Laboratory Measurement ²
		Temperature (°C)	Specific Conductance (µmohs/cm)	pH (pH Units)	TDS (mg/L)	TDS (mg/L)
MW-20	24-Mar-04	14	420	6.9	280	250
	18-May-04	18	470	6.7	310	280
	30-Aug-04	21	500	-- ³	330	300
	15-Dec-04	12	370	6.5	240	--
	09-Mar-05	13	320	6.6	220	--
	07-Sep-05	19	510	6.6	340	--
MW-21	24-Mar-04	12	990	6.3	680	460
	18-May-04	14	1,000	6.3	660	420
	30-Aug-04	16	960	-- ³	660	450
	15-Dec-04	11	760	6.2	500	--
	10-Mar-05	11	930	6.3	640	--
	07-Sep-05	15	1,000	6.4	690	--
Deep Wells						
MW-13D	20-Mar-03	14	1,200	6.2	--	--
	22-May-03	14	1,100	6.2	--	--
	27-Aug-03	15	1,100	6.1	750	690
	04-Nov-03	15	1,000	6.1	--	580
	17-May-04	14	1,000	5.8	700	610
	15-Dec-04	14	620	6.1	400	--
	11-Mar-05	14	900	6.2	620	--
MW-15D	20-Mar-03	13	1,300	6.8	--	--
	22-May-03	13	1,300	6.8	--	800
	27-Aug-03	14	1,300	6.3	900	810
	04-Nov-03	14	1,300	6.8	--	790
	17-May-04	13	1,400	6.3	930	800
	15-Dec-04	14	1,000	6.7	650	--
	11-Mar-05	13	1,300	6.8	880	--
MW-16D	18-Mar-03	14	5,200	7.7	--	--
	23-May-03	14	5,200	7.6	--	3,200
	27-Aug-03	16	5,000	7.4	3,400	3,000
	04-Nov-03	16	4,800	7.6	3,700	2,800
	17-May-04	15	4,600	7.3	3,500	2,800
	14-Dec-04	16	3,700	7.7	2,400	--
	11-Mar-05	15	4,400	7.8	3,400	--

TABLE 3
SUMMARY OF WATER QUALITY PARAMETERS

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Well No.	Date Sampled	Field Measurements ¹				Laboratory Measurement ²
		Temperature (°C)	Specific Conductance (µmhos/cm)	pH (pH Units)	TDS (mg/L)	TDS (mg/L)
MW-19D	20-Mar-03	16	810	6.7	--	--
	22-May-03	16	860	6.6	520	480
	27-Aug-03	17	810	6.5	560	410
	03-Nov-03	17	760	6.7	520	370
	17-May-04	16	840	6.5	560	430
	15-Dec-04	17	490	6.5	320	--

Notes:

1. Water quality parameters measured in the field using an Ultrameter instrument or a YSI Model 556 instrument; reported measurements recorded towards end of purge after parameters stabilized or from the last purge volume if a well was repeatedly purged dry.
2. Water quality parameter analyzed in the laboratory; EPA Method 160.1. Laboratory analysis of TDS was discontinued during the fourth quarter 2004.
3. pH meter inoperable.

Abbreviations:

°C = degrees Celsius

µmhos/cm = micromhos per centimeter at 25 °C

mg/L = milligrams per liter

-- = not measured or sample not collected for analysis

TDS = total dissolved solids

EPA = U.S. Environmental Protection Agency

TABLE 4
LABORATORY ANALYTICAL RESULTS FOR CHLORINATED PHENOLS (CANADIAN PULP METHOD)

Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Concentrations in micrograms per liter (µg/L)

Monitoring Well Number	Date Sampled ¹	Penta-chlorophenol	2,4,6-trichloro-phenol	2,3,5,6-tetrachloro-phenol	2,3,4,6-tetrachloro-phenol	2,3,4,5-tetrachloro-phenol	Comments
Shallow Wells							
MW-1	14-Mar-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Jul-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	16-Sep-02	1.8	< 1.0	< 1.0	< 1.0	< 1.0	
	03-Oct-02 ²	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	02-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	22-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	04-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	15-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
11-Mar-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	low flow sample	
MW-2	14-Mar-02	7.4	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Jul-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	16-Sep-02	2.5	< 1.0	< 1.0	< 1.0	< 1.0	
	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	22-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	24-Mar-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	30-Aug-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	15-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	11-Mar-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	low flow sample
07-Sep-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	low flow sample	
MW-3	14-Mar-02	1.2	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Jul-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	16-Sep-02	5.0	< 1.0	< 1.0	< 1.0	< 1.0	
	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	22-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
15-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		

TABLE 4
LABORATORY ANALYTICAL RESULTS FOR CHLORINATED PHENOLS (CANADIAN PULP METHOD)

Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Concentrations in micrograms per liter (µg/L)

Monitoring Well Number	Date Sampled ¹	Penta-chlorophenol	2,4,6-trichloro-phenol	2,3,5,6-tetrachloro-phenol	2,3,4,6-tetrachloro-phenol	2,3,4,5-tetrachloro-phenol	Comments
MW-4	14-Mar-02	8.6	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Jul-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	16-Sep-02	5.7	< 1.0	< 1.0	< 1.0	< 1.0	
	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	22-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
15-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
MW-5	14-Mar-02	4.3	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Jul-02	9.1	< 1.0	< 1.0	< 1.0	< 1.0	
	16-Sep-02	25	< 1.0	< 1.0	< 1.0	< 1.0	
	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	duplicate sample
	22-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
15-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
MW-6	14-Mar-02	4.5	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Jul-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	16-Sep-02	6.3	< 1.0	< 1.0	< 1.0	< 1.0	
	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	22-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	24-Mar-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	30-Aug-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	15-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	11-Mar-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
07-Sep-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		

TABLE 4
LABORATORY ANALYTICAL RESULTS FOR CHLORINATED PHENOLS (CANADIAN PULP METHOD)

Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Concentrations in micrograms per liter (µg/L)

Monitoring Well Number	Date Sampled ¹	Penta-chlorophenol	2,4,6-trichloro-phenol	2,3,5,6-tetrachloro-phenol	2,3,4,6-tetrachloro-phenol	2,3,4,5-tetrachloro-phenol	Comments
MW-7	14-Mar-02	31,000	< 1.0	41	650	24	
	18-Jul-02	33,000	< 1.0	< 1.0	990	56	
	16-Sep-02	44,000	< 1.0	< 1.0	920	64	
	03-Dec-02	46,000	< 1.3	76	1,300	52	
	14-Jan-03 ³	51,000	2.4	< 1.0	970	52	
	20-Mar-03	19,000	< 1.0	36	460	22	
	22-May-03	19,000	< 1.0	< 1.0	470	< 100	
	22-May-03	16,000	< 1.0	< 1.0	400	< 100	duplicate sample
	22-May-03	14,000	< 1.0	< 1.0	400	< 100	filtered
	27-Aug-03	31,000	< 1.5	41	710	39	
	27-Aug-03	18,000	< 1.0	28	450	26	duplicate sample
	3-Nov-03	28,000	< 5.0	36	580	35	bailer sample / unfiltered
	3-Nov-03	31,000	< 5.0	47	740	43	bailer sample / filtered
	3-Nov-03	20,000	< 5.0	28	450	24	low flow sample / unfiltered
	3-Nov-03	14,000	< 5.0	19	300	17	low flow sample / filtered
	24-Mar-04	19,000	< 1.5	19	450	19	
	24-Mar-04	7,400	< 1.0	8.7	150	9.9	duplicate sample
	18-May-04	25,000	< 2.5	86	480	41	
	30-Aug-04	13,000	< 1.0	54	200	17	
	15-Dec-04	22,000	1.7	57	310	42	
09-Mar-05	24,000	< 1.0	39	420	32	low flow sample	
07-Sep-05	16,000	< 1.0	19	280	16		
07-Sep-05	13,000	< 1.0	17	230	14	duplicate sample	
MW-8	14-Mar-02	\	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Jul-02	31	< 1.0	< 1.0	< 1.0	< 1.0	
	16-Sep-02	4.8	< 1.0	< 1.0	< 1.0	< 1.0	
	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	21-May-03	1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	24-Mar-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	30-Aug-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	14-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	11-Mar-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
07-Sep-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		

TABLE 4
LABORATORY ANALYTICAL RESULTS FOR CHLORINATED PHENOLS (CANADIAN PULP METHOD)

Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Concentrations in micrograms per liter (µg/L)

Monitoring Well Number	Date Sampled ¹	Penta-chlorophenol	2,4,6-trichloro-phenol	2,3,5,6-tetrachloro-phenol	2,3,4,6-tetrachloro-phenol	2,3,4,5-tetrachloro-phenol	Comments
MW-9	14-Mar-02	94	3.1	21	130	5.5	
	18-Jul-02	2.1	< 1.0	< 1.0	< 1.0	< 1.0	
	16-Sep-02	3.1	< 1.0	< 1.0	< 1.0	< 1.0	
	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	23-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	04-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	24-Mar-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	30-Aug-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	14-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	11-Mar-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
07-Sep-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
MW-10	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	23-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
14-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
MW-11	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	21-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
14-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
MW-12	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	21-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	14-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	

TABLE 4
LABORATORY ANALYTICAL RESULTS FOR CHLORINATED PHENOLS (CANADIAN PULP METHOD)

Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Concentrations in micrograms per liter (µg/L)

Monitoring Well Number	Date Sampled ¹	Penta-chlorophenol	2,4,6-trichloro-phenol	2,3,5,6-tetrachloro-phenol	2,3,4,6-tetrachloro-phenol	2,3,4,5-tetrachloro-phenol	Comments
MW-14	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	22-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	15-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	09-Mar-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	low flow sample
MW-17	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	22-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
		14-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MW-18	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	23-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
		14-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MW-20	24-Mar-04	35	< 1.0	< 1.0	5.1	3.8	
	18-May-04	3.6	< 1.0	< 1.0	1.1	< 1.0	
	30-Aug-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	15-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	09-Mar-05	71	3.4	27	< 1.0	4.6	low flow sample
	07-Sep-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
MW-21	24-Mar-04	800	< 1.0	6.3	17	12	
	18-May-04	1,900	< 1.0	11	36	11	
	18-May-04	670	< 1.0	3.5	16	4.4	duplicate sample
	30-Aug-04	2,700	< 1.0	6.4	66	5.4	
	30-Aug-04	2,800	< 1.0	6.9	68	5.5	duplicate sample
	15-Dec-04	3,200	< 1.0	34	50	5.5	
	15-Dec-04	8,100	2.1	64	120	8.3	duplicate sample
	10-Mar-05	4,700	< 1.0	8.1	31	< 1.5	low flow sample
	10-Mar-05	4,600	2.7	26	86	6.5	low flow sample / duplicate
07-Sep-05	4,900	< 1.0	11	170	4.8		

TABLE 4
LABORATORY ANALYTICAL RESULTS FOR CHLORINATED PHENOLS (CANADIAN PULP METHOD)

Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Concentrations in micrograms per liter (µg/L)

Monitoring Well Number	Date Sampled ¹	Penta-chlorophenol	2,4,6-trichloro-phenol	2,3,5,6-tetrachloro-phenol	2,3,4,6-tetrachloro-phenol	2,3,4,5-tetrachloro-phenol	Comments
Deep Wells							
MW-13D	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	22-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	15-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
MW-15D	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	22-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	15-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
MW-16D	03-Dec-02	1.3	< 1.0	< 1.0	< 1.0	< 1.0	
	18-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	23-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	14-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
MW-19D	03-Dec-02	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	20-Mar-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	22-May-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	27-Aug-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	4-Nov-03	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	17-May-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
	15-Dec-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	

Notes:

1. Data prior to March 18, 2003 were obtained from Results of the Remedial Investigation for Sierra Pacific Industries, Arcata Division Sawmill, Arcata, California, dated January 30, 2003, prepared by EnviroNet Consulting.
2. Confirmation sample collected due to detection of pentachlorophenol on September 16, 2002.
3. Sample also contained 280 mg/L of 2,3,4-trichlorophenol and 190 mg/L of 2,4,5-trichlorophenol.

Abbreviation:

< = target analyte was not detected at or above the laboratory reporting limit shown.

-- = not measured or sample not collected for analysis.

TABLE 5
LABORATORY ANALYTICAL RESULTS FOR CHLORINATED PHENOLS AND PHENOL (8270 SIM METHOD)

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Concentrations in micrograms per liter (µg/L)

Monitoring Well	Date Sampled	PCP	3,4,5-TCP	2,3,5,6-TeCP	2,3,4,5-TeCP	2,3,4,6-TeCP	3,4-DCP	2,3,6-TCP	3,5-DCP	2,3,4-TCP	2,4,5-TCP	2,4,6-TCP	2,3,5-TCP	2,5-DCP	3-CP + 4-CP ²	2,6-DCP	2,3-DCP	2,4-DCP	2-CP	Phenol
MW-1	24-Mar-04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1
	11-Mar-05	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1
	07-Sep-05 ³	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	07-Sep-05 ^{3,4}	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	24-Mar-04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1
	11-Mar-05	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1
	07-Sep-05 ³	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	24-Mar-04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1
	10-Mar-05	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1
	07-Sep-05 ³	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	24-Mar-04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1
	10-Mar-05	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1
	07-Sep-05 ³	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	24-Mar-04	15,000	92	320	17	23	390	<1	18	1	56	<1	2	<1	460	<1	<1	4	<1	2
	09-Mar-05	12,000	290	490	37	17	610	1	28	2	75	1	2	<1	890	<1	1	5	<1	3
MW-14	24-Mar-04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1
	09-Mar-05	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1
	07-Sep-05 ³	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-20	24-Mar-04	9	2	2	2	<1	8	<1	<1	<1	1	<1	<1	<1	2	<1	<1	<1	<1	<1
	09-Mar-05	100	4	2	4	12	15	<1	9	<1	<1	4	5	<1	9	<1	<1	1	<1	<1
MW-21	24-Mar-04	520	52 ve	16	16	7	130	<1	9	<1	3	<1	<1	<1	200	<1	<1	<1	<1	<1
	24-Mar-04 ⁴	570	50 ve	17	14	6	120	<1	9	<1	3	<1	<1	<1	200	<1	<1	<1	<1	<1
	10-Mar-05	5,500	250	109	4	27	310	<1	19	<1	5	<1	<1	<1	270	<1	<1	2	<1	<1
	10-Mar-05 ⁴	5,500	250	110	4	27	310	<1	20	<1	5	<1	<1	<1	270	<1	<1	2	<1	<1

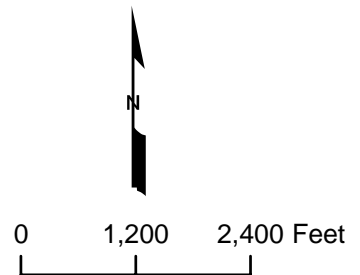
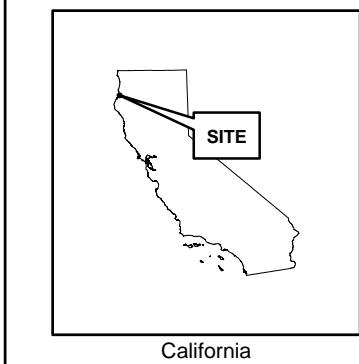
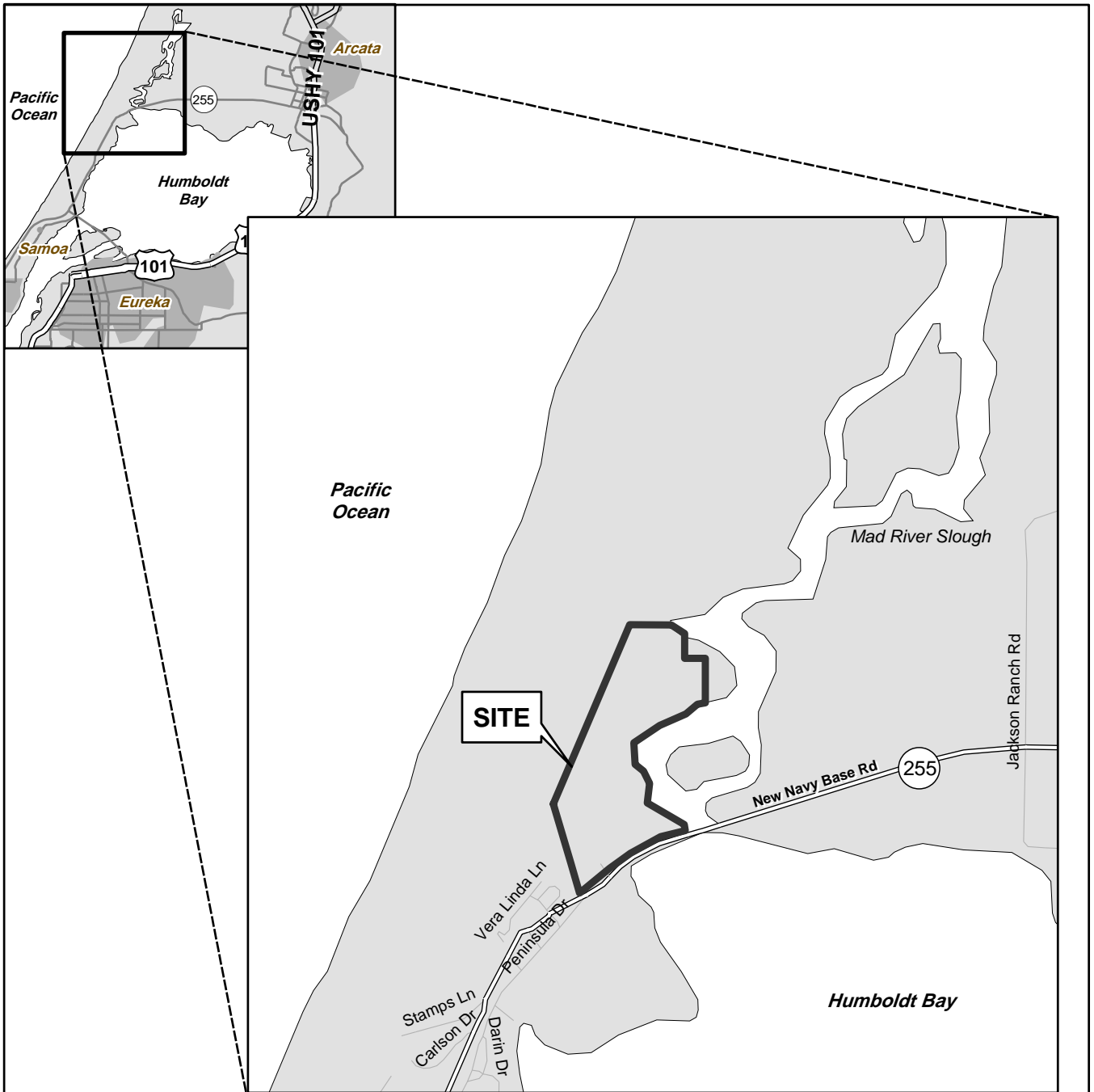
Notes:

- EPA Method 8270 SIM analysis of groundwater samples.
- Results shown are for both 3-CP and 4-CP (the sum of) since these compounds could not be separated for individual analysis in the laboratory.
- Confirmation sample collected due to detection of pentachlorophenol on March 10 or 11, 2005.
- Duplicate sample.

Abbreviations:

- PCP = pentachlorophenol
 TeCP = tetrachlorophenol
 TCP = trichlorophenol
 DCP = dichlorophenol
 CP = chlorophenol
 EPA = U.S. Environmental Protection Agency
 SIM = select ion monitoring
 -- = not measured or sample not collected for analysis
 < = target analyte was not detected at or above the laboratory reporting limit shown.
 ve = value exceeded the calibration range established for the instrument and is therefore considered an estimate; result upon dilution and re-analysis was not detected at or above a laboratory reporting limit of 50.

FIGURES



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SITE LOCATION MAP
 Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Project No.
 9329

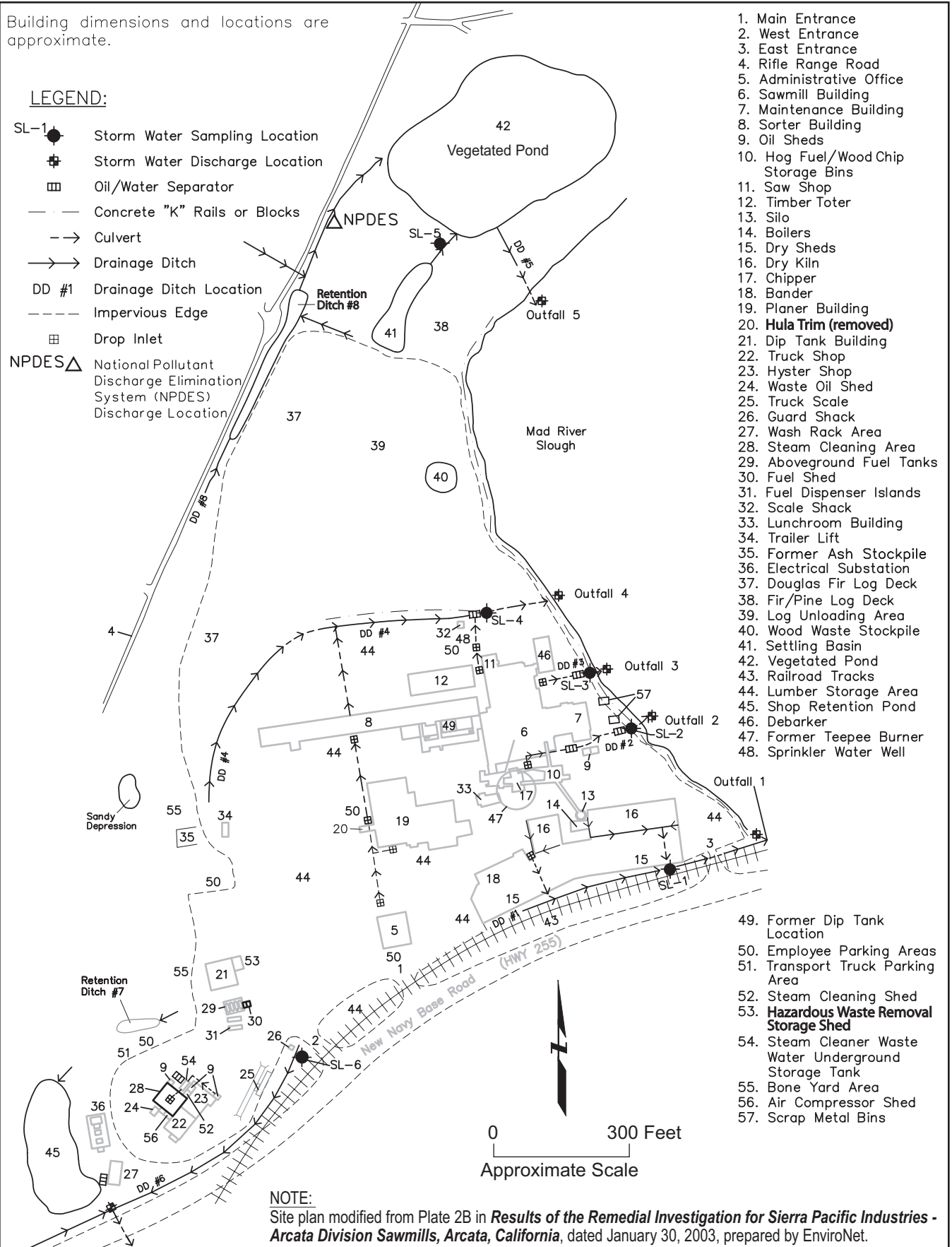
Figure No.
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Building dimensions and locations are approximate.

LEGEND:

- SL-1 ● Storm Water Sampling Location
- ⊕ Storm Water Discharge Location
- ▣ Oil/Water Separator
- Concrete "K" Rails or Blocks
- - -> Culvert
- Drainage Ditch
- DD #1 Drainage Ditch Location
- - - Impervious Edge
- ⊞ Drop Inlet
- NPDES Δ National Pollutant Discharge Elimination System (NPDES) Discharge Location

1. Main Entrance
2. West Entrance
3. East Entrance
4. Rifle Range Road
5. Administrative Office
6. Sawmill Building
7. Maintenance Building
8. Sorter Building
9. Oil Sheds
10. Hog Fuel/Wood Chip Storage Bins
11. Saw Shop
12. Timber Toter
13. Silo
14. Boilers
15. Dry Sheds
16. Dry Kiln
17. Chipper
18. Bander
19. Planer Building
20. **Hula Trim (removed)**
21. Dip Tank Building
22. Truck Shop
23. Hyster Shop
24. Waste Oil Shed
25. Truck Scale
26. Guard Shack
27. Wash Rack Area
28. Steam Cleaning Area
29. Aboveground Fuel Tanks
30. Fuel Shed
31. Fuel Dispenser Islands
32. Scale Shack
33. Lunchroom Building
34. Trailer Lift
35. Former Ash Stockpile
36. Electrical Substation
37. Douglas Fir Log Deck
38. Fir/Pine Log Deck
39. Log Unloading Area
40. Wood Waste Stockpile
41. Settling Basin
42. Vegetated Pond
43. Railroad Tracks
44. Lumber Storage Area
45. Shop Retention Pond
46. Debarker
47. Former Teepee Burner
48. Sprinkler Water Well
49. Former Dip Tank Location
50. Employee Parking Areas
51. Transport Truck Parking Area
52. Steam Cleaning Shed
53. **Hazardous Waste Removal Storage Shed**
54. Steam Cleaner Water Underground Storage Tank
55. Bone Yard Area
56. Air Compressor Shed
57. Scrap Metal Bins



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

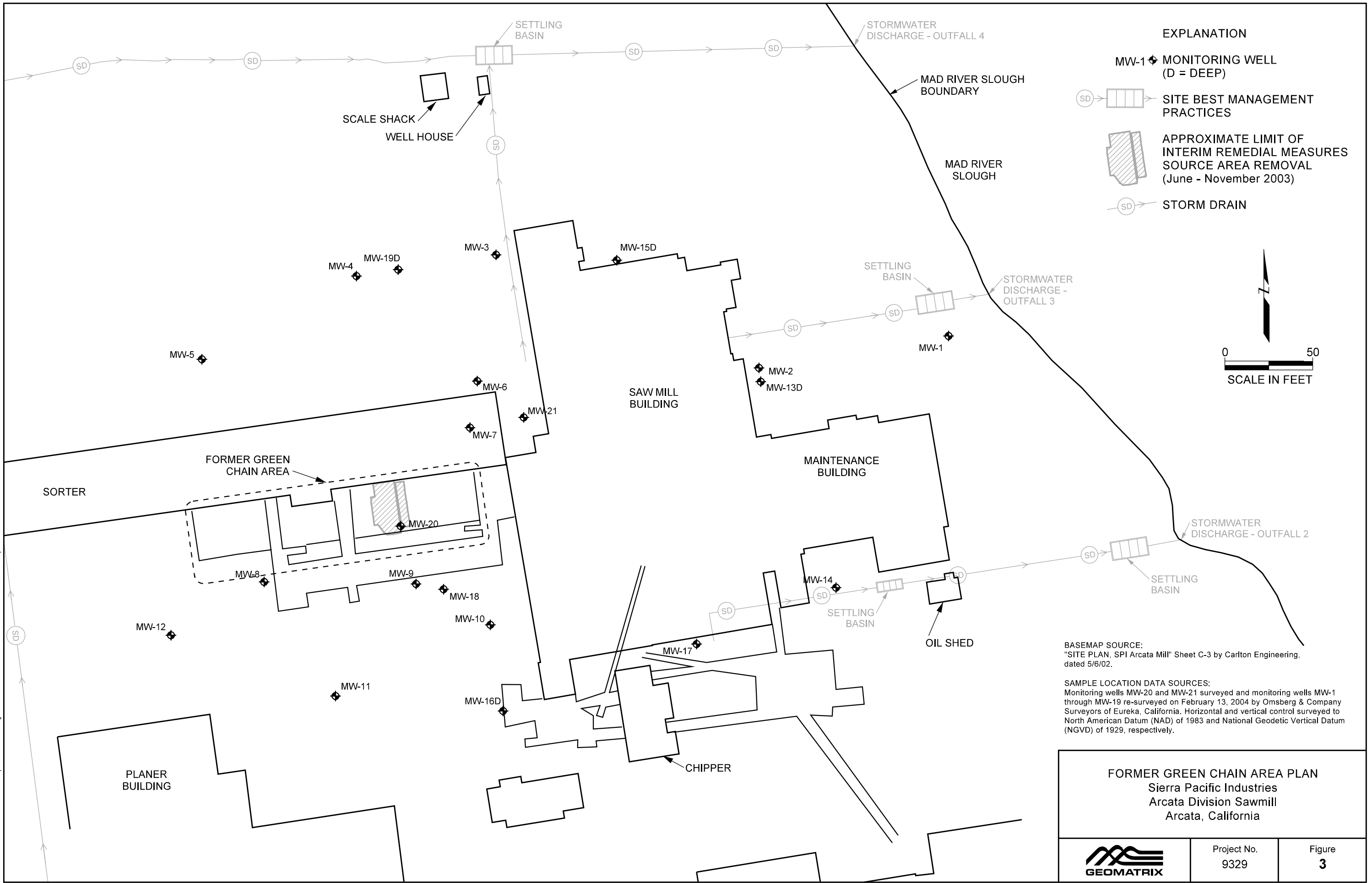
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SITE PLAN
 Sierra Pacific Industries
 Arcata Division Sawmill
 Arcata, California

Project No. 9329
Figure 2

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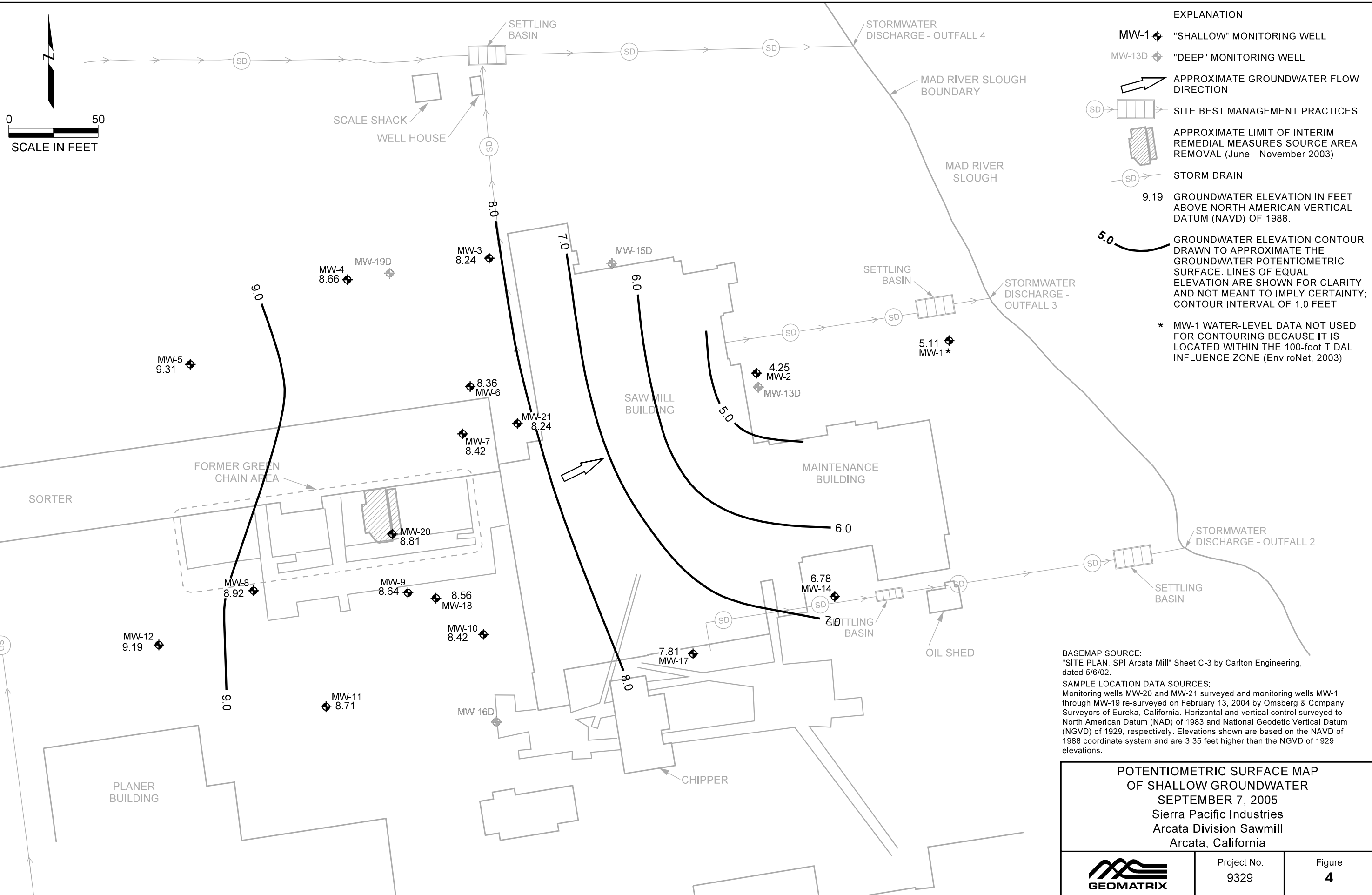
EXPLANATION

- MW-1 ◆ MONITORING WELL (D = DEEP)
- SD → [] SITE BEST MANAGEMENT PRACTICES
- [/ / /] APPROXIMATE LIMIT OF INTERIM REMEDIAL MEASURES SOURCE AREA REMOVAL (June - November 2003)
- SD → () STORM DRAIN

BASEMAP SOURCE:
 "SITE PLAN, SPI Arcata Mill" Sheet C-3 by Carlton Engineering, dated 5/6/02.

SAMPLE LOCATION DATA SOURCES:
 Monitoring wells MW-20 and MW-21 surveyed and monitoring wells MW-1 through MW-19 re-surveyed on February 13, 2004 by Omsberg & Company Surveyors of Eureka, California. Horizontal and vertical control surveyed to North American Datum (NAD) of 1983 and National Geodetic Vertical Datum (NGVD) of 1929, respectively.

FORMER GREEN CHAIN AREA PLAN Sierra Pacific Industries Arcata Division Sawmill Arcata, California		
 GEOMATRIX	Project No. 9329	Figure 3



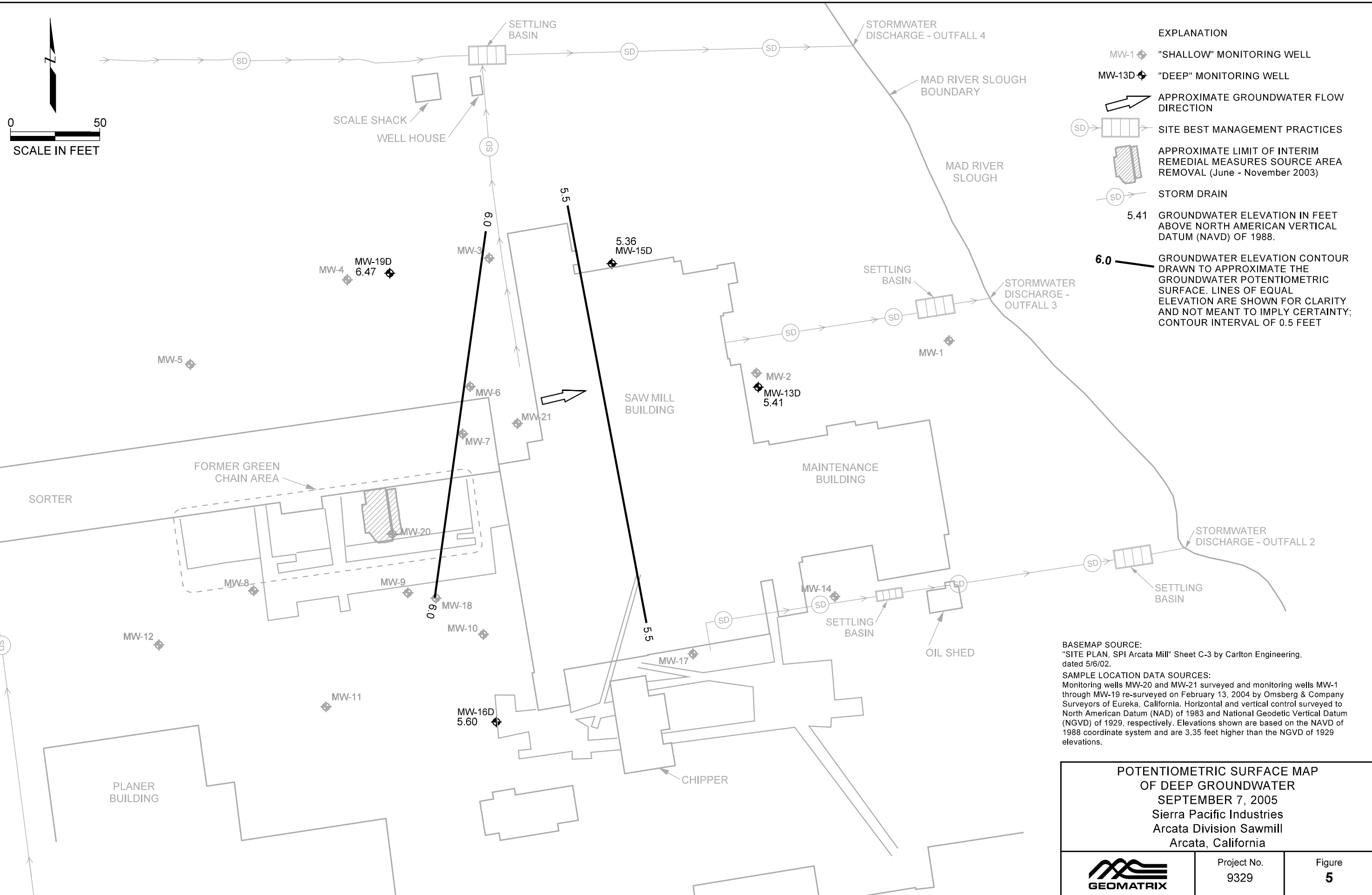
- EXPLANATION**
- MW-1 ◆ "SHALLOW" MONITORING WELL
 - MW-13D ◆ "DEEP" MONITORING WELL
 - ➔ APPROXIMATE GROUNDWATER FLOW DIRECTION
 - SD [Symbol] SITE BEST MANAGEMENT PRACTICES
 - [Hatched Area] APPROXIMATE LIMIT OF INTERIM REMEDIAL MEASURES SOURCE AREA REMOVAL (June - November 2003)
 - SD [Symbol] STORM DRAIN
 - 9.19 GROUNDWATER ELEVATION IN FEET ABOVE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.
 - 5.0 [Line] GROUNDWATER ELEVATION CONTOUR DRAWN TO APPROXIMATE THE GROUNDWATER POTENTIOMETRIC SURFACE. LINES OF EQUAL ELEVATION ARE SHOWN FOR CLARITY AND NOT MEANT TO IMPLY CERTAINTY; CONTOUR INTERVAL OF 1.0 FEET
 - * MW-1 WATER-LEVEL DATA NOT USED FOR CONTOURING BECAUSE IT IS LOCATED WITHIN THE 100-foot TIDAL INFLUENCE ZONE (EnviroNet, 2003)

BASEMAP SOURCE:
 "SITE PLAN, SPI Arcata Mill" Sheet C-3 by Carlton Engineering, dated 5/6/02.

SAMPLE LOCATION DATA SOURCES:
 Monitoring wells MW-20 and MW-21 surveyed and monitoring wells MW-1 through MW-19 re-surveyed on February 13, 2004 by Omsberg & Company Surveyors of Eureka, California. Horizontal and vertical control surveyed to North American Datum (NAD) of 1983 and National Geodetic Vertical Datum (NGVD) of 1929, respectively. Elevations shown are based on the NAVD of 1988 coordinate system and are 3.35 feet higher than the NGVD of 1929 elevations.

POTENTIOMETRIC SURFACE MAP OF SHALLOW GROUNDWATER SEPTEMBER 7, 2005 Sierra Pacific Industries Arcata Division Sawmill Arcata, California		
 GEOMATRIX	Project No. 9329	Figure 4


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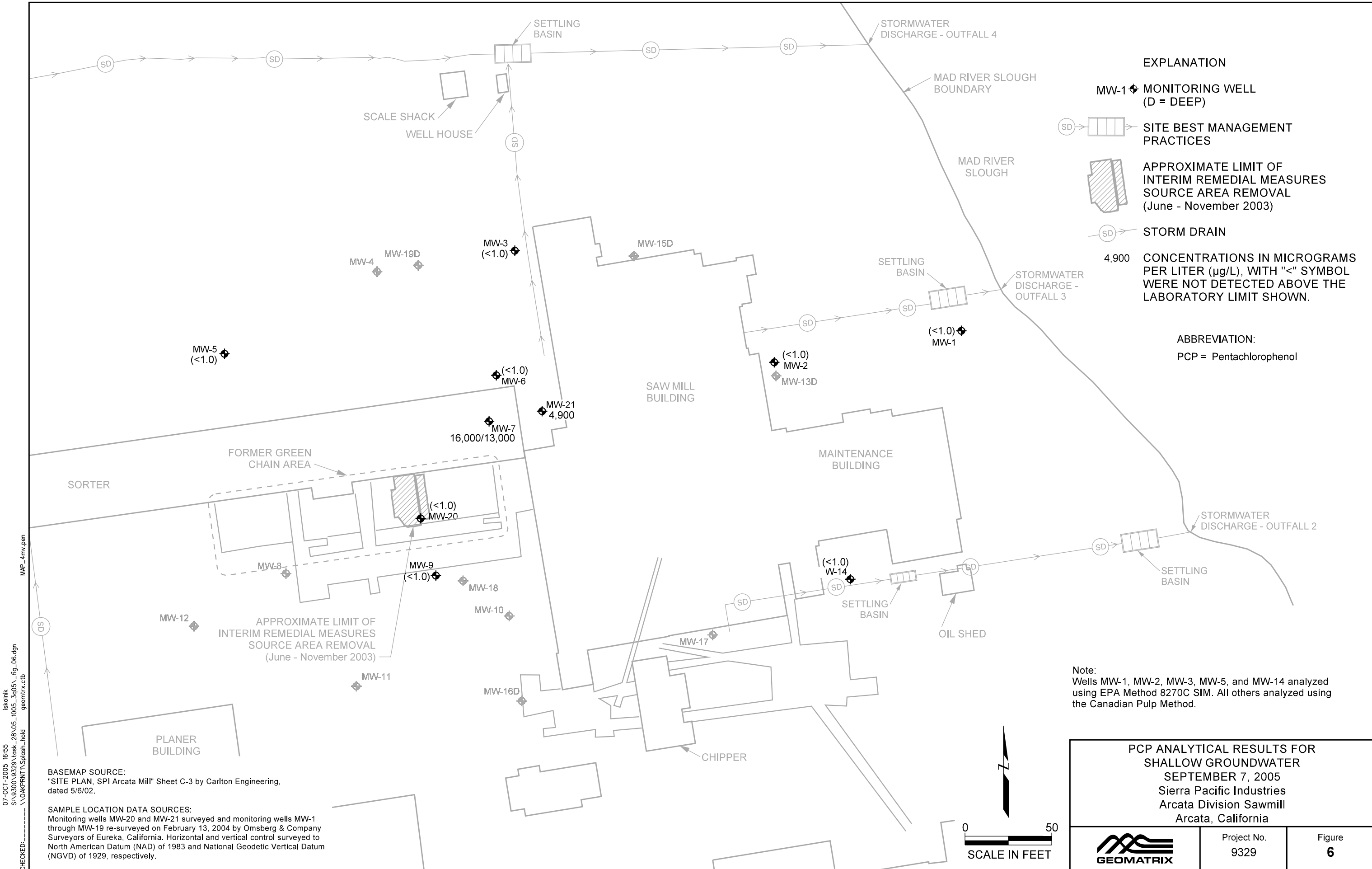
- EXPLANATION**
- MW-1 ◆ "SHALLOW" MONITORING WELL
 - MW-13D ◆ "DEEP" MONITORING WELL
 - ➔ APPROXIMATE GROUNDWATER FLOW DIRECTION
 - (SD) [Symbol] SITE BEST MANAGEMENT PRACTICES
 - [Hatched Area] APPROXIMATE LIMIT OF INTERIM REMEDIAL MEASURES SOURCE AREA REMOVAL (June - November 2003)
 - (SD) [Symbol] STORM DRAIN
 - 5.41 GROUNDWATER ELEVATION IN FEET ABOVE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.
 - 6.0 GROUNDWATER ELEVATION CONTOUR DRAWN TO APPROXIMATE THE GROUNDWATER POTENTIOMETRIC SURFACE. LINES OF EQUAL ELEVATION ARE SHOWN FOR CLARITY AND NOT MEANT TO IMPLY CERTAINTY; CONTOUR INTERVAL OF 0.5 FEET

BASEMAP SOURCE:
 "SITE PLAN, SPI Arcata Mill" Sheet C-3 by Carlton Engineering, dated 5/6/02.

SAMPLE LOCATION DATA SOURCES:
 Monitoring wells MW-20 and MW-21 surveyed and monitoring wells MW-1 through MW-19 re-surveyed on February 13, 2004 by Omsberg & Company Surveyors of Eureka, California. Horizontal and vertical control surveyed to North American Datum (NAD) of 1983 and National Geodetic Vertical Datum (NGVD) of 1929, respectively. Elevations shown are based on the NAVD of 1988 coordinate system and are 3.35 feet higher than the NGVD of 1929 elevations.

POTENTIOMETRIC SURFACE MAP OF DEEP GROUNDWATER SEPTEMBER 7, 2005 Sierra Pacific Industries Arcata Division Sawmill Arcata, California		
 GEOMATRIX	Project No. 9329	Figure 5

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- EXPLANATION**
- MW-1 ◆ MONITORING WELL (D = DEEP)
 - SD [] SITE BEST MANAGEMENT PRACTICES
 - [/] APPROXIMATE LIMIT OF INTERIM REMEDIAL MEASURES SOURCE AREA REMOVAL (June - November 2003)
 - SD → STORM DRAIN
 - 4,900 CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L), WITH "<" SYMBOL WERE NOT DETECTED ABOVE THE LABORATORY LIMIT SHOWN.

ABBREVIATION:
PCP = Pentachlorophenol

Note:
Wells MW-1, MW-2, MW-3, MW-5, and MW-14 analyzed using EPA Method 8270C SIM. All others analyzed using the Canadian Pulp Method.

BASEMAP SOURCE:
"SITE PLAN, SPI Arcata Mill" Sheet C-3 by Carlton Engineering, dated 5/6/02.

SAMPLE LOCATION DATA SOURCES:
Monitoring wells MW-20 and MW-21 surveyed and monitoring wells MW-1 through MW-19 re-surveyed on February 13, 2004 by Omsberg & Company Surveyors of Eureka, California. Horizontal and vertical control surveyed to North American Datum (NAD) of 1983 and National Geodetic Vertical Datum (NGVD) of 1929, respectively.

PCP ANALYTICAL RESULTS FOR SHALLOW GROUNDWATER SEPTEMBER 7, 2005 Sierra Pacific Industries Arcata Division Sawmill Arcata, California		
 GEOMATRIX	Project No. 9329	Figure 6

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APPENDIX A

Field Documentation

**Groundwater Monitoring and Sampling
Records**

Pilot Study Groundwater Sampling Records

DAILY FIELD RECORD



Project and Task Number: 9329.000.0 28/23	Date: 9/7/05
Project Name: SPI Arcata	Field Activity: GW Monitoring
Location: Arcata	Weather: overcast

PERSONNEL:	Name	Company	Time In	Time Out
	Matt Hillyard	Geomatrix	8:00	17:10
	Mike Keim	Geomatrix	8:00	16:00
	Carrie	MCS	8:00	10:45

PERSONAL SAFETY CHECKLIST			
X	Steel-toed Boots	X	Hard Hat
X	Rubber Gloves	X	Safety Goggles
			Tyvek Coveralls
			1/2-Face Respirator

DRUM I.D.	DESCRIPTION OF CONTENTS AND QUANTITY	LOCATION
GW1	Purge water from PCP-impacted wells	under sorter near MW-7
GW2	Purge water non-PCP impacted wells	near MW-8

TIME	DESCRIPTION OF WORK PERFORMED
8:00	Arrive @ Site check in ✓ Jay Mike & Carrie to Ditch 8
8:05	check for empty drums, none available
8:12	begin opening wells
9:25	Finish opening wells
9:30	begin water levels
11:02	Finish WLS, show Mike around site
11:40	Lunch
12:15	Begin @ MW-1
12:25	Calibrate ultrameter pH 4, 7, 0 TDS 1500 + 300 ppm EC 2070 + 447 uS
12:32	Begin purge MW-1
16:50	Finish @ MW-7, cleanup
17:10	leave Site

WATER LEVEL MONITORING RECORD



Project Name: SPI Arcata Project and Task Number: 9329.000.0 28

Date: 9/7/05 Measured by: MAH Instrument Used: ES #1

Note: For your convenience, the following abbreviations may be used.

P = Pumping I = Inaccessible D = Dedicated Pump
 ST = Steel Tape ES = Electric Sounder MP = Measuring Point WL = Water Level

Well No.	Time	MP Elevation (feet)	Water Level Below MP (feet)	Water Level Elevation (feet)	Previous Water Level Below MP	Remarks
RR	930	15.70	16.35	-0.65		
MW-12	942	10.76	1.57	9.19		
MW-8	944	10.33	1.41	8.92	TD=8.15	
MW-11	948	10.28	1.57	8.71		
MW-9	951	9.91	1.27	8.64	TD=7.97	needs new well box
MW-18	953	9.92	1.36	8.56		
MW-10	956	9.85	1.43	8.42		
MW-16D	1000	9.83	4.23	5.60		
MW-17	1006	9.16	1.35	7.81		
MW-14	1012	9.15	2.37	6.78		
MW-1	1018	9.69	4.58	5.11		needs 1 bolt
MW-2	1020	9.61	5.36	4.25		
MW-13D	1021	9.96	4.55	5.41		needs 1 bolt
MW-15D	1029	11.19	5.83	5.36		
MW-3	1032	11.22	2.98	8.24		
MW-19D	1033	11.06	4.59	6.47		
MW-4	1037	10.74	2.08	8.66		
MW-5	1041	10.74	1.43	9.31	TD=7.97	
MW-6	1045	9.83	1.47	8.36	TD=7.98	
MW-20	1052	11.87	3.06	8.81	TD=6.72	
MW-21	1050	12.89	4.65	8.24	TD=10.97	
MW-7	1055	9.74	1.32	8.42	TD=7.97	4. head hole in well box and bit changed
RR	1102	15.70	12.95	2.75		



WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-1 Initial Depth to Water: _____

Sample ID: MW-01-200509 Duplicate ID: BD-01-20509 Depth to Water after Sampling: _____

Sample Depth: Mid Screen Total Depth to Well: _____

Project and Task No.: 9329.000.0 23 Well Diameter: 2"

Project Name: SPI ARCATA 1 Casing/Borehole Volume: _____
(Circle one)

Date: 09/07/05 3 Casing/Borehole Volumes: _____
(Circle one)

Sampled By: MAH/MRK Total Casing/Borehole
Method of Purging: Low Flow Volumes Removed: _____

Method of Sampling: Low Flow

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)
1243	mid screen	0.2	0	18.1	7.60	3012	ORP=-132mV TDS=2235ppm 1+ yellow clear
1245			0.4	17.8	7.00	2434	ORP=-110mV TDS=1758ppm " "
1246			0.6	17.7	6.82	2353	ORP=-134mV TDS=1695ppm " "
1248			1.0	17.7	6.54	2387	ORP=-130mV TDS=1725ppm " "
1250			1.4	17.7	6.53	2384	ORP=-134mV TDS=1720ppm " "
							sample

pH CALIBRATION (choose two)				Model or Unit No.: Ultrameter 6P
Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Temperature C				
Instrument Reading				
SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION				Model or Unit No.: Ultrameter 6P
KCL Solution (µS/cm=µmhos/cm)	447	2070		
Temperature C				
Instrument Reading				

Notes:



WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: <u>MW-2</u>	Initial Depth to Water: <u>5.36</u>
Sample ID: <u>MW-02-200509</u> Duplicate ID: _____	Depth to Water after Sampling: _____
Sample Depth: <u>mid screen</u>	Total Depth to Well: _____
Project and Task No.: <u>9329.000.0 28/23</u>	Well Diameter: <u>2"</u>
Project Name: <u>SPI ARCATA</u>	1 Casing/Borehole Volume: _____ (Circle one)
Date: <u>09/07/05</u>	3 Casing/Borehole Volumes: _____ (Circle one)
Sampled By: <u>MAH/MRK</u>	Total Casing/Borehole Volumes Removed: _____
Method of Purging: <u>Low Flow</u>	
Method of Sampling: <u>Low Flow</u>	

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)
1312	mid screen	0.24/min	0	18.2	6.90	1317	ORP = -69mV TDS = 910µm clear
1314			0.4	18.1	6.69	1300	ORP = -79mV TDS = 896µm "
1316			0.8	18.1	6.37	1304	ORP = -84mV TDS = 901µm "
1319			1.4	18.1	6.37	1301	ORP = -74mV TDS = 899µm "
							sample

pH CALIBRATION (choose two)				Model or Unit No.: Ultrameter 6P
Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Temperature C				
Instrument Reading				
SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION				Model or Unit No.: Ultrameter 6P
KCL Solution (µS/cm=µmhos/cm)				
Temperature C				
Instrument Reading				

Notes:



WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-3
 Sample ID: MW-03-200509 Duplicate ID: _____
 Sample Depth: Mid screen
 Project and Task No.: 9329.000.0 23
 Project Name: SPI ARCATA
 Date: 09/07/05
 Sampled By: MAH/MRK
 Method of Purging: Low Flow
 Method of Sampling: Low Flow

Initial Depth to Water: _____
 Depth to Water after Sampling: _____
 Total Depth to Well: ' _____
 Well Diameter: 2"
 1 Casing/Borehole Volume: _____
 (Circle one)
 3 Casing/Borehole Volumes: _____
 (Circle one)
 Total Casing/Borehole Volumes Removed: _____

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)
1348		0.2	0	18.7	6.65	860	ORP=07mV TDS=582ppm clean
1350			0.4	18.6	6.51	850	ORP=-53mV TDS=576 clean
1352			0.8	18.6	6.41	821	ORP=-79mV TDS=557 "
1354			1.4	18.6	6.37	814	ORP=-87mV TDS=551 "
1356			1.6	18.6	6.37	812	ORP=-89 TDS=550 "
							sample

pH CALIBRATION (choose two)			
Buffer Solution	pH 4.0	pH 7.0	pH 10.0
Temperature C			
Instrument Reading			
SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION			
KCL Solution (µS/cm=µmhos/cm)			
Temperature C			
Instrument Reading			

Model or Unit No.: Ultrameter 6P

Model or Unit No.: Ultrameter 6P

Notes:



WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: <u>MW-5</u>	Initial Depth to Water: <u>1.43</u>
Sample ID: <u>MW-05-200509</u> Duplicate ID: _____	Depth to Water after Sampling: _____
Sample Depth: <u>Mid Screen</u>	Total Depth to Well: _____
Project and Task No.: <u>9329.000.0 23</u>	Well Diameter: <u>2"</u>
Project Name: <u>SPI ARCATA</u>	1 Casing/Borehole Volume: _____ (Circle one)
Date: <u>09/07/05</u>	3 Casing/Borehole Volumes: _____ (Circle one)
Sampled By: <u>MAH/MRK</u>	Total Casing/Borehole Volumes Removed: _____
Method of Purging: <u>Low Flow</u>	
Method of Sampling: <u>Low Flow</u>	

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)
1411	<u>Mid screen</u>	<u>0.2</u>	<u>0</u>	<u>18.4</u>	<u>6.93</u>	<u>675</u>	<u>ORP=0mV TDS=454ppm Clear</u>
1412		<u>0.1</u>	<u>0.2</u>	<u>18.2</u>	<u>6.63</u>	<u>671</u>	<u>ORP=0mV TDS=451ppm "</u>
1415			<u>0.8</u>	<u>18.2</u>	<u>6.54</u>	<u>664</u>	<u>ORP=0mV TDS=446ppm "</u>
1417			<u>1.2</u>	<u>18.2</u>	<u>6.53</u>	<u>664</u>	<u>ORP=0mV TDS=447 "</u>

pH CALIBRATION (choose two)					Model or Unit No.: Ultrameter 6P
Buffer Solution	pH 4.0	pH 7.0	pH 10.0		
Temperature C					
Instrument Reading					
SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION					Model or Unit No.: Ultrameter 6P
KCL Solution (µS/cm=µmhos/cm)					
Temperature C					
Instrument Reading					

Notes:



WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-6 Initial Depth to Water: 1.47

Sample ID: MW-06-200509 Duplicate ID: _____ Depth to Water after Sampling: _____

Sample Depth: _____ Total Depth to Well: 7.98

Project and Task No.: 9329.000.0 28 Well Diameter: 2"

Project Name: SPI ARCATA 1 Casing/Borehole Volume: 6.57 x 0.163 gal/ft = 1.1
(Circle one)

Date: 09/07/05 3 Casing/Borehole Volumes: 3.3
(Circle one)

Sampled By: MAH/MRK Total Casing/Borehole Volumes Removed: _____

Method of Purging: DISPOSABLE TEFLON BAILER

Method of Sampling: DISPOSABLE TEFLON BAILER

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)
1539			0	16.1	6.59	920	TDS = 630 ppm clear
1540			1	15.8	6.47	955	TDS = 655 ppm "
1541			2	15.7	6.70	912	TDS = 624 ppm Slightly cloudy yellow
1542			3	15.8	6.42	890	TDS = 608 ppm " " "
1544			3.5	15.7	6.41	876	TDS = 613 ppm " " "
							sample

pH CALIBRATION (choose two)				Model or Unit No.: Ultrameter 6P	
Buffer Solution	pH 4.0	pH 7.0	pH 10.0		
Temperature C					
Instrument Reading				Model or Unit No.: Ultrameter 6P	
SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION					
KCL Solution (µS/cm=µmhos/cm)					
Temperature C					
Instrument Reading					

Notes:



WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: <u>MW-7</u>	Initial Depth to Water: <u>1.32</u>
Sample ID: <u>MW-07-200509</u> Duplicate ID: <u>BD-02-200509</u>	Depth to Water after Sampling: _____
Sample Depth: _____	Total Depth to Well: <u>7.97</u>
Project and Task No.: <u>9329.000.0 28</u>	Well Diameter: <u>2"</u>
Project Name: <u>SPI ARCATA</u>	1 Casing/Borehole Volume: <u>1.1</u> (Circle one)
Date: <u>09/07/05</u>	3 Casing/Borehole Volumes: <u>3.3</u> (Circle one)
Sampled By: <u>MAH/MRK</u>	Total Casing/Borehole Volumes Removed: _____
Method of Purging: <u>DISPOSABLE TEFLON BAILER</u>	
Method of Sampling: <u>DISPOSABLE TEFLON BAILER</u>	

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)
1642			0	13.5	6.91	890	TDS=611 ppm clear
1643			1	13.3	6.58	917	TDS=631 ppm "
1645			2	13.3	6.40	931	TDS=640 ppm "
1646			3	12.7	6.39	940	TDS=648 ppm Slightly cloudy
1647			3.5	13.2	6.39	917	TDS=631 ppm " "
							Sample

pH CALIBRATION (choose two)				Model or Unit No.: Ultrameter 6P	
Buffer Solution	pH 4.0	pH 7.0	pH 10.0		
Temperature C					
Instrument Reading					
SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION				Model or Unit No.: Ultrameter 6P	
KCL Solution (µS/cm=µmhos/cm)					
Temperature C					
Instrument Reading					

Notes:



WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: <u>MW-8</u>	Initial Depth to Water: <u>1.41</u>
Sample ID: <u>MW-08-200509</u> Duplicate ID: _____	Depth to Water after Sampling: _____
Sample Depth: _____	Total Depth to Well: <u>8.15</u>
Project and Task No.: <u>9329.000.0 28</u>	Well Diameter: <u>2"</u>
Project Name: <u>SPI ARCATA</u>	1 Casing/Borehole Volume: <u>1.1</u> (Circle one)
Date: <u>09/07/05</u>	3 Casing/Borehole Volumes: <u>3 3</u> (Circle one)
Sampled By: <u>MAH/MRK</u>	Total Casing/Borehole Volumes Removed: _____
Method of Purging: <u>DISPOSABLE TEFLON BAILER</u>	
Method of Sampling: <u>DISPOSABLE TEFLON BAILER</u>	

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)
1515			0	20.5	7.03	820	TDS=554ppm lt yellow clear
1517			1	20.7	6.80	817	TDS=551ppm " " "
1518			2	20.6	6.52	811	TDS=547ppm " " "
1517			3	20.5	6.40	808	TDS=546ppm " " "
1520			4	20.5	6.35	808	TDS=545ppm " " "
							sample

pH CALIBRATION (choose two)				Model or Unit No.: Ultrameter 6P
Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Temperature C				
Instrument Reading				
SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION				Model or Unit No.: Ultrameter 6P
KCL Solution (µS/cm=µmhos/cm)				
Temperature C				
Instrument Reading				

Notes:



WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: <u>MW-9</u>	Initial Depth to Water: <u>1.27</u>
Sample ID: <u>MW-09-200509</u> Duplicate ID: _____	Depth to Water after Sampling: _____
Sample Depth: _____	Total Depth to Well: <u>7.97</u>
Project and Task No.: <u>9329.000.0 28</u>	Well Diameter: <u>2"</u>
Project Name: <u>SPI ARCATA</u>	1 Casing/Borehole Volume: <u>1.1</u> (Circle one)
Date: <u>09/07/05</u>	3 Casing/Borehole Volumes: <u>3.3</u> (Circle one)
Sampled By: <u>MAH/MRK</u>	Total Casing/Borehole Volumes Removed: _____
Method of Purging: <u>DISPOSABLE TEFLON BAILER</u>	
Method of Sampling: <u>DISPOSABLE TEFLON BAILER</u>	

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)
1527			0	20.1	6.57	904	TDS=614 ppm clear 1+ yellow orange particles
1529			1	19.5	6.43	928	TDS=632 ppm " "
1530			2	19.3	6.40	926	TDS=630 ppm slightly cloudy 1+ yellow-grey
1531			3	19.2	6.38	920	TDS=626 ppm " "
1533			3.5	19.1	6.38	916	TDS=623 ppm " "

pH CALIBRATION (choose two)				Model or Unit No.: Ultrameter 6P			
Buffer Solution	pH 4.0	pH 7.0	pH 10.0				
Temperature C							
Instrument Reading							
SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION				Model or Unit No.: Ultrameter 6P			
KCL Solution (µS/cm=µmhos/cm)							
Temperature C							
Instrument Reading							

Notes:



WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: <u>MW-14</u> Sample ID: <u>MW-14-200509</u> Duplicate ID: _____ Sample Depth: <u>mid screen</u> Project and Task No.: <u>9329.000.0 23</u> Project Name: <u>SPI ARCATA</u> Date: <u>09/07/05</u> Sampled By: <u>MAH/MRK</u> Method of Purging: <u>Low Flow</u> Method of Sampling: <u>Low Flow</u>	Initial Depth to Water: <u>2-37</u> Depth to Water after Sampling: _____ Total Depth to Well: _____ Well Diameter: <u>2"</u> 1 Casing/Borehole Volume: _____ (Circle one) 3 Casing/Borehole Volumes: _____ (Circle one) Total Casing/Borehole Volumes Removed: _____
---	--

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)
1432	mid screen	0.2	0	18.9	6.55	3017	ORP = -50mV TDS = 2224ppm yellow clear water
1435		0.6	0.6	20.1	6.50	2548	ORP = -69mV TDS = 1846ppm " "
1437		1.0	1.0	20.4	6.40	2482	ORP = -79mV TDS = 1792ppm " "
1439		1.4	1.4	20.2	6.36	2585	ORP = -90mV TDS = 1875ppm " "
1440		1.6	1.6	19.9	6.39	2711	ORP = -93mV TDS = 1980ppm sample

pH CALIBRATION (choose two)				Model or Unit No.: Ultrameter 6P			
Buffer Solution	pH 4.0	pH 7.0	pH 10.0				
Temperature C							
Instrument Reading							

SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION				Model or Unit No.: Ultrameter 6P			
KCL Solution (µS/cm=µmhos/cm)							
Temperature C							
Instrument Reading							

Notes:



WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-20 Initial Depth to Water: 3.06
 Sample ID: MW-20-200509 Duplicate ID: _____ Depth to Water after Sampling: _____
 Sample Depth: _____ Total Depth to Well: 6.72
 Project and Task No.: 9329.000.0 28 Well Diameter: 4"
 Project Name: SPI ARCATA 1 Casing/Borehole Volume: 3.66 x 0.653 gal/ft = 249.1
 Date: 09/07/05 (Circle one)
 Sampled By: MAH/MRK 3 Casing/Borehole Volumes: 7.2991
 (Circle one)
 Method of Purging: DISPOSABLE TEFLON BAILER Total Casing/Borehole
 Method of Sampling: DISPOSABLE TEFLON BAILER Volumes Removed: _____

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)
1554			0	18.7	7.00	576	TDS = 387 ppm clear
1600			2	19.0	6.71	513	TDS = 342 ppm " "
1603			4	18.9	6.61	525	352 ppm " "
1607			6	19.0	6.59	912	TDS = 515 ppm clear w/ sand
1616			7.5	19.0	6.59	509	TDS = 341 ppm " "
							Sample

pH CALIBRATION (choose two)				Model or Unit No.: Ultrameter 6P			
Buffer Solution	pH 4.0	pH 7.0	pH 10.0				
Temperature C							
Instrument Reading							
SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION				Model or Unit No.: Ultrameter 6P			
KCL Solution (µS/cm=µmhos/cm)							
Temperature C							
Instrument Reading							

Notes: Sample volume doubled for MS/MSD.



WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: <u>MW-21</u> Sample ID: <u>MW-21-200509</u> Duplicate ID: _____ Sample Depth: _____ Project and Task No.: <u>9329.000.0 28</u> Project Name: <u>SPI ARCATA</u> Date: <u>09/07/05</u> Sampled By: <u>MAH/MRK</u> Method of Purging: <u>Peristaltic Pump</u> Method of Sampling: <u>Peristaltic Pump</u>	Initial Depth to Water: <u>4.65</u> Depth to Water after Sampling: _____ Total Depth to Well: <u>10.97</u> Well Diameter: <u>0.75"</u> 1 Casing/Borehole Volume: <u>6.32</u> x 0.023 gal/ft = <u>0.15</u> (Circle one) 3 Casing/Borehole Volumes: <u>0.45</u> (Circle one) Total Casing/Borehole Volumes Removed: _____
---	---

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)
1625		0.29	0	6.34	6.54	1187	TDS = 523 ppm clear
1627		0.4	0.4	14.8	6.58	1006	TDS = 694 ppm clear
1629		0.8	0.8	14.8	6.40	1002	TDS = 691 ppm clear
1630		1.0	1.0	14.8	6.37	1002	TDS = 691 ppm "
							Sample

pH CALIBRATION (choose two)					Model or Unit No.: Ultrameter 6P
Buffer Solution	pH 4.0	pH 7.0	pH 10.0		
Temperature C					
Instrument Reading					
SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION					Model or Unit No.: Ultrameter 6P
KCL Solution (µS/cm=µmhos/cm)					
Temperature C					
Instrument Reading					

Notes:

APPENDIX B

Laboratory Reports and Chain-of-Custody Records for Groundwater Samples

Laboratory reports in order of appearance:

**Alpha Analytical Work Order: A509231
Friedman & Bruya Project: 509072**



alpha

Alpha Analytical Laboratories Inc.

208 Mason St. Ukiah, California 95482

e-mail: clientservices@alpha-labs.com • Phone: (707) 468-0401 • Fax: (707) 468-5267

22 September 2005

Geomatrix Consultants

Attn: Mike Keim

2101 Webster Street, 12th Floor

Oakland, CA 94612

RE: 9329

Work Order: A509231

Enclosed are the results of analyses for samples received by the laboratory on 09/08/05 16:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sheri Speaks

Sheri L. Speaks
Project Manager



Alpha Analytical Laboratories Inc.

208 Mason St. Ukiah, California 95482

e-mail: clientservices@alpha-labs.com • Phone: (707) 468-0401 • Fax: (707) 468-5267

CHEMICAL EXAMINATION REPORT

Page 1 of 7

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Mike Keim

Report Date: 09/22/05 12:07
Project No: 9329/28
Project ID: 9329

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A509231	09/08/2005 16:20	GEOMAT	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-02-200509	A509231-01	Water	09/07/05 13:19	09/08/05 16:20
MW-06-200509	A509231-02	Water	09/07/05 15:44	09/08/05 16:20
MW-07-200509	A509231-03	Water	09/07/05 16:47	09/08/05 16:20
MW-08-200509	A509231-04	Water	09/07/05 15:20	09/08/05 16:20
MW-09-200509	A509231-05	Water	09/07/05 15:33	09/08/05 16:20
MW-20-200509	A509231-06	Water	09/07/05 16:16	09/08/05 16:20
MW-21-200509	A509231-07	Water	09/07/05 16:30	09/08/05 16:20
BD-02-200509	A509231-08	Water	09/07/05 00:00	09/08/05 16:20

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sheri Speaks

Sheri L. Speaks
Project Manager

9/22/2005



Alpha Analytical Laboratories Inc.

208 Mason St. Ukiah, California 95482

e-mail: clientservices@alpha-labs.com • Phone: (707) 468-0401 • Fax: (707) 468-5267

CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Mike Keim

Report Date: 09/22/05 12:07
Project No: 9329/28
Project ID: 9329

Order Number Receipt Date/Time Client Code Client PO/Reference
A509231 09/08/2005 16:20 GEOMAT

Alpha Analytical Laboratories, Inc.

METHOD BATCH PREPARED ANALYZED DILUTION RESULT PQL NOTE

MW-02-200509 (A509231-01)

Sample Type: Water

Sampled: 09/07/05 13:19

Chlorinated Phenols by Canadian Pulp Method

2,4,6-Trichlorophenol	EnvCan	AI51617	09/14/05	09/16/05	1	ND ug/l	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,5-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
Pentachlorophenol	"	"	"	"	"	ND "	1.0
Surrogate: Tribromophenol	"	"	"	"		102 %	70-124

MW-06-200509 (A509231-02)

Sample Type: Water

Sampled: 09/07/05 15:44

Chlorinated Phenols by Canadian Pulp Method

2,4,6-Trichlorophenol	EnvCan	AI51617	09/14/05	09/17/05	1	ND ug/l	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,5-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
Pentachlorophenol	"	"	"	"	"	ND "	1.0
Surrogate: Tribromophenol	"	"	"	"		99.2 %	70-124

MW-07-200509 (A509231-03)

Sample Type: Water

Sampled: 09/07/05 16:47

Chlorinated Phenols by Canadian Pulp Method

2,4,6-Trichlorophenol	EnvCan	AI51617	09/14/05	09/17/05	1	ND ug/l	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	19 "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	09/20/05	100	280 "	100
2,3,4,5-Tetrachlorophenol	"	"	"	09/17/05	1	16 "	1.0
Pentachlorophenol	"	"	"	09/21/05	1000	16000 "	1000
Surrogate: Tribromophenol	"	"	"	09/17/05		83.2 %	70-124

MW-08-200509 (A509231-04)

Sample Type: Water

Sampled: 09/07/05 15:20

Chlorinated Phenols by Canadian Pulp Method

2,4,6-Trichlorophenol	EnvCan	AI51617	09/14/05	09/20/05	1	ND ug/l	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,5-Tetrachlorophenol	"	"	"	"	"	ND "	1.0

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sheri Speaks

Sheri L. Speaks
Project Manager

9/22/2005



Alpha Analytical Laboratories Inc.

208 Mason St. Ukiah, California 95482

e-mail: clientservices@alpha-labs.com • Phone: (707) 468-0401 • Fax: (707) 468-5267

CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
 2101 Webster Street, 12th Floor
 Oakland, CA 94612
 Attn: Mike Keim

Report Date: 09/22/05 12:07
 Project No: 9329/28
 Project ID: 9329

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A509231	09/08/2005 16:20	GEOMAT	

Alpha Analytical Laboratories, Inc.

METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
MW-08-200509 (A509231-04)		Sample Type: Water			Sampled: 09/07/05 15:20		
Chlorinated Phenols by Canadian Pulp Method (cont'd)							
Pentachlorophenol	EnvCan	"	"	09/20/05	"	ND "	1.0
<i>Surrogate: Tribromophenol</i>	"	"	"	"		95.6 %	70-124
MW-09-200509 (A509231-05)		Sample Type: Water			Sampled: 09/07/05 15:33		
Chlorinated Phenols by Canadian Pulp Method							
2,4,6-Trichlorophenol	EnvCan	AI51617	09/14/05	09/17/05	1	ND ug/l	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,5-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
Pentachlorophenol	"	"	"	"	"	ND "	1.0
<i>Surrogate: Tribromophenol</i>	"	"	"	"		101 %	70-124
MW-20-200509 (A509231-06)		Sample Type: Water			Sampled: 09/07/05 16:16		
Chlorinated Phenols by Canadian Pulp Method							
2,4,6-Trichlorophenol	EnvCan	AI51617	09/14/05	09/17/05	1	ND ug/l	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,5-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
Pentachlorophenol	"	"	"	"	"	ND "	1.0
<i>Surrogate: Tribromophenol</i>	"	"	"	"		100 %	70-124
MW-21-200509 (A509231-07)		Sample Type: Water			Sampled: 09/07/05 16:30		
Chlorinated Phenols by Canadian Pulp Method							
2,4,6-Trichlorophenol	EnvCan	AI51617	09/14/05	09/17/05	1	ND ug/l	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	11 "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	09/20/05	10	170 "	10
2,3,4,5-Tetrachlorophenol	"	"	"	09/17/05	1	4.8 "	1.0
Pentachlorophenol	"	"	"	09/21/05	1000	4900 "	1000
<i>Surrogate: Tribromophenol</i>	"	"	"	09/17/05		94.0 %	70-124
BD-02-200509 (A509231-08)		Sample Type: Water			Sampled: 09/07/05 00:00		

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Sheri Speaks

Sheri L. Speaks
 Project Manager

9/22/2005



Alpha

Alpha Analytical Laboratories Inc.

208 Mason St. Ukiah, California 95482

e-mail: clientservices@alpha-labs.com • Phone: (707) 468-0401 • Fax: (707) 468-5267

CHEMICAL EXAMINATION REPORT

Page 4 of 7

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Mike Keim

Report Date: 09/22/05 12:07
Project No: 9329/28
Project ID: 9329

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A509231	09/08/2005 16:20	GEOMAT	

Alpha Analytical Laboratories, Inc.

METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
BD-02-200509 (A509231-08)		Sample Type: Water		Sampled: 09/07/05 00:00			
Chlorinated Phenols by Canadian Pulp Method							
2,4,6-Trichlorophenol	EnvCan	AI51617	09/14/05	09/17/05	1	ND ug/l	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	17 "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	09/20/05	10	230 "	10
2,3,4,5-Tetrachlorophenol	"	"	"	09/17/05	1	14 "	1.0
Pentachlorophenol	"	"	"	09/21/05	1000	13000 "	1000
<i>Surrogate: Tribromophenol</i>	"	"	"	09/17/05		94.4 %	70-124

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Sheri L. Speaks
Project Manager

9/22/2005



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CHEMICAL EXAMINATION REPORT

Page 5 of 7

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Mike Keim

Report Date: 09/22/05 12:07
Project No: 9329/28
Project ID: 9329

Order Number A509231	Receipt Date/Time 09/08/2005 16:20	Client Code GEOMAT	Client PO/Reference
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Chlorinated Phenols by Canadian Pulp Method - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AI51617 - Solvent Extraction										
Blank (AI51617-BLK1)				Prepared: 09/14/05 Analyzed: 09/16/05						
2,4,6-Trichlorophenol	ND	1.0	ug/l							
2,3,5,6-Tetrachlorophenol	ND	1.0	"							
2,3,4,6-Tetrachlorophenol	ND	1.0	"							
2,3,4,5-Tetrachlorophenol	ND	1.0	"							
Pentachlorophenol	ND	1.0	"							
<i>Surrogate: Tribromophenol</i>	20.2		"	25.0		80.8	70-124			
LCS (AI51617-BS1)				Prepared: 09/14/05 Analyzed: 09/16/05						
2,4,6-Trichlorophenol	5.77	1.0	ug/l	5.00		115	81-120			
2,3,5,6-Tetrachlorophenol	5.13	1.0	"	5.00		103	78-108			
2,3,4,6-Tetrachlorophenol	4.91	1.0	"	5.00		98.2	76-108			
2,3,4,5-Tetrachlorophenol	4.97	1.0	"	5.00		99.4	80-116			
Pentachlorophenol	4.14	1.0	"	5.00		82.8	86-109			QL-03
<i>Surrogate: Tribromophenol</i>	24.1		"	25.0		96.4	70-124			
Matrix Spike (AI51617-MS1)				Source: A509231-01 Prepared: 09/14/05 Analyzed: 09/16/05						
2,4,6-Trichlorophenol	4.87	1.0	ug/l	5.00	ND	97.4	75-125			
2,3,5,6-Tetrachlorophenol	4.78	1.0	"	5.00	ND	95.6	69-115			
2,3,4,6-Tetrachlorophenol	3.94	1.0	"	5.00	ND	78.8	66-117			
2,3,4,5-Tetrachlorophenol	4.70	1.0	"	5.00	ND	94.0	70-115			
Pentachlorophenol	3.41	1.0	"	5.00	ND	68.2	55-124			
<i>Surrogate: Tribromophenol</i>	21.6		"	25.0		86.4	70-124			
Matrix Spike Dup (AI51617-MSD1)				Source: A509231-01 Prepared: 09/14/05 Analyzed: 09/16/05						
2,4,6-Trichlorophenol	5.36	1.0	ug/l	5.00	ND	107	75-125	9.58	20	
2,3,5,6-Tetrachlorophenol	5.26	1.0	"	5.00	ND	105	69-115	9.56	20	

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Sheri Speaks

Sheri L. Speaks
Project Manager

9/22/2005



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e-mail: clientservices@alpha-labs.com • Phone: (707) 468-0401 • Fax: (707) 468-5267

CHEMICAL EXAMINATION REPORT

Page 6 of 7

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Mike Keim

Report Date: 09/22/05 12:07
Project No: 9329/28
Project ID: 9329

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A509231	09/08/2005 16:20	GEOMAT	

Chlorinated Phenols by Canadian Pulp Method - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AI51617 - Solvent Extraction										
Matrix Spike Dup (AI51617-MSD1)										
Source: A509231-01 Prepared: 09/14/05 Analyzed: 09/16/05										
2,3,4,6-Tetrachlorophenol	4.41	1.0	"	5.00	ND	88.2	66-117	11.3	20	
2,3,4,5-Tetrachlorophenol	5.12	1.0	"	5.00	ND	102	70-115	8.55	20	
Pentachlorophenol	3.94	1.0	"	5.00	ND	78.8	55-124	14.4	20	
Surrogate: Tribromophenol	23.7		"	25.0		94.8	70-124			

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Sheri L. Speaks

Sheri L. Speaks
Project Manager

9/22/2005



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CHEMICAL EXAMINATION REPORT

Page 7 of 7

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Mike Keim

Report Date: 09/22/05 12:07
Project No: 9329/28
Project ID: 9329

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A509231	09/08/2005 16:20	GEOMAT	

Notes and Definitions

- QL-03 Although the LCS/LCSD recovery for this analyte is outside of in-house developed control limits, it is within the EPA recommended range of 70-130%.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- PQL Practical Quantitation Limit

Date: 9/8/05

Chain-of Custody Record

Project No.: 9329/28

Samplers (Signature): *Matt Willard*

Date	Time	Sample Number
9/7/05	1319	MW-02-200509
	1544	MW-06-200509
	1647	MW-07-200509
	1520	MW-08-200509
	1533	MW-09-200509
	1616	MW-20-200509
	1630	MW-21-200509
		PD-02-200509

ANALYSES

EPA Method 8021 (Full Scan)	(Hal. VOCs only)	EPA Method 8021 (BTEX only)	EPA Method 8260	EPA Method 8270 (Full Scan)	EPA Method 8270 (SIM (PAHS only))	Method 8015m (Gasoline)	Method 8015m (Diesel)	Method 8015m (Motor Oil)	Silica Gel Cleanup	Soil (S), Water (W) Vapor (V), or Other (o)	Filtered	Preserved	Cooled	No. of Containers	Additional Comments
A50A231-							01		X	W			X	2	Need Geotracker
							2							2	EDF (drop date suffix
							3							2	for location ID)
							4							2	
							5							2	
							6							2	
							7							2	
							8							2	

REMARKS

Global ID#
T060239334
Per Matt. 9/9/05

Laboratory: Alpha

Turnaround Time: Standard

Results to: Mike Keim

Total No. of Containers: 16

Relinquished by (Signature): *Matt Willard*
Date: 9/8/05
Printed Name: Matt Willard
Company: Geomatrix

Relinquished by (Signature): *Don Burkhus*
Date: 9/8/05
Printed Name: Don Burkhus
Company: Geomatrix

Relinquished by (Signature): *Wena Burgess*
Date: 9/8/05
Printed Name: Wena Burgess
Company: Alpha

Method of Shipment: Courier
Laboratory Comments and Log No.:

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

September 21, 2005

Mike Keim, Project Manager
Geomatrix Consultants, Inc.
2101 Webster Street, 12th Floor
Oakland, CA 94612

Dear Mr. Keim:

Included are the results from the testing of material submitted on September 12, 2005 from the 9329/23, F&BI 509072 project. There are 9 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Charlene Morrow
Chemist

Enclosures
GMC0921R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on September 12, 2005 by Friedman & Bruya, Inc. from the Geomatrix Consultants, Inc. 9329/23, F&BI 509072 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Geomatrix Consultants, Inc.</u>
509072-01	MW-01-200509
509072-02	MW-02-200509
509072-03	MW-03-200509
509072-04	MW-05-200509
509072-05	MW-14-200509
509072-06	BD-01-200509

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-01-200509	Client:	Geomatrix Consultants, Inc.
Date Received:	09/12/05	Project:	9329/23, F&BI 509072
Date Extracted:	09/13/05	Lab ID:	509072-01
Date Analyzed:	09/14/05	Data File:	091422.D
Matrix:	water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	65	13	89
Phenol-d6	46	12	85
2,4,6-Tribromophenol	115	40	129

Compounds:	Concentration ug/L (ppb)
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-02-200509	Client:	Geomatrix Consultants, Inc.
Date Received:	09/12/05	Project:	9329/23, F&BI 509072
Date Extracted:	09/13/05	Lab ID:	509072-02
Date Analyzed:	09/15/05	Data File:	091423.D
Matrix:	water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	69	13	89
Phenol-d6	47	12	85
2,4,6-Tribromophenol	122	40	129

Compounds:	Concentration ug/L (ppb)
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-03-200509	Client:	Geomatrix Consultants, Inc.
Date Received:	09/12/05	Project:	9329/23, F&BI 509072
Date Extracted:	09/13/05	Lab ID:	509072-03
Date Analyzed:	09/15/05	Data File:	091424.D
Matrix:	water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	61	13	89
Phenol-d6	44	12	85
2,4,6-Tribromophenol	112	40	129

Compounds:	Concentration ug/L (ppb)
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-05-200509	Client:	Geomatrix Consultants, Inc.
Date Received:	09/12/05	Project:	9329/23, F&BI 509072
Date Extracted:	09/13/05	Lab ID:	509072-04
Date Analyzed:	09/15/05	Data File:	091425.D
Matrix:	water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	62	13	89
Phenol-d6	42	12	85
2,4,6-Tribromophenol	102	40	129

Compounds:	Concentration ug/L (ppb)
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-14-200509	Client:	Geomatrix Consultants, Inc.
Date Received:	09/12/05	Project:	9329/23, F&BI 509072
Date Extracted:	09/13/05	Lab ID:	509072-05
Date Analyzed:	09/15/05	Data File:	091426.D
Matrix:	water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	69	13	89
Phenol-d6	48	12	85
2,4,6-Tribromophenol	97	40	129

Compounds:	Concentration ug/L (ppb)
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	BD-01-200509	Client:	Geomatrix Consultants, Inc.
Date Received:	09/12/05	Project:	9329/23, F&BI 509072
Date Extracted:	09/13/05	Lab ID:	509072-06
Date Analyzed:	09/15/05	Data File:	091427.D
Matrix:	water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	70	13	89
Phenol-d6	46	12	85
2,4,6-Tribromophenol	113	40	129

Compounds:	Concentration ug/L (ppb)
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	Method Blank	Client:	Geomatrix Consultants, Inc.
Date Received:	Not Applicable	Project:	9329/23, F&BI 509072
Date Extracted:	09/13/05	Lab ID:	051221 mb
Date Analyzed:	09/14/05	Data File:	091421.D
Matrix:	water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	51	13	89
Phenol-d6	35	12	85
2,4,6-Tribromophenol	71	40	129

Compounds:	Concentration ug/L (ppb)
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/21/05

Date Received: 09/12/05

Project: 9329/23, F&BI 509072

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270C SIM**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Pentachlorophenol	µg/L (ppb)	7.5	69	68	63-115	1

509072

CM 09-12-05

18845

A05

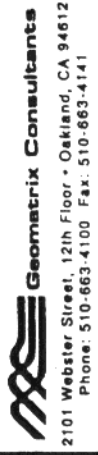
Chain-of Custody Record

Project No.: 9329/23			ANALYSES										REMARKS									
Samplers (Signature): <i>Mat Hild</i>																						
Date	Time	Sample Number	EPA Method 8021 (Full Scan)	EPA Method 8021 (Hal VOCs only)	EPA Method 8021 (BTEX only)	EPA Method 8260	EPA Method 8270 (Full Scan)	EPA Method 8270 SIM (PAHS only)	Method 8015m (Gasoline)	Method 8015m (Diesel)	Method 8015m (Motor Oil)	Silica Gel Cleanup	Pentachloroethane 8270 SEM	Soil (S), Water (W) Vapor (V), or Other (o)	Filtered	Preserved	Cooled	No. of Containers	Additional Comments			
9/7/05	1250	MW-01-200509											X	W			X	2	Need Greater Global ID			
	1319	MW-02-200509																	T0602393344			
	1356	MW-03-200509																	Drop suffix for location ID			
	1417	MW-05-200509																				
	1440	MW-14-200509																				
		BD-01-200509																				
Laboratory: Friedmann + Bruhn			Turnaround Time: <i>Standard</i>										Results to: <i>Mitekeim</i>					Total No. of Containers: 12				
Relinquished by (Signature): <i>Mat Hild</i>			Relinquished by (Signature):										Relinquished by (Signature):					Method of Shipment: <i>Fed Ex</i>				
Printed Name: <i>Mat Hild</i>			Printed Name:										Printed Name:					Laboratory Comments and Log No.:				
Company: <i>Geomatrix</i>			Company:										Company:									
Received by: <i>Mat Hild</i>			Received by:										Received by:									
Printed Name: <i>Nhan Phan</i>			Printed Name:										Printed Name:									
Company: <i>FBI</i>			Company:										Company:									

Project No.: 9329/23 Date: 9/9/05 Page 1 of 1

Lab ID: 01B, 02, 03, 04, 05, 06

Tracking No.: 7901484220052
7901484220055



APPENDIX C

Laboratory Data Quality Review

APPENDIX C

LABORATORY DATA QUALITY REVIEW

Geomatrix reviewed quality assurance and quality control (QA/QC) procedures to assess quality of the analytical results by evaluating the precision, accuracy, and completeness of the data. Data quality was reviewed using U.S. Environmental Protection Agency *National Functional Guidelines for Organic Data Review* (U.S. EPA, 1999).

PRECISION

Data precision is evaluated by comparing analytical results for the following:

- primary and (blind) duplicate field samples
- matrix spike (MS) and matrix spike duplicate (MSD) concentrations
- laboratory control sample (LCS) and laboratory control sample duplicate (LCSD)

Concentrations detected in the primary or spiked samples are compared with respective concentrations in duplicate or duplicate spiked samples. Relative percent differences (RPDs) are used to calculate results, using the following equation:

$$RPD = \frac{[S - D]}{(S + D) / 2} \times 100$$

Where,

S = Sample concentration

D = Duplicate sample concentration

RPDs for primary and duplicate field samples are calculated in Table C-1. RPDs are only calculated when primary and duplicate sample concentrations are greater than or equal to two times the laboratory reporting limits. In cases where the detection in either the primary or duplicate sample, or both, are less than two times the reporting limit, the absolute difference between the primary and duplicate sample concentration is calculated. RPDs for MS/MSD and LCS/LCSD analyses (if performed) are reported in laboratory analytical reports, included in Appendix B.

The RPDs between the primary (MW-7) and the duplicate (BD-02) field samples are consistent and are considered acceptable for pentachlorophenol and tetrachlorophenol (see Table C-1).

ACCURACY

Data accuracy is assessed by evaluating holding times required by analytical methods, sample preservation, laboratory method blank results, recovery of laboratory surrogates, MS/MSD results, and LCS/LCSD results if performed. We evaluated these criteria for samples collected for the groundwater monitoring program. Results of the review are summarized below.

- **Hold times.** Samples were analyzed within the holding time for each analytical method, except for the dissolved gases. Because these results are similar to the previous event, these data are considered satisfactory.
- **Preservation.** Samples were collected in laboratory-supplied containers with preservatives, if applicable. Samples were stored and transported to analytical laboratories in chilled coolers.
- **Method blanks.** No detections were observed in any of the method blanks analyzed by the laboratory.
- **Surrogate recoveries.** Laboratory surrogates were recovered at concentrations within acceptable ranges.
- **MS/MSD analysis.** RPDs were acceptable.
- **LCS analysis.** Percent recovery for pentachlorophenol was below the in-house control limits; however, it was within the EPA recommended range for the method.

COMPLETENESS

Based on our laboratory data quality review, data contained in this report are considered complete and representative.

**TABLE C-1
RELATIVE PERCENT DIFFERENCES
BETWEEN DUPLICATE SAMPLES**

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Samples collected on September 7, 2005

Constituent	Reporting Limit ¹	Sample Concentration MW-07	Duplicate Sample Concentration BD-02	Relative Percent Difference ²
Chlorinated Phenols by Canadian Pulp Method (reported in micrograms per liter [$\mu\text{g/L}$]) ³				
PCP	1000	16,000	13,000	20.7%
2,3,4,5-TeCP	1.0	16	14	13.3%
2,3,4,6-TeCP	100/10	280	230	19.6%
2,3,5,6-TeCP	1.0	19	17	11.1%
2,4,6-TCP	1.0	ND	ND	--

Constituent	Reporting Limit	Sample Concentration MW-01	Duplicate Sample Concentration BD-01	Relative Percent Difference ²
Pentachlorophenol by EPA Method 8270 SIM (reported in $\mu\text{g/L}$) ⁴				
PCP	1.0	ND	ND	--

Notes:

- The reporting limit is presented as the reporting limit for MW-07/BD-02 for the listed constituent when the laboratory chose to use different dilutions with which to analyze the respective samples.
- RPD calculated as $([2(S-D)]/[S+D]) \times 100$ where S is the sample concentration and D is the blind duplicate sample concentration. For sample concentrations less than two times the reporting limit, the absolute difference between the sample concentration and the blind duplicate sample is calculated.
- Analyzed by Alpha Analytical Laboratory, of Ukiah, California.
- Analyzed by Friedman & Bruya, Inc. Environmental Chemists, of Seattle, Washington.

Abbreviations:

PCP = pentachlorophenol
TeCP = tetrachlorophenol
TCP = trichlorophenol