Groundwater Monitoring and Progress Report
First Quarter 2004

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

Prepared for:

Sierra Pacific Industries

April 30, 2004

Project No. 9329, Task 22

Geomatrix Consultants

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GEOMATRIX

April 30, 2004
Project 9329, Task 22

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

Attention: Dean Prat

Subject: Groundwater Monitoring and Progress Report
First Quarter 2004
Sierra Pacific Industries
Arcata Division Sawmill
2593 New Navy Base Road
Arcata, California

Dear Mr. Prat:

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

Sincerely yours,
GEOMATRIX CONSULTANTS, INC.

Ross Steenson, C.HG.
Senior Hydrogeologist

Edward P. Conti, C.E.G., C.HG.
Principal Geologist

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Enclosure

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

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First Quarter 2004

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Arcata Division Sawmill
2593 New Navy Base Road
Arcata, California

Prepared for:

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Prepared by:

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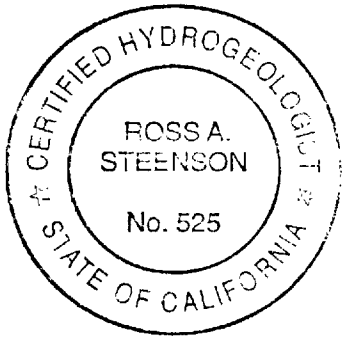
GEOMATRIX

PROFESSIONAL CERTIFICATION

GROUNDWATER MONITORING
AND PROGRESS REPORT
FIRST QUARTER 2004
Sierra Pacific Industries
Arcata Division Sawmill
2593 New Navy Base Road
Arcata, California

April 30, 2004
Project No. 9329.000, Task 22

This report was prepared by Geomatrix Consultants, Inc., under the professional supervision of Ross A. Steenson. 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.



Ross A. Steenson, C.HG.
Senior Hydrogeologist

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FIRST QUARTER 2004

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 quarterly groundwater monitoring event and a progress report for remediation pilot study activities performed during the first quarter 2004 at the Sierra Pacific Industries (SPI) Arcata Division Sawmill located in Arcata, California (the site, Figure 1). The quarterly groundwater monitoring event was performed in accordance with Monitoring and Reporting Program (MRP) No. R1-2003-0127, issued by the California Regional Water Quality Control Board, North Coast Region (RWQCB) on November 13, 2003.

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 to provide the quarterly status of groundwater monitoring performed under the MRP and remediation pilot study activities conducted at the site.

This report is organized as follows:

- Background, including a discussion of site history, subsurface lithology, and hydrogeology, is presented in Section 2.0.
- First Quarter 2004 Groundwater Monitoring Report methods and results are presented in Section 3.0.
- Progress Report for remediation pilot study activities and results is presented in Section 4.0.
- Wastewater Disposal is discussed in Section 5.0.
- Schedule for Future Activities is presented in Section 6.0.
- References used in preparation of this report are listed in Section 7.0.

2.0 SITE BACKGROUND

This section provides background information regarding the site history, subsurface lithology, and hydrogeology. Subsurface lithology and hydrogeology 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, inland from the northern shoreline of Humboldt Bay and approximately 4 miles east of the town of Arcata, California. The site is bounded to the north and 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; current 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 adjacent to the deeper, in-service well that is no longer used because it began to produce sand also is present.

Wood surface protection activities historically conducted at the site included the use of solution containing chlorinated phenols, including pentachlorophenol (PCP) and tetrachlorophenol for sap stain and mold control 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 located immediately south of the eastern end of the current sorter building (Feature 49 on Figure 2, and shown on Figure 3). Use of 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, 2003). 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, 2003). 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 through soil and groundwater investigations 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 to 20 feet bgs (EnviroNet, 2003). Two additional monitoring wells (MW-20 and MW-21) were installed in January and February of 2004 (Geomatrix, 2004a) to monitor shallow groundwater. 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, such as during 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 FIRST QUARTER 2004 MONITORING REPORT

This section discusses field and laboratory methods, groundwater monitoring and sampling results, and quality of laboratory data for activities conducted for the site as required by the MRP during this monitoring period.

3.1 FIELD METHODS

Depth to water was measured on March 23, 2004 in all site monitoring wells (MW-1 through MW-21) and at a monitoring point in the Mad River Slough using an Envirotech Ltd., Waterline Model 150 meter (Table 2). Water levels were measured one day prior to conducting groundwater sampling activities. Monitoring wells were gauged in 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 meter used to measure the groundwater surface before using it at each location. The equipment was washed in a Liquinox® detergent solution and then rinsed three consecutive times with distilled water.

Seven monitoring wells (MW-2, MW-6 through MW-9, MW-20, and MW-21) were purged and sampled on March 24, 2004 in accordance with the site MRP. Field personnel used dedicated, disposable Teflon® bailers to purge groundwater and remove standing water in the well casing, except for monitoring well MW-21 where a peristaltic pump and disposable tubing were used due to the small diameter of this well casing. Field personnel measured and recorded readings of temperature, pH, and specific conductance on field sampling records during groundwater purging activities. Purging activities stopped 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. Copies of the groundwater sampling records are included in Appendix A.

After purging, groundwater within each well was allowed to recover to at least 80 percent of the height of the initial water column that was measured prior to purging. Groundwater samples were collected upon recharge, if applicable, using the dedicated Teflon® bailers and, for monitoring well MW-21, the peristaltic pump and new tubing. A field sample of groundwater was monitored for temperature, pH, specific conductance, and total dissolved solids (TDS) just prior to collecting the groundwater sample, to record water quality parameters of the groundwater being sampled. These field parameters are summarized in Table 3; laboratory analytical results for TDS also are shown 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 and a 1-quart plastic bottle that was sealed with a plastic screw cap. After filling, the vials and bottles 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 MW-A. 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.

Water generated during groundwater sampling and rinsate generated from cleaning water-level measurement equipment was temporarily stored at the site in labeled, Department of Transportation (DOT)-approved, 55-gallon drums pending disposal (Section 5.0). Additional cleaning rinsate was not generated during purging and sampling activities as dedicated bailers were used at each well and a peristaltic pump with new tubing was used at monitoring well MW-21.

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, as follows.

- Total dissolved solids (TDS) [Environmental Protection Agency (EPA) Method 160.1].

- Chlorinated phenols (consisting of PCP, three tetrachlorophenols, and one trichlorophenol) [Canadian Pulp Method].

Results of laboratory analyses for these constituents are discussed in the following section.

3.3 GROUNDWATER MONITORING AND SAMPLING RESULTS

Monitoring and sampling results include data obtained from measuring groundwater elevations in site wells and data obtained from laboratory analysis and field monitoring of groundwater samples. Groundwater elevation data provides information on subsurface hydraulic conditions, discussed below as occurrence and movement of groundwater. Groundwater quality is evaluated based on laboratory analysis and field measurements of TDS and on laboratory analysis of chlorinated phenols. Sampling results are presented below.

3.3.1 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 0.40 to 5.31 feet below the measuring point with associated groundwater elevations ranging from 4.30 to 10.12 feet mean sea level, relative to the North American Vertical Datum of 1988. Groundwater elevation data from these monitoring wells suggest that the direction of shallow groundwater flow is generally to the east (Figure 4). The magnitude of the lateral hydraulic gradient ranges from approximately 0.004 to 0.008 feet/foot in the former green chain vicinity to up to approximately 0.05 feet/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 flow direction or gradient of shallow groundwater.

The groundwater surface measured in deep monitoring wells at the site (i.e., screened from approximately 15 to 20 feet bgs) ranged from 4.01 to 5.66 feet below the measuring point with associated groundwater elevations ranging from 5.53 to 6.93 feet msl, relative to the North American Vertical Datum of 1988. Groundwater elevation data from these monitoring wells suggest that the direction of deep groundwater flow is to the east-southeast (Figure 5) at a lateral hydraulic gradient of approximately 0.01 feet/foot.

3.3.2 Groundwater Analytical Results

This section discusses results of laboratory analyses for TDS and chlorinated phenols. Laboratory analytical reports and chain-of-custody records are included in Appendix B. TDS results are summarized with field parameter measurements in Table 3 and chlorinated phenol results are summarized in Table 4. PCP results also are summarized on Figure 6.

TDS measured in groundwater samples by the laboratory ranged from 250 to 740 milligrams per liter (mg/L) (Table 3). TDS measured in the field was from 34 to 233 mg/L higher than laboratory measurements, with measurements ranging from 284 to 973 mg/L (Table 3).

The laboratory analyzed groundwater samples for chlorinated phenols, consisting of PCP, three tetrachlorophenols (2,3,5,6-tetrachlorophenol, 2,3,4,6-tetrachlorophenol, and 2,3,4,5-tetrachlorophenol) and one trichlorophenol (2,4,6-trichlorophenol). Trichlorophenol was not detected in groundwater samples and PCP and tetrachlorophenols were only detected in groundwater samples from monitoring wells MW-7, MW-20, and MW-21 (Table 4; PCP also shown on Figure 6). Concentrations of these constituents were the highest in groundwater samples collected from monitoring well MW-7, where primary and duplicate PCP concentrations were 19,000 and 7,400 micrograms per liter (μg/L), respectively, and tetrachlorophenol concentrations ranged from 8.7 to 450 μg/L. PCP and tetrachlorophenols were detected in groundwater samples from monitoring well MW-21, downgradient of MW-7, at lower concentrations, of 800 μg/L for PCP and ranging from 6.3 to 17 μg/L for tetrachlorophenols. The lowest concentrations were detected in groundwater samples collected from monitoring well MW-20. PCP was detected at a concentration of 35 μg/L and tetrachlorophenol concentrations ranged from 3.8 to5.1 μg/L in groundwater samples from this well.

3.4 LABORATORY DATA QUALITY REVIEW

Geomatrix reviewed quality of laboratory data generated for the January through March 2004 quarterly sampling event as discussed in Appendix C. Quality assurance and quality control procedures included the following:

- a blind duplicate sample of monitoring well MW-7 (designated MW-A),
- matrix spike and matrix spike duplicate analysis,
- laboratory method blanks, and
- laboratory control spike and laboratory control spike duplicate analyses.

Based on the results of the quality assurance and quality control procedures, sample results for the first quarter 2004 sampling event appear to be representative and accurate.

4.0 PILOT STUDY PROGRESS REPORT

This section presents a summary of activities performed in accordance with the *Pilot Study Work Plan for Implementation of Proposed Remedial Action* (Geomatrix, 2004b) during the subject period. 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 on-site from participating in activities that would results in exposure to unacceptable risk.

During the subject period, groundwater sampling, storm water sampling, and storm water response action were performed.

4.1 DEMONSTRATION OF NATURAL ATTENUATION – GROUNDWATER SAMPLING

Geomatrix collected groundwater samples from selected monitoring wells for the pilot study. being conducted at the site. The groundwater sampling was performed to identify natural attenuation parameters, pentachlorophenol-breakdown products, and concentrations of dioxins and furans. This sampling effort was the first of three sampling events that will be conducted over a two-year period.

4.1.1 Field Methods

Eight monitoring wells (MW-1, MW-2, MW-3, MW-5, MW-7, MW-14, MW-20 and MW-21) were purged and sampled on March 24, 2004 in conjunction with the quarterly groundwater monitoring event of the MRP. Field personnel used a peristaltic pump and tubing dedicated to purge groundwater using low-flow techniques, at a rate of approximately 250 milliliters per minute. Measurements of temperature, pH, specific conductance, dissolved oxygen, and reduction-oxidation potential were collected during purging via a flow-through cell and recorded on field sampling records, included in Appendix A; field measurements are summarized in Table 5.

Field personnel collected groundwater samples after purging a minimum of three pore-tube volumes and 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. 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 laboratories for analysis. Chain-of-custody records were completed for the samples and accompanied the samples until received by the laboratories. 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-21 and submitted to the laboratory as a blind duplicate sample, labeled MW-21B. This sample also was placed in laboratory-supplied containers and sent to the laboratory as described above.

Water generated during groundwater sampling was temporarily stored at the site in the labeled, Department of Transportation (DOT)-approved, 55-gallon drums used for the quarter sampling event (Section 3.0). The drums were temporarily stored at the site pending disposal and an appropriate waste-disposal facility.

4.1.2 Laboratory Methods

Groundwater samples collected from the monitoring wells were analyzed at the following laboratories: Alpha; Friedman & Bruya, Inc. (Friedman & Bruya), of Seattle, Washington; Frontier Analytical Laboratory (Frontier), of El Dorado, California; and K Prime, Inc. of Santa Rosa, California. These laboratories are all certified by the California Department of Health Services for laboratory chemical analysis. Groundwater samples were analyzed as follows:

- Natural attenuation parameters: total organic carbon (EPA Method 415.1); calcium and magnesium (EPA Method 200.7); alkalinity (Standard Method 2320B); chloride, nitrate, and sulfate (EPA Method 300.0); iron (II) and manganese (II) (EPA Method 6010B), and dissolved methane and carbon dioxide (RSK 175).
- Pentachlorophenol and breakdown products, including tetrachlorophenols, trichlorophenols, dichlorophenols, and chlorophenols (EPA Method 8270 Selective Ion Monitoring [SIM]).
- Phenol (EPA Method 8270 SIM).
- Dioxins and furans (EPA Method 1613).

4.1.3 Groundwater Analytical Results

Laboratory analytical reports and chain-of-custody records for pilot study groundwater samples are included in Appendix B. Table 5 summarizes results for field and geochemical parameters; Table 6 and Figure 6 summarize results for chlorinated phenols and phenol, with quarterly sampling results for PCP (by the Canadian Pulp Method); and Table 7 summarizes results for dioxins and furans.

Groundwater analytical results for the pilot study are a work in progress. Results from this March 2004 sampling event are the first of three sampling events that will be used to assess whether natural attenuation is occurring. Chlorinated phenols, phenol, and dioxin and furan results are discussed below.

PCP degradation products (tetra-, tri-, di-, and chloro-phenols) were detected in groundwater samples in the former green chain area. The highest concentrations were detected in groundwater samples from monitoring well MW-7, where PCP was detected at 15,000 μg/L, tetrachlorophenol concentrations ranged from 17 to 320 μg/L, trichlorophenol concentrations ranged from 1 to 92 μg/L, dichlorophenol concentrations ranged from 4 to 390 μg/L, and concentrations of chlorophenols were 460 μg/L. Phenols also were detected in the groundwater sample from this well at a concentration of 2 μg/L. Concentrations detected in the primary and duplicate groundwater samples from downgradient monitoring well MW-21 were lower, where PCP concentrations were detected at 520 and 570 μg/L, respectively, tetrachlorophenol concentrations ranged from 6 to 17 μg/L, trichlorophenol concentrations ranged from 3 to approximately 52 μg/L, dichlorophenol concentrations ranged from 9 to 130 μg/L, and concentrations of chlorophenols were 200 μg/L. The lowest concentrations of chlorinated phenols in the former green chain area were detected in groundwater samples from monitoring well MW-20; PCP was detected at a concentration of 9 μg/L, tetrachlorophenol concentrations were 2 μg/L, trichlorophenol concentrations ranged from 1 to 2 μg/L, dichlorophenol was detected at a concentration of 8 μg/L, and concentrations of chlorophenols were 2 μg/L in samples.

Chlorinated phenols were not detected in groundwater samples collected from the other monitoring wells, except for the groundwater sample collected from monitoring well MW-1. Chlorophenols were detected in a groundwater sample from this well at a concentration of 3 μg/L. These results suggest that neither PCP nor associated degradation products are significantly impacting the Mad River Slough via shallow groundwater.

Concentrations of dioxins and furans, which refers to a complex mixture of various dioxin and furan congeners, are generally summarized in terms of their 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) toxic equivalency (TEQ) based on toxic equivalency factors adopted by the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (Cal-EPA, 2003). Total TEQ results for groundwater samples analyzed for dioxins and furans ranged from 0.00611 to 1430 picograms per liter (pg/L). Total TEQ results were 53, 1430, and 29.6 pg/L for groundwater samples collected at monitoring wells MW-7, MW-20, and MW-21, respectively. Total TEQ results for samples collected from monitoring wells MW-1 through MW-3, MW-5, and MW-14 ranged from 0.00611 to 1.06 pg/L.

4.1.4 Laboratory Data Quality Review

Geomatrix reviewed quality of laboratory data generated for pilot study groundwater sampling as discussed in Appendix C. Quality assurance and quality control procedures included the following:

- a blind duplicate sample from monitoring well MW-21 (designated MW-21B),
- laboratory method blanks, and
- laboratory control spike and laboratory control spike duplicate analyses.

Based on the results of the quality assurance and quality control procedures, sample results for the pilot study sampling event appear to be representative and accurate.

4.2 CONTROL OF DISCHARGES TO SURFACE WATER

Sampling for the Storm Water Pollution Protection Plan (EnviroNet, 2003) is conducted annually between October and May of the following year. Sampling activities for this wet season (October 2003 to May 2004) will be reported to the RWQCB by July 1, 2004 in the 2003-2004 Annual Report. This section summarizes activities performed to control or demonstrate control of discharges to surface water during the subject period. Activities performed include the following:

- sampling of storm water and slough water on Drainage Ditches #1 through #4 on February 6, 2004; and
- cleanout of Drainage Ditch #2, #3, and #4 oil separators by SPI on March 31, 2004.

4.2.1 Field Sampling Methods

Grab samples were collected on February 6, 2004 at SL-1 through SL-4 (Figure 2) monitoring stations to assess chlorinated phenol concentrations subsequent to completion of the source area removal interim remedial measures in 2003 (Geomatrix, 2003). Grab samples also were collected from the Mad River Slough adjacent to these monitoring stations to assess TDS concentrations.

Field personnel collected grab samples at Storm Water Pollution Protection Plan monitoring stations and from targeted surface waters by dipping laboratory-supplied containers into the waters by hand. Grab samples 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 storm water and slough samples are included in Appendix B.

4.2.2 Laboratory Methods

Grab samples collected for the Storm Water Pollution Protection Plan were analyzed at Alpha, California Department of Health Services certified analytical laboratory, as follows:

- Chlorinated phenols (consisting of PCP, three tetrachlorophenols, and one trichlorophenol) [Canadian Pulp Method].
- TDS [EPA Method 160.1].

4.2.3 Storm Water Analytical Results

Laboratory analytical reports and chain-of-custody records for storm water sampling activities are included in Appendix B. Results are summarized below.

PCP was detected in the storm water sample collected from monitoring station SL-2 at a concentration of 1.6 μg/L. No other chlorinated phenols were detected in this sample or in the storm water samples collected from monitoring stations SL-1, SL-3, and SL-4.

TDS was detected in storm water samples at monitoring stations SL-1 through SL-4 at concentrations ranging from 96 to 270 milligrams per liter (mg/L). TDS was detected in surface water samples collected adjacent to these monitoring stations at concentrations ranging from 18,000 to 23,000 mg/L.

4.2.4 Laboratory Data Quality Review

Geomatrix reviewed quality of laboratory data generated for storm water sampling as discussed in Appendix C. Quality assurance and quality control procedures included the following:

- laboratory method blanks, and
- laboratory control spike and laboratory control spike duplicate analyses.

Based on the results of the quality assurance and quality control procedures, sample results for the pilot study sampling event appear to be representative and accurate.

4.2.5 Response Action

In response to the detection of PCP in the grab sample collected at monitoring station SL-2 (Drainage Ditch #2), SPI had the accumulated solids and liquids in the oil-water separators along Ditches #2, #3, and #4 pumped out on March 31, 2004 and removed for appropriate disposal by Asbury Environmental Services.

5.0 WASTEWATER DISPOSAL

The purge water and equipment wash water generated by the environmental activities conducted during the first quarter 2004 and discussed herein were placed in three 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, will be disposed of by SPI in accordance with applicable regulations.

6.0 FUTURE MONITORING AND SAMPLING SCHEDULE

For the MRP, the semi-annual (full sampling round) groundwater monitoring event will be performed in May or June 2004. The next pilot study groundwater sampling event will be performed in February or March 2005 in conjunction with the routine quarterly monitoring event. Storm water sampling will be performed in accordance with the Storm Water Pollution Protection Plan (EnviroNet, 2003).

7.0 REFERENCES

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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-03	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-03	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:
1. Construction details for wells MW-1 through MW-9 were obtained from Report on Recent Hydrogeologic Investigations prepared by EnviroNet Consulting. Construction detail for wells MW-10 through MW-19D were obtained from Results of the Remedial Investigation dated January 30, 2003, prepared by EnviroNet Consulting. Construction detail for wells MW-20 and MW-21 were obtained from Monitoring Well MW-20 and MW-21 Installation and Soil Sampling Report, dated April 7, 2004, prepared by Geomatrix Consultants
2. Monitoring wells resurveyed by Omsberg Surveyors and Company of Eureka, California on February 13, 2003; latitude and longitude surveyed relative to North American Datum (NAD) of 1983 and elevations 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.
3. Surface seal interval consists of the concrete surface completion and a neat cement sanitary seal, if applicable.
4. Well installed on a raised concrete pad of the former green chain. Depth measurements (ft bgs) relative to local ground surface of the concrete pad, which is approximately 1 foot above ground surface of the surrounding grade.

Abbreviations:
ft bgs = feet below ground surface
ft msl = feet mean sea level

TABLE 2

GEOMATRIX

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
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
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
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

TABLE 2

GEOMATRIX

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-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
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
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
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

TABLE 2

GEOMATRIX

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-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
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
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
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
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
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

TABLE 2

GEOMATRIX

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-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
MW-20	23-Mar-04	11.87	2.36	9.51
MW-21	23-Mar-04	12.89	3.97	8.92
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
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
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
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

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)
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

Notes:

1. Data prior to March 18, 2003 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.
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 is 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

GEOMATRIX

TABLE 3

SUMMARY OF WATER QUALITY PARAMETERS
GROUNDWATER MONITORING PROGRAM
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Well No.	Date Sampled	Field Measurements[1] Temperature (ºC)	Specific Conductance (µmohs/cm)	pH (pH Units)	TDS (mg/L)	Laboratory Measurement[2] 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	16.9	2,440	6.6	1,800	1,300
	24-Mar-04	--	--	--	--	--
MW-2	20-Mar-03	13	2,100	6.2	--	--
	22-May-03	14	1,700	6.4	1100	860
	27-Aug-03	18	1,500	6.6	1,100	760
	03-Nov-03	16.3	1,590	6.3	1,125	760
	24-Mar-04	13.4	1,390	6.3	973	740
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	16.3	986	6.6	--	410
	24-Mar-04	--	--	--	--	--
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	17.8	758	6.6	516	310
	24-Mar-04	--	--	--	--	--
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	17.2	661	6.6	450	380
	24-Mar-04	--	--	--	--	--
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	12.8	918	6.6	634	430
	24-Mar-04	11	925	6.5	640	410
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	12.4	869	6.6	597	460
	24-Mar-04	10.7	955	6.4	--	440
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	17.2	745	6.4	507	380
	24-Mar-04	14.2	777	6.2	530	400
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	16.7	821	6.6	563	350
	24-Mar-04	13.9	878	6.4	604	380
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	17.9	878	6.6	604	430
	24-Mar-04	--	--	--	--	--
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	18.6	877	6.6	600	450
	24-Mar-04	--	--	--	--	--

TABLE 3

SUMMARY OF WATER QUALITY PARAMETERS
GROUNDWATER MONITORING PROGRAM
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Well No.	Date Sampled	Field Measurements[1] Temperature (ºC)	Specific Conductance (µmohs/cm)	pH (pH Units)	TDS (mg/L)	Laboratory Measurement[2] TDS (mg/L)
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	18.1	916	6.5	631	480
	24-Mar-04	--	--	--	--	--
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	15.9	3,330	6.6	2,520	2,100
	24-Mar-04	--	--	--	--	--
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	14.9	920	6.6	635	450
	24-Mar-04	--	--	--	--	--
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	16.7	1,092	6.6	760	490
	24-Mar-04	--	--	--	--	--
MW-20	24-Mar-04	13.6	425	6.9	284	250
MW-21	24-Mar-04	11.7	987	6.3	683	460
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	14.8	1,020	6.1	--	580
	24-Mar-04	--	--	--	--	--
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	1,290	6.8	--	790
	24-Mar-04	--	--	--	--	--
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	15.5	4,770	7.6	3,700	2,800
	24-Mar-04	--	--	--	--	--
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	16.9	759	6.7	517	370
	24-Mar-04	--	--	--	--	--

Notes:
1. Water quality parameters measured in the field using an Ultrameter instrument or a flow through cell and 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

Abbreviations:
ºC = degrees Celsius
µmhos/cm = micromhos per centimeter at 25 ºC
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)
GROUNDWATER MONITORING PROGRAM
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	
	24-Mar-04	--	--	--	--	--	
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	
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	
	24-Mar-04	--	--	--	--	--	
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	
	24-Mar-04	--	--	--	--	--	
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	
	24-Mar-04	--	--	--	--	--	
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	

TABLE 4

LABORATORY ANALYTICAL RESULTS FOR CHLORINATED PHENOLS (CANADIAN PULP METHOD)
GROUNDWATER MONITORING PROGRAM
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
MW-8	14-Mar-02	22	< 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	
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	
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	
	24-Mar-04	--	--	--	--	--	
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	
	24-Mar-04	--	--	--	--	--	
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	
	24-Mar-04	--	--	--	--	--	

TABLE 4

LABORATORY ANALYTICAL RESULTS FOR CHLORINATED PHENOLS (CANADIAN PULP METHOD)
GROUNDWATER MONITORING PROGRAM
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	
	24-Mar-04	--	--	--	--	--	
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	
	24-Mar-04	--	--	--	--	--	
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	
	4-Nov-03	--	--	--	--	--	
MW-20	24-Mar-04	35	<1.0	<1.0	5.1	3.8	
MW-21	24-Mar-04	800	<1.0	6.3	17	12	
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	
	24-Mar-04	--	--	--	--	--	
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	
	24-Mar-04	--	--	--	--	--	
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	
	24-Mar-04	--	--	--	--	--	
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	
	24-Mar-04	--	--	--	--	--	

Notes:
1. Data prior to March 18, 2003 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.
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.

Abbreviations:
< = target analyte was not detected at or above the laboratory reporting limit shown.
-- = not measured or sample not collected for analysis

TABLE 5

FIELD MEASUREMENTS AND LABORATORY ANALYTICAL RESULTS FOR NATURAL ATTENUATION PARAMETERS
PILOT STUDY
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Monitoring Well Number	Sample Date	Field Measurements[1]					Laboratory Analysis[2]										
		Eh[3]	DO	Specific Conductance	Temperature	pH	Nitrate (N)	Manganese	Iron	Sulfate (SO_4)	Carbon Dioxide	Methane	TOC	Chloride	Total Alkalinity as $CaCO_3$	Calcium	Magnesium
		(mV)	(mg/L)	(µS/cm)	(°C)	(pH Units)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Shallow Wells																	
MW-1	11/04/03	222	0.2	2371	17.3	6.44	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	173	0.1	2389	14.5	6.50	0.42	1.8	42	0.71	255.000	6.916	36.6	320	830	41	63
MW-2	11/03/03	226	0.4	1583	15.9	6.21	2.8	6	30	<0.50	314.320	3.766	33.9	240	520	66	40
	03/24/04	219	0.2	1391	13.2	6.23	<0.20	4	61	<0.50	232.000	4.539	35.7	160	550	65	39
MW-3	11/03/03	201	0.3	922	16.5	6.34	4.6	3.9	9.1	<0.50	173.945	5.44	18.0	37	460	55	36
	03/24/04	183	0.1	1019	13.3	6.39	<0.20	5.3	66	<0.50	179.000	9.082	36.3	35	450	62	46
MW-4	11/03/03	207	0.1	673	18.4	6.34	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	11/03/03	255	0.3	655	17.4	6.25	<1.0	0.42	0.97	<0.50	125.486	9.211	9.36	25	350	28	45
	03/24/04	293	0.2	652	13.9	6.34	<0.20	0.48	4	<0.50	122.000	6.323	11.4	21	310	29	50
MW-6	11/04/03	236	0.2	890	12.7	6.34	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	11/03/03	197	0.1	863	12.7	6.38	<1.0	13	2.3	<0.50	152.071	8.791	28.1	45	420	26	42
	03/24/04	189	0.2	879	10.7	6.37	<0.20	3	55	<0.50	147.000	10.596	20.8	46	410	31	47
MW-8	11/04/03	237	0.3	738	17.0	6.16	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	11/04/03	211	0.2	809	16.6	6.37	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-10	11/04/03	215	0.1	884	18.1	6.39	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-11	11/04/03	196	0.2	872	18.5	6.39	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-12	11/04/03	251	0.4	812	17.5	6.17	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-14	11/04/03	234	0.2	2693	16.2	6.33	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	212	0.1	2360	14.3	6.39	<0.20	1.5	41	<0.50	290.000	5.199	106	460	1100	23	50
MW-17	11/04/03	240	0.2	973	14.9	6.36	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-18	11/04/03	198	0.2	953	16.9	6.43	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-20	03/24/04	252	0.1	436	13.1	6.84	<0.20	1	0.2	1.6	30.500	<0.00158	9.48	21	210	32	32
MW-21	03/24/04	162	0.3	986	11.2	6.37	<0.20	2.7	67	<0.50	135.000	0.00429	21.4	54	380	30	50
Deep Wells																	
MW-13D	11/04/03	253	0.1	672	15.6	5.88	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-15D	11/04/03	255	0.3	1241	14.2	6.49	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-16D	11/04/03	246	0.1	4609	15.8	7.52	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-19D	11/03/03	197	0.3	729	17.5	6.49	--	--	--	--	--	--	--	--	--	--	--
	03/24/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

1. Water quality parameters measured in the field in a flow-through cell.
2. Samples collected by Geomatrix and analyzed by EPA Method 415.1 (total organic carbon), EPA Method 200.7 (calcium and magnesium), EPA Method 300 (chloride, nitrate and sulfate), EPA Method 6010B (Iron (II) and Manganese (II)), Standard Methods 2320B (total alkalinity), RSK 175 (carbon dioxide and methane)
3. Reduction-oxidation potential standardized to hydrogen electrode for silver/silver-chloride electrode (199 millivolts was added to the field measurement

Abbreviations:

Eh = reduction-oxidation potential
DO = dissolved oxygen
TOC = total organic carbon
$CaCO_3$ = calcium carbonate
mV = millivolts
mg/L = milligrams per liter
µS/cm = microSiemens per centimeter
ºC = degrees Celsius
< = target analyte was not detected at or above the laboratory reporting limit shown.
-- = not measured or sample not collected for analysis

TABLE 6
LABORATORY ANALYTICAL RESULTS FOR CHLORINATED PHENOLS AND PHENOL (8270 SIM METHOD)
PILOT STUDY
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Concentrations in micrograms per liter (µg/L).

Monitoring Well Number	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
MW-2	24-Mar-04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<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
MW-5	24-Mar-04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<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
MW-14	24-Mar-04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<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
MW-21	24-Mar-04	520 / 570	52 ve / 50 ve	16 / 17	16 / 14	7 / 6	130 / 120	<1 <1	9 / 9	<1 <1	3 / 3	<1 <1	<1 <1	<1 <1	200 / 200	<1 <1	<1 <1	<1	<1 <1	<1 / 1

Notes:
1. EPA Method 8270 SIM analysis of groundwater samples.
2. 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.

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 5(

TABLE 7

LABORATORY ANALYTICAL RESULTS FOR DIOXINS AND FURANS
PILOT STUDY
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

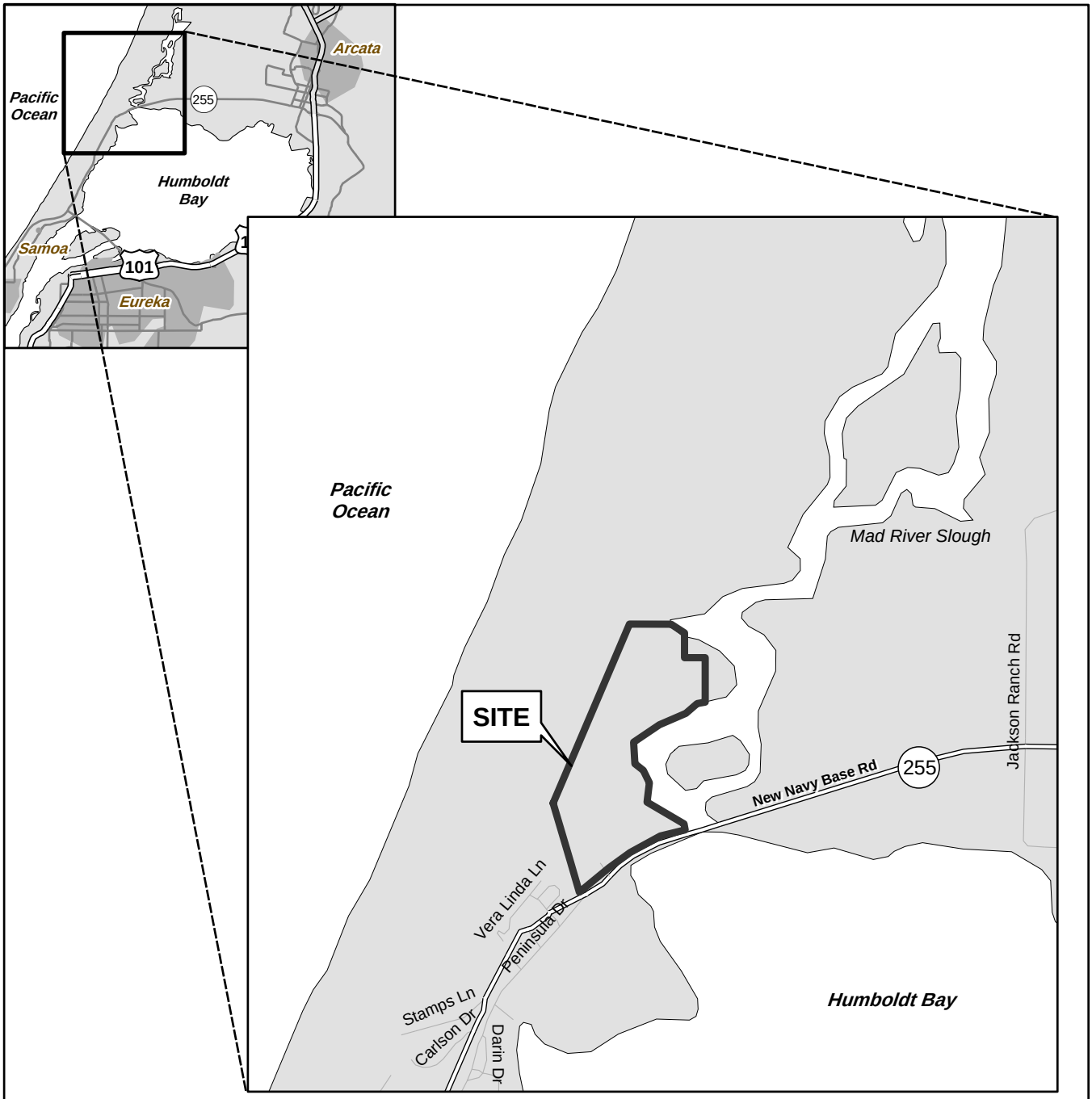
Concentrations in picograms per liter (pg/L).

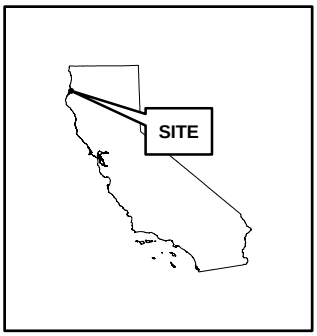
Monitoring Well Number	Date Sampled	2, 3, 7, 8-TCDD	1, 2, 3, 7, 8-PeCDD	1, 2, 3, 4, 7, 8-HxCDD	1, 2, 3, 6, 7, 8-HxCDD	1, 2, 3, 7, 8, 9-HxCDD	1, 2, 3, 4, 6, 7, 8-HpCDD	OCDD	Total Dioxins	2, 3, 7, 8-TCDF	1, 2, 3, 7, 8-PeCDF	2, 3, 4, 7, 8-PeCDF	1, 2, 3, 4, 7, 8-HxCDF	1, 2, 3, 6, 7, 8-HxCDF	2, 3, 4, 6, 7, 8-HxCDF	1, 2, 3, 7, 8, 9-HxCDF	1, 2, 3, 4, 6, 7, 8-HpCDF	1, 2, 3, 4, 7, 8, 9-HpCDF	OCDF	Total Furans	TOTAL TEQ [2, 3]	PERCENT 2,3,7,8-TCDD[4]	Comments
Shallow Wells																							
MW-1	24-Mar-04	<1.69	<2.85	<5.19	<6.00	<5.29	<4.87	87.0	13.5	<1.10	<3.21	<2.84	<1.20	<1.61	<1.47	<1.91	<2.21	<2.57	<7.41	<8.79	0.00870	0	
MW-2	24-Mar-04	<1.63	<2.60	<4.86	<5.67	<4.89	<7.48	61.1	<21.16	<1.37	<3.65	<3.00	<1.30	<1.79	<1.73	<2.42	<3.01	<3.67	<7.05	9.62	0.00611	0	
MW-3	24-Mar-04	<1.90	<2.46	<4.74	<6.23	<4.81	74.6	976	219.14 J	<1.46	<3.76	<2.88	<1.15	<1.53	<1.44	<1.99	21.6 J	<2.22	33.9 J	109.03 J	1.06	0	
MW-5	24-Mar-04	<1.45	<2.24	<3.67	<4.31	<3.72	19.5 J	121	36.9	<1.29	<3.17	<2.80	<0.747	<1.02	<1.05	<1.38	7.60 J	<2.45	20.2 J	28.76	0.286	0	
MW-7	16-Sep-02	<3.12	<3.45	<5.82	<6.31	<5.32	32.4	144	50.0	<3.36	<4.21	<4.59	<2.38	<2.81	<2.86	<2.99	6.59	<6.67	22.2	81.43 J	0.407	0	
	22-May-03	<1.62	<4.05	22.6 J	<3.83	<3.10	30.2	449	101.50	<1.26	<2.04	<2.02	<1.02	<1.17	<1.19	<1.15	4.97 J	<0.807	20.7 J	48.44	2.66	0	
	22-May-03	<1.27	<2.00	7.89 J	<2.47	<1.97	16.3	231	50.0	<1.01	<1.66	<1.64	<1.09	<1.28	<1.4	<1.67	2.09 J	<1.19	7.05 J	32.63	0.997	0	filtered
	03-Nov-03	<2.22	<4.82	<9.48	<10.4	<9.25	<9.54	41.1 J	<26.98	<2.29	<7.96	<5.93	<2.11	<2.51	<2.63	<3.12	<3.03	<4.42	<10.6	<23.04	0.00411	0	filtered
	24-Mar-04	<1.76	46.5	56.4	<5.29	<4.61	71.4	1370	289.3 M	<1.41	<3.57	<2.67	<1.13	<1.57	<1.28	<1.95	8.00 J	<3.17	31.3 J	157.3 J	53.0	0	
MW-14	24-Mar-04	<1.74	<3.36	<5.32	<5.84	<5.15	10.2 J	70.4	19.9 J	<1.31	<3.96	<3.01	<1.13	<1.64	<1.33	<1.97	<2.42	<2.97	<8.53	<10.21	0.109	0	
MW-20	24-Mar-04	4.05 J	22.7 J	60.2	2,060	466	93,600	1,240,000	210,367.2	6.50 F	19.5 J	15.3 J	52.6	226 D,M	57.6	11.4 J	3,220 D,M	251	13,600	26,240 D,M	1430	0.00283	
MW-21	24-Mar-04	<1.82	<2.92	8.76 J	56.1	9.46 J	1,050	12,800	2,542.8	<1.39	<7.15	<3.28	6.89 J	20.9 J	10.3 J	<2.55	605	32.6	1,960	3,477.1 D,M	29.6	0	
	TEF [5]:	1	1	0.1	0.1	0.1	0.01	0.0001	--	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.0001	--	--	--	

Notes:
1. EPA Method 1613 analysis of groundwater samples.
2. Calculated as the sum of congener concentrations after each has been multiplied by its TEF.
3. Concentrations not detected above the laboratory reporting limit were assigned a concentration of 0 pg/g to calculate TEQ.
4. Calculated by dividing the concentration of 2,3,7,8-TCDD by the Total TEQ (multiplied by 100). When the concentration of 2,3,7,8-TCDD was not detected, it was assigned a concentration of 0 pg/g for this calculation.
5. Toxicity equivalency factor (unitless) from the World Health Organization, 1997 (WHO-97), adopted from F.X.R. van Leeuwen, 1997.

Abbreviations:
TCDD = tetrachlorodibenzo-p-dioxin
PeCDD = pentachlorodibenzo-p-dioxin
HxCDD = hexachlorodibenzo-p-dioxin
HpCDD = heptachlorodibenzo-p-dioxin
OCDD = octachlorodibenzo-p-dioxin
TCDF = tetrachlorodibenzofuran
PeCDF = pentachlorodibenzofuran
HxCDF = hexachlorodibenzofuran
HpCDF = heptachlorodibenzofuran
OCDF = octachlorodibenzofuran
TEQ = toxicity equivalence
TEF = toxicity equivalency factor (unitless)
EPA = U.S. Environmental Protection Agency
-- = not measured or sample not collected for analysis
< = target analyte was not detected at or above the laboratory reporting limit shown (in gray color).
J = concentration detected was below the calibration range, as flagged by the laboratory
M = maximum possible concentration, as flagged by the laboratory
F = analyte confirmation on secondary column, as flagged by laboratory
D = presence of diphenyl ethers detected, as flagged by laboratory

FIGURES





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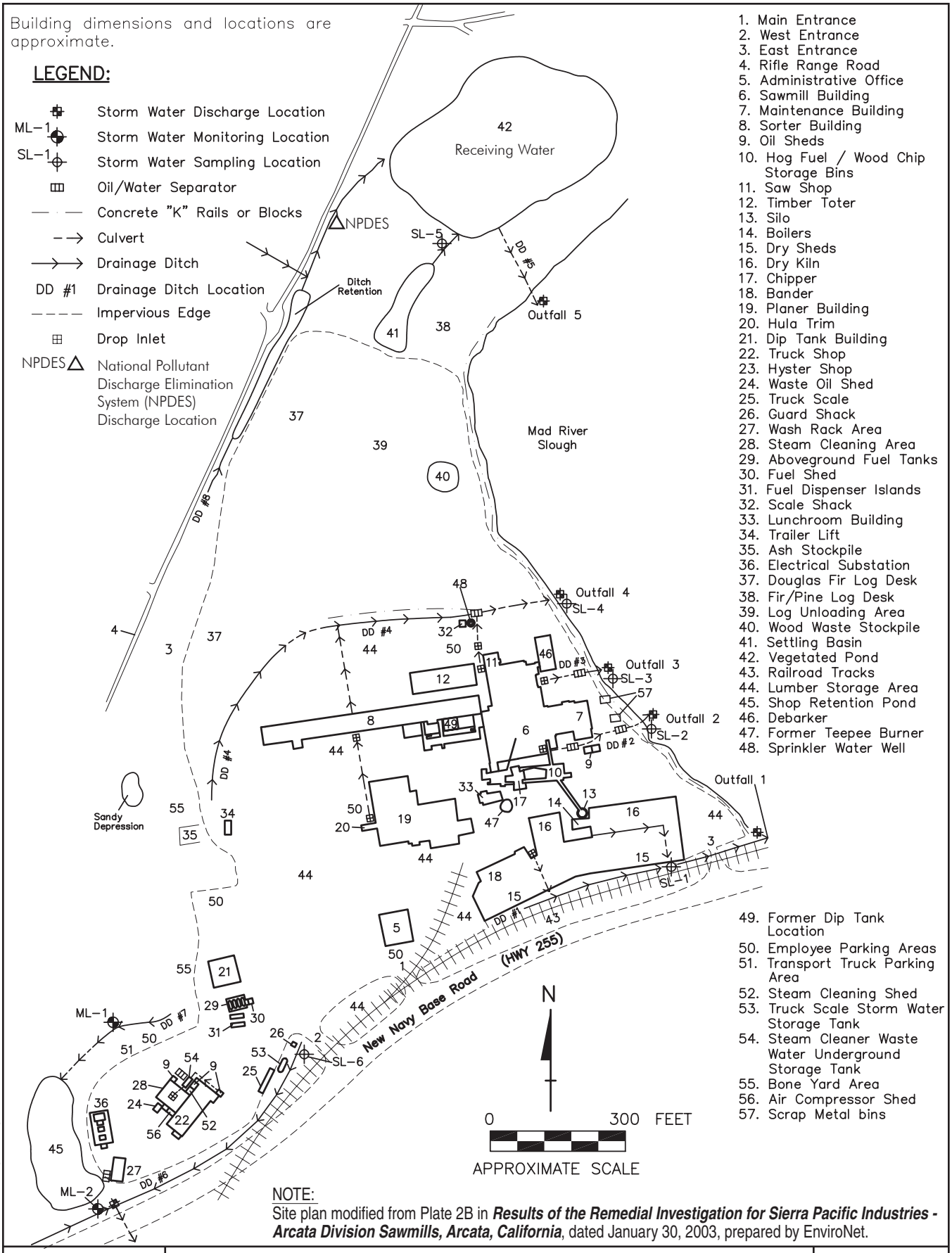
GEOMATRIX

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

Project No.
9329

Figure No.
1



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.

GEOMATRIX

SITE PLAN
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Project No.
9329

Figure
2

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SETTLING BASIN

STORMWATER DISCHARGE - OUTFALL 4

SD

SCALE SHACK

WELL HOUSE

MAD RIVER SLOUGH BOUNDARY

MAD RIVER SLOUGH

EXPLANATION

MW-1 MONITORING WELL (D = DEEP)

SITE BEST MANAGEMENT PRACTICES

APPROXIMATE LIMIT OF INTERIM REMEDIAL MEASURES SOURCE AREA REMOVAL (June - November 2003)

STORM DRAIN

MW-3

MW-15D

MW-4

MW-19D

MW-5

MW-6

MW-21

MW-7

SAW MILL BUILDING

MW-1

MW-2

MW-13D

STORMWATER DISCHARGE - OUTFALL 3

SETTLING BASIN

N

0 50

SCALE IN FEET

FORMER GREEN CHAIN AREA

SORTER

MAINTENANCE BUILDING

MW-20

MW-8

MW-9

MW-18

MW-10

MW-12

MW-14

STORMWATER DISCHARGE - OUTFALL 2

SETTLING BASIN

OIL SHED

MW-17

MW-11

MW-16D

CHIPPER

PLANER BUILDING

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**

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SCALE IN FEET

SETTLING BASIN

STORMWATER DISCHARGE - OUTFALL 4

SCALE SHACK

WELL HOUSE

MAD RIVER SLOUGH BOUNDARY

MAD RIVER SLOUGH

MW-19D

MW-4 9.57

MW-3 8.98

MW-15D

MW-5 10.12

MW-1 5.22 *

MW-2 4.30

MW-13D

STORMWATER DISCHARGE - OUTFALL 3

SETTLING BASIN

SAW MILL BUILDING

MW-6 9.14

MW-21 8.92

MW-7 9.30

FORMER GREEN CHAIN AREA

MAINTENANCE BUILDING

SORTER

MW-20 9.51

STORMWATER DISCHARGE - OUTFALL 2

MW-8 9.76

MW-9 9.51

MW-18 9.40

MW-14 7.07

SETTLING BASIN

MW-10 9.15

OIL SHED

MW-12 9.89

MW-17 8.33

MW-11 9.53

MW-16D

CHIPPER

PLANER BUILDING

10.00

9.00

8.00

7.00

6.00

5.00

EXPLANATION

MW-1 "SHALLOW" MONITORING WELL

MW-13D "DEEP" MONITORING WELL

APPROXIMATE GROUNDWATER FLOW DIRECTION

SITE BEST MANAGEMENT PRACTICES

APPROXIMATE LIMIT OF INTERIM REMEDIAL MEASURES SOURCE AREA REMOVAL (June - November 2003)

STORM DRAIN

9.30 GROUNDWATER ELEVATION IN FEET ABOVE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

5.00 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 MARCH 23, 2004

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

GEOMATRIX

Project No. 9329

Figure 4

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SCALE IN FEET

SETTLING BASIN

STORMWATER DISCHARGE - OUTFALL 4

SD

SCALE SHACK

WELL HOUSE

MAD RIVER SLOUGH BOUNDARY

MAD RIVER SLOUGH

EXPLANATION

MW-1 "SHALLOW" MONITORING WELL

MW-13D "DEEP" MONITORING WELL

APPROXIMATE GROUNDWATER FLOW DIRECTION

SITE BEST MANAGEMENT PRACTICES

APPROXIMATE LIMIT OF INTERIM REMEDIAL MEASURES SOURCE AREA REMOVAL (June - November 2003)

STORM DRAIN

5.54 GROUNDWATER ELEVATION IN FEET ABOVE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

6.00 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 INTERVAL OF 0.5 FEET

MW-4

MW-19D
6.93

MW-3

5.53
MW-15D

MW-5

6.50

6.00

MW-6

MW-21

MW-7

SAW MILL BUILDING

MW-1

MW-2

MW-13D
5.54

STORMWATER DISCHARGE - OUTFALL 3

SETTLING BASIN

FORMER GREEN CHAIN AREA

SORTER

MAINTENANCE BUILDING

MW-20

STORMWATER DISCHARGE - OUTFALL 2

MW-8

MW-9

MW-18

MW-10

MW-14

SETTLING BASIN

OIL SHED

MW-12

MW-17

MW-11

MW-16D
5.82

CHIPPER

PLANER BUILDING

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 MARCH 23, 2004

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

GEOMATRIX	Project No. 9329	Figure 5

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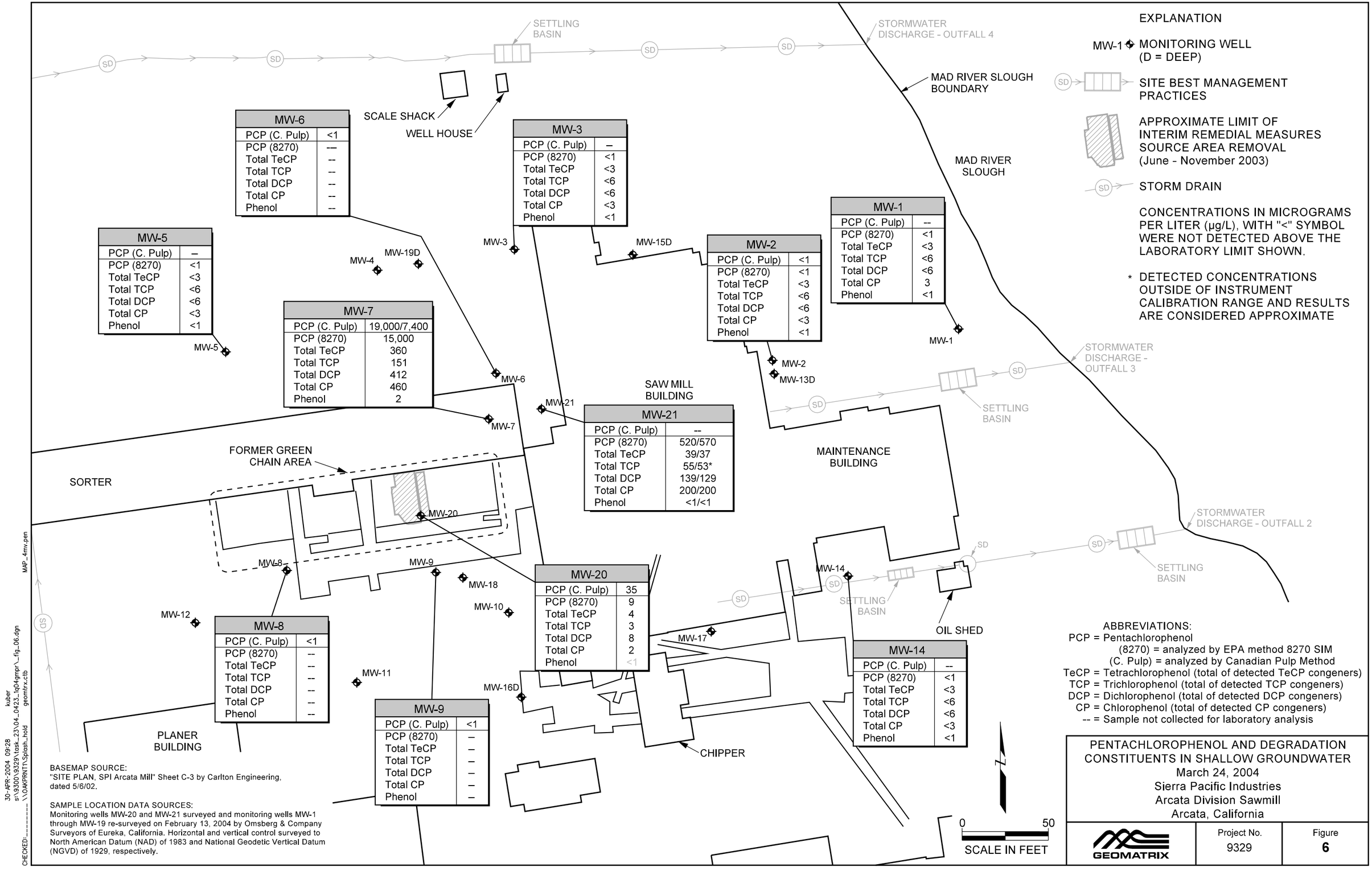

EXPLANATION

MW-1 ◆ MONITORING WELL (D = DEEP)

SITE BEST MANAGEMENT PRACTICES

APPROXIMATE LIMIT OF INTERIM REMEDIAL MEASURES SOURCE AREA REMOVAL (June - November 2003)

STORM DRAIN

CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L), WITH "<" SYMBOL WERE NOT DETECTED ABOVE THE LABORATORY LIMIT SHOWN.

* DETECTED CONCENTRATIONS OUTSIDE OF INSTRUMENT CALIBRATION RANGE AND RESULTS ARE CONSIDERED APPROXIMATE

ABBREVIATIONS:
PCP = Pentachlorophenol
(8270) = analyzed by EPA method 8270 SIM
(C. Pulp) = analyzed by Canadian Pulp Method
TeCP = Tetrachlorophenol (total of detected TeCP congeners)
TCP = Trichlorophenol (total of detected TCP congeners)
DCP = Dichlorophenol (total of detected DCP congeners)
CP = Chlorophenol (total of detected CP congeners)
-- = Sample not collected for laboratory analysis

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.

PENTACHLOROPHENOL AND DEGRADATION CONSTITUENTS IN SHALLOW GROUNDWATER
March 24, 2004
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

GEOMATRIX | Project No. 9329 | Figure 6

APPENDIX A

Field Documentation

A-1 Quarterly Groundwater Monitoring and Sampling Records

A-2 Pilot Study Groundwater Sampling Records

A-1 Quarterly Groundwater Monitoring and Sampling Records

WATER LEVEL MONITORING RECORD

WELL NUMBER or DATE: 3/23 /03

Project No: 030275.22 Project Name: SPI Arcata Sawmill PAGE: 1 of 1

Weather Conditions: Sunny

Measuring Point of Well (MP): Notch or North

Measuring Device: Envirotech LTD, Waterline Model 150

Observations / Comments:

DATE or WELL	TIME	MP ELEVATION (feet, NGVD)	DEPTH TO WATER (feet below MP)	CONVERSIONS or CORRECTIONS TO DEPTH TO WATER	WATER LEVEL ELEVATION (feet, NGVD)	REMARKS	MEASURED BY
MW-1	10:17	9.56	4.47				M.Hillyard
MW-2	10:25	9.49	5.31				
MW-3	10:45	11.14	2.24				
MW-4	10:51	10.71	1.17				
MW-5	11:05	10.69	0.62				
MW-6	11:11	9.77	0.69				
MW-7	11:15	9.68	0.44				
MW-8	9:17	10.30	0.57				
MW-9	9:25	9.86	0.40				
MW-10	9:43	9.80	0.70				
MW-11	9:34	10.26	0.75				
MW-12	9:03	10.73	0.87				
MW-13D	10:24	9.84	4.42				
MW-14	10:00	9.02	2.08				
MW-15D	10:39	11.08	5.66				
MW-16D	9:46	9.80	4.01				
MW-17	9:55	8.98	0.83				
MW-18	9:20	[illegible]	0.52				
MW-19D	10:48	11.00	4.13				
MW-20	9:30		2.36				
MW-21	11:18		3.97				
RR	8:48	15.70	15.00				
RR	11:36	15.70	12.16				

Measured by: Matt Hillyard

Checked by:

Water Levels Form, Rev: 8-8-95

McCulley, Frick & Gilman, Inc.

GROUNDWATER SAMPLING RECORD

PAGE: 1 of: 1

SAMPLE NUMBER: MW-2

Project No: 030275.22 Project Name: SPI Arcata Sawmill Date 03/24/04

Sampling Location (well ID, etc.): MW-2

Sampled by: Matt Hillyard

Measuring Point (MP) of Well:

Screened Interval (ft.BGL): 2.0-8.0

Filter Pack Interval (ft.BGL): 1.5-9.0

Casing Stick-Up/Down (ft.):

Starting Water Level (ft. BMP): 5.33

Total Depth (ft. BMP): 7.60 Water Column Height (ft.): 2.27

Casing Diameter (in. ID): 2-Inch Multiplication Factor: 0.163

Casing Volume (gal.): .37 2X: .8 3X: 1.2 4X:

Water Level (ft.BMP) at End of Purge:

Total Depth (ft. BMP) at End of Purge:

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Liquinox detergent & distilled water solution followed by triple rinse w/ distilled water.

Purging: Disposable Teflon Barter Sampling: Disposable Teflon Bailer

Disposal of Discharged Water: 55-Gallon Drum

INSTRUMENTS (indicate make, model, i.d.):

Water Level: Envirotech LTD, Waterline Model 150 Thermometer: Ultrameter

pH Meter: Ultrameter Field Calibration: pH 4, 7, 10

Conductivity Meter: Ultrameter Field Calibration: 447, 2070 µmhos

Other: TDS Ultrameter Field Calibration: 300,1500 PPM

SAMPLING MEASUREMENTS

Date/ Time	Purge Characteristics: Cumul.Vol. (gal)	Purge Rate (gpm)	Water Quality Data: Temp. (°C)	pH	Specific Conductance (µmhos/cm) @ Field Temp.	@ 25 °C.	Appearance: Color	Turbidity & Sediment	Intake Depth (ft. BMP)	Remarks
1237	0		15.0	6.63		1360	Clear	Clear		
1:39	0.5		14.1	6.39		1372	"	"		cloudy, particles
1:41	1.0		13.8	6.29		1393	Yellow tint	"		
1:42	1.5		13.4	6.27		1390	"	TDS = 973 ppm		Sample

SAMPLE INVENTORY

Water Level (ft. BMP) Before Sampling: 5.39 Recovery %: Sample Intake Depth (ft. BMP):

Bottles Collected: Time	Volume	Composition (glass, plastic)	Quantity	Filtration (Y/N)	Preservation (type)	Analysis	Remarks (quality control sample, other)
1:45	125 ml	Glass	2	N	-	PCP/TCP	
1:45	1/2 gal	Plastic	1	N	-	TDS	
1:34	125 ml	Glass	1	N	—	PCP/TCP	Equip. Blank DI H2O after bailer

Chain-of-Custody Record No.

McCulley, Frick & Gilman, Inc.

GROUNDWATER SAMPLING RECORD

PAGE: 1 of: 1

SAMPLE NUMBER: MW-6

Project No: 030275.22 Project Name: SPI Arcata Sawmill Date 03/24/04

Sampling Location (well ID, etc.): MW-6

Sampled by: Matt Hillyard

Measuring Point (MP) of Well: 9.77

Screened Interval (ft.BGL): 2.0-8.0

Filter Pack Interval (ft.BGL): 1.5-8.0

Casing Stick-Up/Down (ft.):

Starting Water Level (ft. BMP): 0.73

Total Depth (ft. BMP): 7.60 Water Column Height (ft.): 6.87

Casing Diameter (in. ID): 2-Inch Multiplication Factor: 0.163

Casing Volume (gal.): 1.1 2X: 2.2 3X: 3.3 4X:

Water Level (ft.BMP) at End of Purge:

Total Depth (ft. BMP) at End of Purge:

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Liquinox detergent & distilled water solution followed by triple rinse w/ distilled water

Purging: Disposable Teflon Bailer Sampling: Disposable Teflon Bailer

Disposal of Discharged Water: 55-Gallon Drum

INSTRUMENTS (indicate make, model, Ld.):

Water Level: Envirotech LTD, Waterline Model 150 Thermometer: Ultrameter

pH Meter: Ultrameter Field Calibration: pH 4, 7, 10

Conductivity Meter: Ultrameter Field Calibration: 447, 2070 µmhos

Other: TDS Ultrameter Field Calibration: 300,1500 PPM

SAMPLING MEASUREMENTS

Date/ Time	Purge Characteristics: Cumul.Vol. (gal)	Purge Rate (gpm)	Water Quality Data: Temp. (°C)	pH	Specific Conductance (µmhos/cm): @ Field Temp.	@ 25 °C.	Appearance: Color	Turbidity & Sediment	Intake Depth (ft. BMP)	Remarks
10:50	0		12.2	6.71		855	Clear	Clear		Floating Grass particles
1055	1.0		11.3	6.39		904	lt grey	Slightly cloudy		
1100	2.0		11.2	6.38		943	"	"		
1101	3.0		11.0	6.50		935	"	"		
11:03	3.5		11.0	6.51		925	"	TDS=640ppm		Sample

SAMPLE INVENTORY

Water Level (ft. BMP) Before Sampling: 1.4 Recovery %: Sample Intake Depth (ft. BMP):

Bottles Collected: Time	Volume	Composition (glass, plastic)	Quantity	Filtration (Y/N)	Preservation (type)	Analysis	Remarks (quality control sample, other)
11:05	125 ml	Glass	2	N	-	PCP/TCP	
11:05	½ gal	Plastic	1	N	-	TDS	

Chain-of-Custody Record No.

McCulley, Frick & Gilman, Inc.

GROUNDWATER SAMPLING RECORD

PAGE: 1 of: 1

SAMPLE NUMBER: MW-7

Project No: 030275.22 Project Name: SPI Arcata Sawmill Date 03/24/04

Sampling Location (well ID, etc.): MW-7

Sampled by: Matt Hillyard

Measuring Point (MP) of Well: 9.68

Screened Interval (ft.BGL): 2.0-8.0

Filter Pack Interval (ft.BGL): 1.5-8.0

Casing Stick-Up/Down (ft.):

Starting Water Level (ft. BMP): 0.58

Total Depth (ft. BMP): 7.63 Water Column Height (ft.): 7.05

Casing Diameter (in. ID): 2-Inch Multiplication Factor: 0.163

Casing Volume (gal.): 1.15 2X: 2.3 3X 3.5 4X

Water Level (ft.BMP) at End of Purge:

Total Depth (ft. BMP) at End of Purge:

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Liquinox detergent & distilled water solution followed by triple rinse w/ distilled water

Purging: Disposable Teflon Bailer Sampling: Disposable Teflon Bailer

Disposal of Discharged Water: 55-Gallon Drum

INSTRUMENTS (indicate make, model, i.d.):

Water Level: Envirotech LTD, Waterline Model 150 Thermometer: Ultrameter

pH Meter: Ultrameter Field Calibration: pH 4, 7, 10

Conductivity Meter: Ultrameter Field Calibration: 1447, 2070 µmhos

Other: TDS Ultrameter Field Calibration: 300,1500 PPM

SAMPLING MEASUREMENTS

Date/ Time	Purge Characteristics		Water Quality Data				Appearance		Intake Depth (ft. BMP)	Remarks
	Cumul.Vol. (gal)	Purge Rate (gpm)	Temp. (°C)	pH	Specific Conductance (µmhos/cm) @ Field Temp.	@ 25 °C.	Color	Turbidity & Sediment		
1120	0		11.4	6.72		873	Clear	Clear		Orange particles
1123	1.0		10.9	6.37		915	Lt gray	slightly cloudy		
1123	2.0		10.9	6.38		925	"	"		
1126	3		10.7	6.32		920	"	"		
1129	3.5		10.7	6.35		955	"	"		

SAMPLE INVENTORY

Water Level (ft. BMP) Before Sampling: 1.35 Recovery %: Sample Intake Depth (ft. BMP):

Bottles Collected				Filtration (Y/N)	Preservation (type)	Analysis	Remarks (quality control sample, other)
Time	Volume	Composition (glass, plastic)	Quantity				
1130	125 ml	Glass	4	N	-	PCP/TCP	MW-7/MW-4 dup
1130		Plastic	1	N	-	TDS	

Chain-of-Custody Record No.

McCulley, Frick & Gilman, Inc.

GW Sample Form MAC/CAD Revised: 9-8-95

GROUNDWATER SAMPLING RECORD

PAGE: 1 of: 1

SAMPLE NUMBER: MW-8

Project No: 030275.22 Project Name: SPI Arcata Sawmill Date 03/24/04

Sampling Location (well ID, etc.): MW-8
Sampled by: Matt Hillyard
Measuring Point (MP) of Well: 10.3
Screened Interval (ft.BGL): 2.0-8.0
Filter Pack Interval (ft.BGL): 1.5-8.0
Casing Stick-Up/Down (ft.):

Starting Water Level (ft. BMP): 0.64
Total Depth (ft. BMP): 7.64 Water Column Height (ft.): 7.00
Casing Diameter (in. ID): 2-Inch Multiplication Factor: 0.163
Casing Volume (gal.): 1.14 2X: 2.3 3X: 3.5 4X:
Water Level (ft.BMP) at End of Purge:
Total Depth (ft. BMP) at End of Purge:

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Liquinox detergent & distilled water solution followed by triple rinse w/ distilled water
Purging: Disposable Teflon Bailer Sampling: Disposable Teflon Bailer
Disposal of Discharged Water: 55-Gallon Drum

INSTRUMENTS (indicate make, model, i.d.):

Water Level: Envirotech LTD, Waterline Model 150 Thermometer: Ultrameter
pH Meter: Ultrameter Field Calibration: pH 4, 7, 10
Conductivity Meter: Ultrameter Field Calibration: 447, 2070 µmhos
Other: TDS Ultrameter Field Calibration: 300,1500 PPM

SAMPLING MEASUREMENTS

Date/ Time	Purge Characteristics: Cumul.Vol. (gal)	Purge Rate (gpm)	Water Quality Data: Temp. (°C)	pH	Specific Conductance (µmhos/cm): @ Field Temp	@ 25 °C.	Appearance: Color	Turbidity & Sediment	Intake Depth (ft. BMP)	Remarks
9:53	0		15.2	6.17		760	Clear	Clear		
9:54	1.0		14.6	6.13		770	Yellowish	Slightly cloudy		
9:56	2.0		14.3	6.15		777	"	"		
9:58	3.0		14.2	6.14		777	"	"		
10:00	3.5		14.2	6.16		777	"	TDS=530 ppm		Sample

SAMPLE INVENTORY

Water Level (ft. BMP) Before Sampling: 1.52 Recovery %: Sample Intake Depth (ft. BMP):

Bottles Collected: Time	Volume	Composition (glass, plastic)	Quantity	Filtration (Y/N)	Preservation (type)	Analysis	Remarks (quality control sample, other)
10:00	125 ml	Glass	2	N	-	PCP/TCP	
10:01	½ Gal	Plastic	1	N	-	TDS	

Chain-of-Custody Record No.

McCulley, Frick & Gilman, Inc.

GW Sample Form MAC/CAD Revised: 9-8-95

GROUNDWATER SAMPLING RECORD

PAGE: 1 of: 1

SAMPLE NUMBER: MW-9

Project No: 030275.22 Project Name: SPI Arcata Sawmill Date 03/24/04

Sampling Location (well ID, etc.): MW-9

Sampled by: Matt Hillyard

Measuring Point (MP) of Well: 9.86

Screened Interval (ft.BGL): 2.0-8.0

Filter Pack Interval (ft.BGL): 1.5-8.0

Casing Stick-Up/Down (ft.):

Starting Water Level (ft. BMP): 0.48

Total Depth (ft. BMP): 7.60 Water Column Height (ft.): 7.12

Casing Diameter (In. ID): 2-Inch Multiplication Factor: 0.163

Casing Volume (gal.): 1.16 2X: 2.32 3X: 3.5 4X:

Water Level (ft.BMP) at End of Purge:

Total Depth (ft. BMP) at End of Purge:

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Liquinox detergent & distilled water solution followed by triple rinse w/ distilled water

Purging: Disposable Teflon Bailer Sampling: Disposable Teflon Bailer

Disposal of Discharged Water: 55-Gallon Drum

INSTRUMENTS (indicate make, model, i.d.):

Water Level: Envirotech LTD, Waterline Model 150 Thermometer: Ultrameter

pH Meter: Ultrameter Field Calibration: pH 4, 7, 10

Conductivity Meter: Ultrameter Field Calibration: 447, 2070 µmhos

Other: TDS Ultrameter Field Calibration: 300,1500 PPM

SAMPLING MEASUREMENTS

Date/ Time	Purge Characteristics: Cumul.Vol. (gal)	Purge Rate (gpm)	Water Quality Data: Temp. (°C)	pH	Specific Conductance (µmhos/cm): @ Field Temp	@ 25 °C.	Appearance: Color	Turbidity & Sediment	Intake Depth (ft. BMP)	Remarks
10:18	0		14.8	6.57		858	clear	clear		
10:20	1		14.1	6.28		872	lt gray	slightly cloudy		orange flaky particles
10:21	2.0		13.9	6.35		875	"	"		
10:24	3.0		14.1	6.34		878	"	"		
1026	3.5		13.9	6.36		878	"	" TDS = 604 ppm		sample

SAMPLE INVENTORY

Water Level (ft. BMP) Before Sampling: 0.70 Recovery %: Sample Intake Depth (ft. BMP):

Bottles Collected: Time	Volume	Composition (glass, plastic)	Quantity	Filtration (Y/N)	Preservation (type)	Analysis	Remarks (quality control sample, other)
1028	125 ml	Glass	2	N	-	PCP/TCP	
1028	1/2 gal	Plastic	1	N	-	TDS	

Chain-of-Custody Record No.

McCulley, Frick & Gilman, Inc.

GW Sample Form MAC/CAD Revised: 8-8-95

GROUNDWATER SAMPLING RECORD

PAGE: 1 of: 1

SAMPLE NUMBER: MW-20

Project No: 030275.22 Project Name: SPI Arcata Sawmill Date 03/24/04

Sampling Location (well ID, etc.): MW-20

Sampled by: Matt Hillyard

Measuring Point (MP) of Well:

Screened Interval (ft.BGL):

Filter Pack Interval (ft.BGL):

Casing Stick-Up/Down (ft.):

Starting Water Level (ft. BMP): 2.40

Total Depth (ft. BMP): 6.51 Water Column Height (ft.): 4.11

Casing Diameter (in. ID): 4-inch Multiplication Factor: .653

Casing Volume (gal.): 2.7 2X: 5.4 3X 8.1 4X

Water Level (ft.BMP) at End of Purge:

Total Depth (ft. BMP) at End of Purge:

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Liquinox detergent & distilled water solution followed by triple rinse w/ distilled water.

Purging: Disposable Teflon Barter Sampling: Disposable Teflon Bailer

Disposal of Discharged Water: 55-Gallon Drum

INSTRUMENTS (indicate make, model, i.d.):

Water Level: Envirotech LTD, Waterline Model 150 Thermometer: Ultrameter

pH Meter: Ultrameter Field Calibration: pH 4, 7, 10

Conductivity Meter: Ultrameter Field Calibration: 447,2070 µmhos

Other: TDS Ultrameter Field Calibration: 300,1500 PPM

SAMPLING MEASUREMENTS

Date/ Time	Purge Characteristics: Cumul.Vol. (gal)	Purge Rate (gpm)	Water Quality Data: Temp. (°C)	pH	Specific Conductance (µmhos/cm): @ Field Temp	@ 25 °C.	Appearance: Color	Turbidity & Sediment	Intake Depth (ft. BMP)	Remarks
12:20	0		15.4	7.47		411	Clear	clear		
12:53	2		13.8	7.06		424	"	"		
12:56	4		13.7	6.96		426				
1259	6		13.6	6.95		425	"	"		
1303	8.1		13.6	6.92		425	"	" TDS=284 ppm		Sample

SAMPLE INVENTORY

Water Level (ft. BMP) Before Sampling: 2.45 Recovery %: Sample Intake Depth (ft. BMP):

Bottles Collected: Time	Volume	Composition (glass, plastic)	Quantity	Filtration (Y/N)	Preservation (type)	Analysis	Remarks (quality control sample, other)
1305	125 ml	Glass	2	N	-	PCP/TCP	
1305	½ gal	Plastic	1	N	-	TDS	
1705	125 ml	Glass	1	N	—	MS/MSD	QA/QC

Chain-of-Custody Record No.

McCulley, Frick & Gilman, Inc.

GROUNDWATER SAMPLING RECORD

PAGE: 1 of: 1

SAMPLE NUMBER: MW-21

Project No: 030275.22 Project Name: SPI Arcata Sawmill Date 03/24/04

Sampling Location (well ID, etc.): MW-21

Sampled by: Matt Hillyard

Measuring Point (MP) of Well:

Screened Interval (ft.BGL):

Filter Pack Interval (ft.BGL):

Casing Stick-Up/Down (ft.):

Starting Water Level (ft. BMP): 4

Total Depth (ft. BMP): 8.3 Water Column Height (ft.): 4.3

Casing Diameter (in. ID): ¾-inch Multiplication Factor: .023

Casing Volume (gal.): 1 2X: .2 3X .3 4X

Water Level (ft.BMP) at End of Purge:

Total Depth (ft. BMP) at End of Purge:

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Liquinox detergent & distilled water solution followed by triple rinse w/ distilled water.

Purging: ~~Disposable Teflon Bailer~~ peristaltic pump teflon tubing Sampling: ~~Disposable Teflon Bailer~~ peristaltic pump w/ teflon tubing

Disposal of Discharged Water: 55-Gallon Drum

INSTRUMENTS (indicate make, model, i.d.):

Water Level: Envirotech LTD, Waterline Model 150 Thermometer: Ultrameter

pH Meter: Ultrameter Field Calibration: pH 4, 7, 10

Conductivity Meter: Ultrameter Field Calibration: 447,2070 µmhos

Other: TDS Ultrameter Field Calibration: 300,1500 PPM

SAMPLING MEASUREMENTS

Date/ Time	Purge Characteristics: Cumul.Vol. (gal)	Purge Rate (gpm)	Water Quality Data: Temp. (°C)	pH	Specific Conductance (µmhos/cm): @ Field Temp.	@ 25 °C.	Appearance: Color	Turbidity & Sediment	Intake Depth (ft. BMP)	Remarks
										see Groundwx
										notes by Jim Hamilton
9:20			11.7	6.32		986.5		TDS = 683 ppm		sample
	8									

SAMPLE INVENTORY

Water Level (ft. BMP) ~~Before~~ After Sampling: 4.33 Recovery %: Sample Intake Depth (ft. BMP):

Time	Bottles Collected: Volume	Composition (glass, plastic)	Quantity	Filtration (Y/N)	Preservation (type)	Analysis	Remarks (quality control sample, other)
9:20	125 ml	Glass	2	N	-	PCP/TCP	
9:20	1 gal	Plastic	1	N	-	TDS	

Chain-of-Custody Record No.

McCulley, Frick & Gilman, Inc.

A-2 Pilot Study Groundwater Sampling Records

GEOMATRIX

WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-1

Sample ID: MW-1 Duplicate ID:

Sample Depth: MID SCREEN (5') 2-8' Interval

Project and Task No: 9329.000.0 23

Project Name: SPI Arcata

Date: 3/24/04

Sampled By: JHH

Method of Purging: Low Flow

Method of Sampling: Low Flow

Initial Depth to Water: NA

Depth to Water after Sampling: NA

Total Depth to Well: 7.65 ≈ 8.0'

Well Diameter: 2"

Total Volume Removed:

Time	Intake Depth	Rate (mlpm)	Cum. Vol. (ml)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Dissolved Oxygen (mg/l)	Redox Potential (mV; SSCE)	Remarks (color, turbidity, and sediment)
1252	5'	250	40	16.30	6.35	1204	14.84	84.8	clear / lite yellow color
1253	↓	↓	290	14.74	6.53	2390	2.30	14.1	" "
1254			500	14.64	6.55	2394	0.71	-0.1	" "
1255			750	14.62	6.54	2396	0.37	-9.3	" "
1256			1000	14.58	6.53	2397	0.28	-16.0	" "
1257			1250	14.56	6.52	2396	0.24	-20.5	" "
1258			1500	14.52	6.51	2392	0.20	-23.8	" "
1259			1750	14.50	6.50	2389	0.14	-26.4	
1305	sample								

pH CALIBRATION (choose two)

Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Field Temperature °C				
Instrument Reading				

Model or Unit No.:

SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION

KCL Solution (µS/cm=µmhos/cm)	1413 at 25°C	12880 at 25°C	
Field Temperature °C			
Instrument Reading			

Model or Unit No.:

REDOX CALIBRATION

Standard Solution	468 mV
Field Temperature °C	
Instrument Reading	

Model or Unit No.:

Ag/AgCl Electrode (SSCE)

DISSOLVED OXYGEN CALIBRATION

Salinity %	
Altitude	
Instrument Reading	

Model or Unit No.:

Notes: High Tide observed in Mad River slough

GEOMATRIX

WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-2
Sample ID: MW-2 Duplicate ID:
Sample Depth: MID SCREEN (5) Interval 2-5 feet
Project and Task No: 9329.000.0 23
Project Name: SPI Arcata
Date: 3/24/04
Sampled By: JHH
Method of Purging: Low Flow
Method of Sampling: Low Flow

Initial Depth to Water: NA
Depth to Water after Sampling: NA
Total Depth to Well: 7.60 28'
Well Diameter: 2"
Total Volume Removed: 2250 ml

Time	Intake Depth	Rate (gpm)	Cum. Vol. (ml)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Dissolved Oxygen (mg/l)	Redox Potential (mV; SSCE)	Remarks (color, turbidity, and sediment)
1203	5'	250	—	14.16	6.19	1375	7.19	122.4	CLEAR Light yellow color
1204			250	13.74	6.24	1384	1.61	72.4	" "
1205			500	13.46	6.25	1388	0.81	50.6	" "
1206			750	13.44	6.25	1388	0.68	43.6	" "
1207			1000	13.33	6.25	1391	0.54	36.5	" "
1208			1250	13.30	6.24	1390	0.41	30.5	" "
1209			1500	13.30	6.24	1389	0.34	27.4	" "
1210			1750	13.25	6.23	1390	0.38	23.4	" "
1211			2000	13.25	6.23	1390	0.29	21.6	" "
1212			2250	13.22	6.23	1391	0.23	19.9	" "
1215	Sample								

pH CALIBRATION (choose two)				
Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Field Temperature °C				
Instrument Reading				

Model or Unit No.:

SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION			
KCL Solution (µS/cm=µmhos/cm)	1413 at 25°C	12880 at 25°C	
Field Temperature °C			
Instrument Reading			

Model or Unit No.:

REDOX CALIBRATION		DISSOLVED OXYGEN CALIBRATION	
Standard Solution	468 mV	Salinity %	
Field Temperature °C		Altitude	
Instrument Reading		Instrument Reading	
Model or Unit No.: Ag/AgCl Electrode (SSCE)		Model or Unit No.:	

Notes:

GEOMATRIX

WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-3
Sample ID: MW-3 **Duplicate ID:**
Sample Depth: MID SCREEN (5) 2'-8' interval
Project and Task No: 9329.000.0 23
Project Name: SPI Arcata
Date: 3/24/04
Sampled By: JHH
Method of Purging: Low Flow
Method of Sampling: Low Flow

Initial Depth to Water: NA
Depth to Water after Sampling: NA
Total Depth to Well: 7.70 ± 8.0'
Well Diameter: 2"
Total Volume Removed: 2000ml

Time pm	Intake Depth	Rate (ml/pm)	Cum. Vol. (ml)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Dissolved Oxygen (mg/l)	Redox Potential (mV) SSCE	Remarks (color, turbidity, and sediment)
157	5'	250	—	14.19	6.50	1819	1.55	76.9	gray.
158	↓	↓	250	13.80	6.43	1222	0.29	9.2	CLEAR / OPAQUE OR YELLOW
159			500	13.59	6.41	1118	0.24	-1.0	"
200			750	13.49	6.40	1078	0.10	-6.4	"
201			1000	13.35	6.39	1038	0.16	-11.4	"
202			1250	13.32	6.39	1034	0.17	-12.4	"
203			1500	13.31	6.39	1027	0.15	-14.2	"
204			1750	13.30	6.39	1024	0.14	-14.8	"
205			2000	13.30	6.39	1019	0.14	-15.6	"
210	Sample.								

pH CALIBRATION (choose two)

Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Field Temperature °C				
Instrument Reading				

Model or Unit No.:

SPECIFIC ELECTRICAL CONDUCTANCE – CALIBRATION

KCL Solution (µS/cm=µmhos/cm)	1413 at 25°C	12880 at 25°C	
Field Temperature °C			
Instrument Reading			

Model or Unit No.:

REDOX CALIBRATION

Standard Solution	468 mV
Field Temperature °C	
Instrument Reading	

Model or Unit No.:

Ag/AgCl Electrode (SSCE)

DISSOLVED OXYGEN CALIBRATION

Salinity %	
Altitude	
Instrument Reading	

Model or Unit No.:

Notes:

GEOMATRIX

WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-5
Sample ID: MW-5 Duplicate ID:
Sample Depth: MID SCREEN (5) 2-8' Interval
Project and Task No: 9329.000.0 23
Project Name: SPI Arcata
Date: 3/24/04
Sampled By: JHH
Method of Purging: Low Flow
Method of Sampling: Low Flow

Initial Depth to Water: NA
Depth to Water after Sampling: Plan NA
Total Depth to Well: 7.60 = 8.0
Well Diameter: 2 inch
Total Volume Removed: 1750 ml

Time	Intake Depth	Rate (gpm) ml/min	Cum. Vol. (gal.) ml	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Dissolved Oxygen (mg/l)	Redox Potential (mV; SSCE)	Remarks (color, turbidity, and sediment)
308	5'	250	—	15.17	6.42	696	11.08	136.1	Clear
309			250	14.94	6.40	680	2.44	129.2	"
310			500	14.54	6.38	670	0.95	124.2	"
311			750	14.27	6.37	664	0.63	115.0	"
312			1000	14.10	6.37	659	0.46	110.8	"
313			1250	14.02	6.36	655	0.34	101.3	"
314			1500	13.98	6.35	653	0.24	97.5	"
315	↓	↓	1750	13.91	6.34	652	0.19	93.8	"
320	Sample								

pH CALIBRATION (choose two)				
Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Field Temperature °C				
Instrument Reading				

Model or Unit No.:

SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION			
KCL Solution (µS/cm=µmhos/cm)	1413 at 25°C	12880 at 25°C	
Field Temperature °C			
Instrument Reading			

Model or Unit No.:

REDOX CALIBRATION		DISSOLVED OXYGEN CALIBRATION	
Standard Solution	468 mV	Salinity %	
Field Temperature °C		Altitude	
Instrument Reading		Instrument Reading	
Model or Unit No.: Ag/AgCl Electrode (SSCE)		Model or Unit No.:	

Notes:

GEOMATRIX

WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-7
Sample ID: MW-7 Duplicate ID:
Sample Depth: MID SCREEN (5) Interval 2-9 Ft
Project and Task No: 9329.000.0 23
Project Name: SPI Arcata
Date: 3/27/04
Sampled By: JHH
Method of Purging: Low Flow
Method of Sampling: Low Flow

Initial Depth to Water: NA
Depth to Water after Sampling: NA
Total Depth to Well: 7163 28.0'
Well Diameter: 2 inch
Total Volume Removed: 2250ml

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Dissolved Oxygen (mg/l)	Redox Potential (mV; SSCE)	Remarks (color, turbidity, and sediment)
948	5'	250	—	11.07	6.42	979	4.16	35.7	CLEAR Light yellow color
949			750	10.95	6.41	936	0.99	18.1	"
950			500	10.93	6.41	915	0.69	10.6	"
951			750	10.87	6.41	904	0.54	5.7	"
952			1000	10.83	6.41	896	0.42	2.5	"
953			1250	10.79	6.41	886	0.33	-1.4	"
954			1500	10.77	6.40	882	0.28	-4.4	"
955			1750	10.75	6.38	880	0.25	-7.1	"
956			2000	10.74	6.37	880	0.22	-8.9	"
957			2250	10.73	6.37	879	0.20	-10.1	"
1000	Sample								

pH CALIBRATION (choose two)				
Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Field Temperature °C				
Instrument Reading				

Model or Unit No.:

SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION			
KCL Solution (µS/cm=µmhos/cm)	1413 at 25°C	12880 at 25°C	
Field Temperature °C			
Instrument Reading			

Model or Unit No.:

REDOX CALIBRATION		DISSOLVED OXYGEN CALIBRATION	
Standard Solution	468 mV	Salinity %	
Field Temperature °C		Altitude	
Instrument Reading		Instrument Reading	
Model or Unit No.: Ag/AgCl Electrode (SSCE)		Model or Unit No.:	

Notes:

GEOMATRIX

WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-14
Sample ID: MW-14 Duplicate ID:
Sample Depth: MID SCREEN @ 2-5,000 ft-final
Project and Task No: 9329.000.0 23
Project Name: SPI Arcata
Date: 3/24/04
Sampled By: JHH
Method of Purging: Low Flow
Method of Sampling: Low Flow

Initial Depth to Water: NA
Depth to Water after Sampling: NA
Total Depth to Well: 7,70 38.0'
Well Diameter: 2 inch
Total Volume Removed: 2250 ml

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Dissolved Oxygen (mg/l)	Redox Potential (mV: SSCE)	Remarks (color, turbidity, and sediment)
404	5'	250	—	14:41	6.29	2678	5.46	174.7	CLEAR / YELLOW BROWN TINT COLOR
405			250	14:17	6.31	2682	2.70	152.1	"
406			500	14:13	6.33	2683	1.25	125.2	"
407			750	14:09	6.35	2677	0.66	95.2	"
408			1000	14:19	6.37	2624	0.38	69.2	"
409			1250	14:19	6.37	2547	0.39	40.9	"
410			1500	14:18	6.38	2471	0.23	35.7	"
411			1750	14:26	6.39	2405	0.16	24.4	"
412			2000	14:28	6.39	2379	0.14	18.3	"
413			2250	14:27	6.39	2360	0.12	13.4	"
415	Sample								

pH CALIBRATION (choose two)

Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Field Temperature °C				
Instrument Reading				

Model or Unit No.:

SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION

KCL Solution (µS/cm=µmhos/cm)	1413 at 25°C	12880 at 25°C	
Field Temperature °C			
Instrument Reading			

Model or Unit No.:

REDOX CALIBRATION		DISSOLVED OXYGEN CALIBRATION		Notes:
Standard Solution	468 mV	Salinity %		
Field Temperature °C		Altitude		
Instrument Reading		Instrument Reading		
Model or Unit No.: Ag/AgCl Electrode (SSCE)		Model or Unit No.:		

GEOMATRIX

WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-20
Sample ID: MW-20 Duplicate ID:
Sample Depth: MID SCREEN (5) 3.2-6.8 Intake #1
Project and Task No: 9329.000.0 23
Project Name: SPI Arcata
Date: 3/24/04
Sampled By: JHH
Method of Purging: Low Flow
Method of Sampling: Low Flow

Initial Depth to Water:
Depth to Water after Sampling:
Total Depth to Well: 7 feet
Well Diameter: 4"
Total Volume Removed: 2000 ml

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV; SSCE)	Remarks (color, turbidity, and sediment)
1049	5'	250	~	13.42	6.88	459	~~2.8~~	91.3	clear Very Light yellow color
1050			250	13.28	6.88	453	0.60	69.4	"
1051			500	13.20	6.87	449	0.26	65.2	"
1052			750	13.21	6.86	442	0.19	61.0	"
1053			1000	13.19	6.85	440	0.17	58.8	"
1054			1250	13.17	6.85	439	0.15	57.4	"
1055			1500	13.15	6.84	438	0.13	55.7	"
1056			1750	13.14	6.84	436	0.12	53.8	"
1057			2000	13.13	6.84	436	0.11	53.0	"
1100 Sample									

pH CALIBRATION (choose two)				
Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Field Temperature °C				
Instrument Reading				

Model or Unit No.:

SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION			
KCL Solution (µS/cm=µmhos/cm)	1413 at 25°C	12880 at 25°C	
Field Temperature °C			
Instrument Reading			

Model or Unit No.:

REDOX CALIBRATION		DISSOLVED OXYGEN CALIBRATION	
Standard Solution	468 mV	Salinity %	
Field Temperature °C		Altitude	
Instrument Reading		Instrument Reading	
Model or Unit No.: Ag/AgCl Electrode (SSCE)		Model or Unit No.:	

Notes:

GEOMATRIX

WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-21
Sample ID: MW-21 Duplicate ID: MW-21B 2:30pm
Sample Depth: MID SCREEN 2.1-8.1 feet below TOC
Project and Task No: 9329.000.0 23
Project Name: SPI Arcata
Date: 3/24/04
Sampled By: JHH
Method of Purging: Low Flow
Method of Sampling: Low Flow

Initial Depth to Water: NA
Depth to Water after Sampling: NA
Total Depth to Well: ~~9.5~~ 8.1
Well Diameter: 0.75 inches
Total Volume Removed: 1250 ml

Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Dissolved Oxygen (mg/l)	Redox Potential (mV; SSCE)	Remarks (color, turbidity, and sediment)
933	5'	250	-	11.37	6.25	1188	2.55	7.5	cloudy, gray
934			250	11.25	6.33	1038	0.85	-24.2	cloudy, gray
935			500	11.20	6.35	1002	0.47	-28.0	" "
936			750	11.19	6.36	991	0.38	-30.2	" "
937			1000	11.17	6.36	987	0.31	-33.7	Light gray/opaque
937			1250	11.15	6.37	986	0.32	-37.1	" "
SAMP	950								

pH CALIBRATION (choose two)				
Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Field Temperature °C				
Instrument Reading				

Model or Unit No.: RENTAL FROM EQUIPCO, FOR SAMPLING ROUND.

SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION			
KCL Solution (µS/cm=µmhos/cm)	1413 at 25°C	12880 at 25°C	
Field Temperature °C			
Instrument Reading			

Model or Unit No.:

REDOX CALIBRATION		DISSOLVED OXYGEN CALIBRATION	
Standard Solution	468 mV	Salinity %	
Field Temperature °C		Altitude	
Instrument Reading		Instrument Reading	
Model or Unit No.: Ag/AgCl Electrode (SSCE)		Model or Unit No.:	

Notes:

APPENDIX B

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

B-1 Quarterly Groundwater Sampling
B-2 Pilot Study Groundwater Sampling
B-3 Storm Water Sampling

B-1 Quarterly Groundwater Sampling

FILE 9329

Alpha Analytical Laboratories Inc.
208 Mason St. Ukiah, California 95482
e-mail: clientservices@alpha-labs.com • Phone: (707) 468-0401 • Fax: (707) 468-5267

RECEIVED 4/12/2004

07 April 2004

Task 22 GROUNDWATER
1Q04 SAMPLING EVENT

Geomatrix Consultants
Attn: Ross Steenson
2101 Webster Street, 12th Floor
Oakland, CA 94612
RE: SPI Arcata GW Monitoring
Work Order: A403578

Enclosed are the results of analyses for samples received by the laboratory on 03/25/04 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nena M. Burgess For Karen A. Daly
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

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/07/04 10:40
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403578	03/25/2004 15:30	GEOMAT	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-A	A403578-01	Water	03/24/04 00:00	03/25/04 15:30

BLIND DUPLICATE OF MW-7

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.

Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

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: Ross Steenson

Report Date: 04/07/04 10:40
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403578	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT		PQL	NOTE
MW-A (A403578-01)			**Sample Type: Water**			**Sampled: 03/24/04 00:00**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AD40112	03/31/04	04/02/04	1	ND ug/l		1.0	
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	**8.7** "		**1.0**	
2,3,4,6-Tetrachlorophenol	"	"	"	04/03/04	100	**150** "		**100**	
2,3,4,5-Tetrachlorophenol	"	"	"	04/02/04	1	**9.9** "		**1.0**	
Pentachlorophenol	"	"	"	04/06/04	5000	**7400** "		**5000**	
Surrogate: Tribromophenol	"	"	"	*04/02/04*		*102 %*	*79-119*		

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.

Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

Alpha Analytical Laboratories Inc.
208 Mason St. Ukiah, California 95482
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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/07/04 10:40
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403578	03/25/2004 15:30	GEOMAT	

SourceResult

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 AD40112 - Solvent Extraction										
Blank (AD40112-BLK1)				Prepared: 03/31/04 Analyzed: 04/01/04						
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	"							
Surrogate: Tribromophenol	*23.0*		"	*25.0*		*92.0*	*79-119*			
LCS (AD40112-BS1)				Prepared: 03/31/04 Analyzed: 04/01/04						
2,4,6-Trichlorophenol	4.07	1.0	ug/l	5.00		81.4	81-120			
2,3,5,6-Tetrachlorophenol	4.10	1.0	"	5.00		82.0	78-108			
2,3,4,6-Tetrachlorophenol	4.46	1.0	"	5.00		89.2	76-108			
2,3,4,5-Tetrachlorophenol	4.16	1.0	"	5.00		83.2	80-116			
Pentachlorophenol	4.65	1.0	"	5.00		93.0	86-109			
Surrogate: Tribromophenol	*23.8*		"	*25.0*		*95.2*	*79-119*			
Matrix Spike (AD40112-MS1)	**Source: A403571-06**			Prepared: 03/31/04 Analyzed: 04/01/04						
2,4,6-Trichlorophenol	4.27	1.0	ug/l	5.00	ND	85.4	75-125			
2,3,5,6-Tetrachlorophenol	4.71	1.0	"	5.00	ND	84.6	69-115			
2,3,4,6-Tetrachlorophenol	8.51	1.0	"	5.00	5.1	68.2	66-117			
2,3,4,5-Tetrachlorophenol	7.04	1.0	"	5.00	3.8	64.8	70-115			QM-05
Pentachlorophenol	31.8	10	"	5.00	35	NR	55-124			QM-4X
Surrogate: Tribromophenol	*24.1*		"	*25.0*		*96.4*	*79-119*			
Matrix Spike Dup (AD40112-MSD1)	**Source: A403571-06**			Prepared: 03/31/04 Analyzed: 04/01/04						
2,4,6-Trichlorophenol	4.40	1.0	ug/l	5.00	ND	88.0	75-125	3.00	20	
2,3,5,6-Tetrachlorophenol	4.85	1.0	"	5.00	ND	87.4	69-115	2.93	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.

Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

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: Ross Steenson

Report Date: 04/07/04 10:40
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403578	03/25/2004 15:30	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 AD40112 - Solvent Extraction										
Matrix Spike Dup (AD40112-MSD1)	**Source: A403571-06**			Prepared: 03/31/04		Analyzed: 04/01/04				
2,3,4,6-Tetrachlorophenol	9.51	1.0	"	5.00	5.1	88.2	66-117	11.1	20	
2,3,4,5-Tetrachlorophenol	7.82	1.0	"	5.00	3.8	80.4	70-115	10.5	20	
Pentachlorophenol	37.1	10	"	5.00	35	42.0	55-124	15.4	20	QM-4X
Surrogate: Tribromophenol	*24.5*		"	*25.0*		*98.0*	*79-119*			

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.

Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

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: Ross Steenson

Report Date: 04/07/04 10:40
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403578	03/25/2004 15:30	GEOMAT	

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
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

0.3

MFG, INC.

CHAIN-OF-CUSTODY RECORD AND REQUEST FOR ANALYSIS

COC No. 46219

Arcata Office
5 Crescent Way
cata, CA 95521-6741
one (707) 826-8430 FAX (707) 826-8437

☐ CA - Irvine
17770 Cartwright Rd.
Ste. 500
Irvine, CA 92614
Tel (949) 253-2951
Fax (949) 253-2954

☐ CA - San Francisco
180 Howard St., Ste. 200
San Francisco, CA 94105
Tel (415) 495-7110
Fax (415) 495-7107

☐ CO - Boulder
4900 Pearl East Cir.
Ste. 300W
Boulder, CO 80301
Tel (303) 447-1823
Fax (303) 447-1836

☐ ID - Osburn
PO Box 30
Wallace, ID 83873
Tel (208) 556-6811
Fax (208) 556-7271

☐ MT - Missoula
PO Box 7158
Missoula, MT 59807
Tel (406) 728-4500
Fax (406) 728-4698

☐ NJ - Edison
1090 King Georges Post Rd.
Ste. 703
Edison, NJ 08837
Tel (732) 738-5707
Fax (732) 738-5711

☐ OR - Portland
1020 SW Taylor St.
Ste. 530
Portland, OR 97205
Tel (503) 228-6616
Fax (503) 228-8631

☐ PA - Pittsburgh
800 Vinial St., Bldg. A
Pittsburgh, PA 15212
Tel (412) 321-2278
Fax (412) 321-2283

☐ TX - Austin
4807 Spicewood Springs Rd.
Bldg. IV, 1st Floor
Austin, TX 78759
Tel (512) 338-1667
Fax (512) 338-1331

☐ TX - Houston
12337 Jones Rd.
Ste. 230
Houston, TX 77070
Tel (281) 890-5068
Fax (281) 890-5044

☐ TX - Port Lavaca
320 East Main
Port Lavaca, TX 77979
Tel (361) 552-8839
Fax (361) 553-6115

☐ TX - Texarkana
4532 Summerhill Rd.
Texarkana, TX 75503
Tel (903) 794-0625
Fax (903) 794-0626

☐ WA - Seattle
19203 36th Ave. W.
Ste. 100
Lynnwood, WA 98036
Tel (425) 921-4000
Fax (425) 921-4040

Geomatrix
2101 Webster St 12th floor
Oakland CA 94612
(510) 663-4107

PROJECT NO: 030275-22 PROJECT NAME: SPI Arcata GW Monitoring PAGE: 1 OF: 1

SAMPLER (Signature): Matt Hillyard PROJECT MANAGER: Ross Steenson DATE: 3/24/04

METHOD OF SHIPMENT: Courier CARRIER/WAYBILL NO: — DESTINATION: Alpha

Field Sample Identification	SAMPLES: Sample DATE	TIME	Matrix*	Preservation: HCl	HNO_3	H_2SO_4	COLD	FILTRATION*	Containers: VOLUME (ml/oz)	TYPE*	NO.	ANALYSIS REQUEST: Constituents/Method: PCP/TCP	MS/MSD	Handling: HOLD	RUSH	STANDARD	Remarks
MW-A	3/24		AQ				X		125ml	G	2	X				X	PCP/TCP by Canadian Pulp → A403578-01
MW-20	3/24	1305	AQ				X		125ml	G	1		X			X	USE as MS/MSD → PCP Only
Equip. Blank	3/24	1334	AQ				X		125ml	G	1	X		X			Hold if Do not run → PCP Only
																	3/26/04 09:15

TOTAL NUMBER OF CONTAINERS 4

LABORATORY COMMENTS/CONDITION OF SAMPLES Cooler Temp: 0.3

RELINQUISHED BY: SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME	RECEIVED BY: SIGNATURE	PRINTED NAME	COMPANY
Matt Hillyard	Matt Hillyard	MFG	3/25/04	1040	John Taylor	John Taylor	Alpha
John Taylor	John Taylor	Alpha	3/25/04	15:30	Nora Burgess	Nora Burgess	alpha

LABORATORY

*KEY Matrix: AQ - aqueous SA - nonaqueous SO - soil SL - sludge P - petroleum A - air OT - other Containers: P - plastic G - glass T - teflon B - brass ST - other Filtration: F - filtered U - unfiltered

DISTRIBUTION: PINK: Field Copy YELLOW: Laboratory Copy WHITE: Return to Originator

FILE 9329

Alpha Analytical Laboratories Inc.
208 Mason St. Ukiah, California 95482
e-mail: clientservices@alpha-labs.com • Phone (707) 468-0401 • Fax: (707) 468-5267

RECEIVED 4/12/2004

07 April 2004

Task 22 GROUNDWATER
1Q04 Sampling Event

Geomatrix Consultants
Attn: Ross Steenson
2101 Webster Street, 12th Floor
Oakland, CA 94612
RE: SPI Arcata GW Monitoring
Work Order: A403571

Enclosed are the results of analyses for samples received by the laboratory on 03/25/04 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nena M. Burgess For Karen A. Daly
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

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/07/04 10:33
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403571	03/25/2004 15:30	GEOMAT	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-2	A403571-01	Water	03/24/04 13:45	03/25/04 15:30
MW-6	A403571-02	Water	03/24/04 11:05	03/25/04 15:30
MW-7	A403571-03	Water	03/24/04 11:30	03/25/04 15:30
MW-8	A403571-04	Water	03/24/04 10:00	03/25/04 15:30
MW-9	A403571-05	Water	03/24/04 10:28	03/25/04 15:30
MW-20	A403571-06	Water	03/24/04 13:05	03/25/04 15:30
MW-21	A403571-07	Water	03/24/04 09:20	03/25/04 15:30

Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

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: Ross Steenson

Report Date: 04/07/04 10:33
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403571	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT		PQL	NOTE
MW-2 (A403571-01)			**Sample Type: Water**			**Sampled: 03/24/04 13:45**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AD40112	03/31/04	04/01/04	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	"	"	"	"		*101 %*	*79-119*		
Conventional Chemistry Parameters by APHA/EPA Methods									
Total Dissolved Solids	EPA 160.1	AC43118	03/31/04	04/05/04	1	**740 mg/l**		**10**	
MW-6 (A403571-02)			**Sample Type: Water**			**Sampled: 03/24/04 11:05**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AD40112	03/31/04	04/01/04	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	"	"	"	"		*107 %*	*79-119*		
Conventional Chemistry Parameters by APHA/EPA Methods									
Total Dissolved Solids	EPA 160.1	AC43118	03/31/04	04/05/04	1	**410 mg/l**		**10**	
MW-7 (A403571-03)			**Sample Type: Water**			**Sampled: 03/24/04 11:30**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AD40112	03/31/04	04/02/04	1	ND ug/l		1.5	R-06
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	**19 "**		**1.0**	
2,3,4,6-Tetrachlorophenol	"	"	"	04/03/04	100	**450 "**		**100**	
2,3,4,5-Tetrachlorophenol	"	"	"	04/02/04	1	**19 "**		**0.10**	
Pentachlorophenol	"	"	"	04/06/04	5000	**19000 "**		**5000**	
Surrogate: Tribromophenol	"	"	"	*04/02/04*		*110 %*	*79-119*		

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Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/07/04 10:33
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403571	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT		PQL	NOTE
MW-7 (A403571-03)			**Sample Type: Water**			**Sampled: 03/24/04 11:30**			
Conventional Chemistry Parameters by APHA/EPA Methods									
Total Dissolved Solids	EPA 160.1	AC43118	03/31/04	04/05/04	1	**440 mg/l**		**10**	
MW-8 (A403571-04)			**Sample Type: Water**			**Sampled: 03/24/04 10:00**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AD40112	03/31/04	04/02/04	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	"	"	"	"		*109 %*	*79-119*		
Conventional Chemistry Parameters by APHA/EPA Methods									
Total Dissolved Solids	EPA 160.1	AC43118	03/31/04	04/05/04	1	**400 mg/l**		**10**	
MW-9 (A403571-05)			**Sample Type: Water**			**Sampled: 03/24/04 10:28**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AD40112	03/31/04	04/02/04	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	"	"	"	"		*99.6 %*	*79-119*		

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Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/07/04 10:33
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403571	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT		PQL	NOTE
MW-9 (A403571-05)			**Sample Type: Water**			**Sampled: 03/24/04 10:28**			
Conventional Chemistry Parameters by APHA/EPA Methods									
Total Dissolved Solids	EPA 160.1	AC43118	03/31/04	04/05/04	1	**380 mg/l**		**10**	
MW-20 (A403571-06)			**Sample Type: Water**			**Sampled: 03/24/04 13:05**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AD40112	03/31/04	04/01/04	1	ND ug/l		1.0	
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	ND "		1.0	
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	**5.1 "**		**1.0**	
2,3,4,5-Tetrachlorophenol	"	"	"	"	"	**3.8 "**		**1.0**	
Pentachlorophenol	"	"	"	04/03/04	10	**35 "**		**10**	
Surrogate: Tribromophenol	"	"	"	*04/01/04*		*110 %*	*79-119*		
Conventional Chemistry Parameters by APHA/EPA Methods									
Total Dissolved Solids	EPA 160.1	AC43118	03/31/04	04/05/04	1	**250 mg/l**		**10**	
MW-21 (A403571-07)			**Sample Type: Water**			**Sampled: 03/24/04 09:20**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AD40112	03/31/04	04/02/04	1	ND ug/l		1.0	
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	**6.3 "**		**1.0**	
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	**17 "**		**1.0**	
2,3,4,5-Tetrachlorophenol	"	"	"	"	"	**12 "**		**1.0**	
Pentachlorophenol	"	"	"	04/03/04	100	**800 "**		**100**	
Surrogate: Tribromophenol	"	"	"	*04/02/04*		*104 %*	*79-119*		

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Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/07/04 10:33
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403571	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
MW-21 (A403571-07)			**Sample Type: Water**			**Sampled: 03/24/04 09:20**		
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Dissolved Solids	EPA 160.1	AC43118	03/31/04	04/05/04	1	**460 mg/l**	**10**	

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Report Date: 04/07/04 10:33
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403571	03/25/2004 15:30	GEOMAT	

SourceResult

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 AD40112 - Solvent Extraction										
Blank (AD40112-BLK1)				Prepared: 03/31/04 Analyzed: 04/01/04						
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	"							
Surrogate: Tribromophenol	*23.0*		"	*25.0*		*92.0*	*79-119*			
LCS (AD40112-BS1)				Prepared: 03/31/04 Analyzed: 04/01/04						
2,4,6-Trichlorophenol	4.07	1.0	ug/l	5.00		81.4	81-120			
2,3,5,6-Tetrachlorophenol	4.10	1.0	"	5.00		82.0	78-108			
2,3,4,6-Tetrachlorophenol	4.46	1.0	"	5.00		89.2	76-108			
2,3,4,5-Tetrachlorophenol	4.16	1.0	"	5.00		83.2	80-116			
Pentachlorophenol	4.65	1.0	"	5.00		93.0	86-109			
Surrogate: Tribromophenol	*23.8*		"	*25.0*		*95.2*	*79-119*			
Matrix Spike (AD40112-MS1)	**Source: A403571-06**			Prepared: 03/31/04 Analyzed: 04/01/04						
2,4,6-Trichlorophenol	4.27	1.0	ug/l	5.00	ND	85.4	75-125			
2,3,5,6-Tetrachlorophenol	4.71	1.0	"	5.00	ND	84.6	69-115			
2,3,4,6-Tetrachlorophenol	8.51	1.0	"	5.00	5.1	68.2	66-117			
2,3,4,5-Tetrachlorophenol	7.04	1.0	"	5.00	3.8	64.8	70-115			QM-05
Pentachlorophenol	31.8	10	"	5.00	35	NR	55-124			QM-4X
Surrogate: Tribromophenol	*24.1*		"	*25.0*		*96.4*	*79-119*			
Matrix Spike Dup (AD40112-MSD1)	**Source: A403571-06**			Prepared: 03/31/04 Analyzed: 04/01/04						
2,4,6-Trichlorophenol	4.40	1.0	ug/l	5.00	ND	88.0	75-125	3.00	20	
2,3,5,6-Tetrachlorophenol	4.85	1.0	"	5.00	ND	87.4	69-115	2.93	20	

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Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/07/04 10:33
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403571	03/25/2004 15:30	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 AD40112 - Solvent Extraction										
Matrix Spike Dup (AD40112-MSD1)	**Source: A403571-06**			Prepared: 03/31/04		Analyzed: 04/01/04				
2,3,4,6-Tetrachlorophenol	9.51	1.0	"	5.00	5.1	88.2	66-117	11.1	20	
2,3,4,5-Tetrachlorophenol	7.82	1.0	"	5.00	3.8	80.4	70-115	10.5	20	
Pentachlorophenol	37.1	10	"	5.00	35	42.0	55-124	15.4	20	QM-4X
Surrogate: Tribromophenol	*24.5*		"	*25.0*		*98.0*	*79-119*			

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Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

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CHEMICAL EXAMINATION REPORT

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Report Date: 04/07/04 10:33
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403571	03/25/2004 15:30	GEOMAT	

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AC43118 - General Preparation										
Blank (AC43118-BLK1)				Prepared: 03/31/04 Analyzed: 04/05/04						
Total Dissolved Solids	ND	10	mg/l							
Duplicate (AC43118-DUP1)		**Source: A403571-01**		Prepared: 03/31/04 Analyzed: 04/05/04						
Total Dissolved Solids	737	10	mg/l		740			0.406	30	

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/07/04 10:33
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403571	03/25/2004 15:30	GEOMAT	

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
R-06	The Reporting Limits for this analysis have been raised to account for matrix interference.
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

03

MFG, INC.

CHAIN-OF-CUSTODY RECORD AND REQUEST FOR ANALYSIS

COC No. 46221

Arcata Office

CA - Irvine · CA - San Francisco · CO - Boulder · ID - Desmet · MT - Missoula · NJ - Edison · OR - Portland · PA - Pittsburgh · TX - Austin · TX - Houston · TX - Port Lavaca · TX - Texarkana · WA - Seattle

Geomatrix
2101 Webster St 12th Floor
Oakland, CA 94612
(510) 663-4107

PROJECT NO: 030275.22 PROJECT NAME: SPI Arcata GW Monitoring PAGE: 1 OF: 2
SAMPLER (Signature): Matt Hillyard PROJECT MANAGER: Ross Steenson DATE: 3/24/04
METHOD OF SHIPMENT: Courier CARRIER/WAYBILL NO: — DESTINATION: Alpha

Field Sample Identification	DATE	TIME	Matrix*	HCl	HNO_3	H_2SO_4	COLD		FILTRATION*	VOLUME (ml/oz)	TYPE*	NO.	PCP/TCP	Constituents/Method			HOLD	RUSH	STANDARD	Remarks
MW-2	3/24	1345	AQ				X		U	250ml	G	2	X	A463571-01					X	PCP/TCP by
MW-6	↓	1105	↓				↓		↓	↓	↓	↓	↓	-02					↓	Canadian pulp mill
MW-7	↓	1130	↓				↓		↓	↓	↓	↓	↓	-03					↓	
MW-8	↓	1000	↓				↓		↓	↓	↓	↓	↓	-04					↓	
MW-9	↓	1028	↓				↓		↓	↓	↓	↓	↓	-05					↓	
MW-20	↓	1305	↓				↓		↓	↓	↓	↓	↓	-06					↓	
MW-21	↓	920	↓				↓		↓	↓	↓	↓	↓	-07					↓	

TOTAL NUMBER OF CONTAINERS: 14
LABORATORY COMMENTS/CONDITION OF SAMPLES: Cooler Temp: 0.3

RELINQUISHED BY: SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME	RECEIVED BY: SIGNATURE	PRINTED NAME	COMPANY
Matt Hillyard	Matt Hillyard	MFG	3/25/04	1040	John Taylor	John Taylor	Alpha
John Taylor	John Taylor	Alpha	3/25/04	1530	[signature]	Nena Burgess	Alpha Laboratory

MFG, INC.

CHAIN-OF-CUSTODY RECORD AND REQUEST FOR ANALYSIS

COC No. 46222

Arcata Office
1 Creeper Way
Arcata, CA 95521-4741
Phone (707) 826-8400 FAX (707) 826-8407

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☐ TX - Port Lavaca
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4532 Summerhill Rd.
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☐ WA - Seattle
19203 36th Ave. W.
Ste. 100
Lynnwood, WA 98036
Tel (425) 921-4000
Fax (425) 921-4040

☒ Geomatrix Oakland

PROJECT NO: 050275.22 PROJECT NAME: SPI Arcata GW Monitoring PAGE: 2 OF: 2

SAMPLER (Signature): Matt Hillyard PROJECT MANAGER: Ross Steenson DATE: 3/24/04

METHOD OF SHIPMENT: Courier CARRIER/WAYBILL NO: — DESTINATION: Alpha

Field Sample Identification	SAMPLES: Sample DATE	TIME	Matrix*	Preservation: HCl	HNO_3	H_2SO_4	COLD		FILTRATION*	Containers: VOLUME (ml/oz)	TYPE*	NO.	ANALYSIS REQUEST: Constituents/Method: TDS					Handling: HOLD	RUSH	STANDARD	Remarks
MW-2	3/24	1345	WQ				X		U	Y250	P	1	X							X	TDS by EPA 160.2
MW-6		1105																			
MW-7		1130																			
MW-8		1000																			
MW-9		1028																			
MW-20		1305																			
MW-21		920																			

TOTAL NUMBER OF CONTAINERS 7

LABORATORY COMMENTS/CONDITION OF SAMPLES

Cooler Temp:

RELINQUISHED BY: SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME	RECEIVED BY: SIGNATURE	PRINTED NAME	COMPANY
Matt Hillyard	Matt Hillyard	MFG	3/25/04	1040		John TAylor	Alpha
	John TAylor	Alpha	3/25/04	1530		W.M. Burgess	LABORATORY

*SCE Matrix: AQ - aqueous; WA - nonaqueous; ST - soil; SL - sludge; P - petroleum; A - air; OT - other Containers: P - plastic; G - glass; T - teflon; S - liquid; OT - other Filtration: F - filtered; U - unfiltered

DISTRIBUTION: White, Field Copy; Yellow, Laboratory Copy; PINK, Return to Originator

FILE 9329

Alpha Analytical Laboratories Inc.
208 Mason St. Ukiah, California 95482
e-mail: clientservices@alpha-labs.com • Phone: (707) 468-0401 • Fax: (707) 468-5267

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APR 12 2004

07 April 2004

Task 22 GROUNDWATER
1Q04 SAMPLING EVENT

Geomatrix Consultants
Attn: Ross Steenson
2101 Webster Street, 12th Floor
Oakland, CA 94612
RE: SPI Arcata GW Monitoring
Work Order: A403578

Enclosed are the results of analyses for samples received by the laboratory on 03/25/04 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nena M. Burgess For Karen A. Daly
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

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/07/04 10:40
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403578	03/25/2004 15:30	GEOMAT	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-A	A403578-01	Water	03/24/04 00:00	03/25/04 15:30

BLIND DUPLICATE OF MW-7

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.

Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
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Attn: Ross Steenson

Report Date: 04/07/04 10:40
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403578	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT		PQL	NOTE
MW-A (A403578-01)			**Sample Type: Water**			**Sampled: 03/24/04 00:00**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AD40112	03/31/04	04/02/04	1	ND ug/l		1.0	
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	**8.7** "		**1.0**	
2,3,4,6-Tetrachlorophenol	"	"	"	04/03/04	100	**150** "		**100**	
2,3,4,5-Tetrachlorophenol	"	"	"	04/02/04	1	**9.9** "		**1.0**	
Pentachlorophenol	"	"	"	04/06/04	5000	**7400** "		**5000**	
Surrogate: Tribromophenol	"	"	"	*04/02/04*		*102 %*	*79-119*		

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Project Manager

4/7/04

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Attn: Ross Steenson

Report Date: 04/07/04 10:40
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403578	03/25/2004 15:30	GEOMAT	

SourceResult

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 AD40112 - Solvent Extraction										
Blank (AD40112-BLK1)				Prepared: 03/31/04 Analyzed: 04/01/04						
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	"							
Surrogate: Tribromophenol	*23.0*		"	*25.0*		*92.0*	*79-119*			
LCS (AD40112-BS1)				Prepared: 03/31/04 Analyzed: 04/01/04						
2,4,6-Trichlorophenol	4.07	1.0	ug/l	5.00		81.4	81-120			
2,3,5,6-Tetrachlorophenol	4.10	1.0	"	5.00		82.0	78-108			
2,3,4,6-Tetrachlorophenol	4.46	1.0	"	5.00		89.2	76-108			
2,3,4,5-Tetrachlorophenol	4.16	1.0	"	5.00		83.2	80-116			
Pentachlorophenol	4.65	1.0	"	5.00		93.0	86-109			
Surrogate: Tribromophenol	*23.8*		"	*25.0*		*95.2*	*79-119*			
Matrix Spike (AD40112-MS1)	**Source: A403571-06**			Prepared: 03/31/04 Analyzed: 04/01/04						
2,4,6-Trichlorophenol	4.27	1.0	ug/l	5.00	ND	85.4	75-125			
2,3,5,6-Tetrachlorophenol	4.71	1.0	"	5.00	ND	84.6	69-115			
2,3,4,6-Tetrachlorophenol	8.51	1.0	"	5.00	5.1	68.2	66-117			
2,3,4,5-Tetrachlorophenol	7.04	1.0	"	5.00	3.8	64.8	70-115			QM-05
Pentachlorophenol	31.8	10	"	5.00	35	NR	55-124			QM-4X
Surrogate: Tribromophenol	*24.1*		"	*25.0*		*96.4*	*79-119*			
Matrix Spike Dup (AD40112-MSD1)	**Source: A403571-06**			Prepared: 03/31/04 Analyzed: 04/01/04						
2,4,6-Trichlorophenol	4.40	1.0	ug/l	5.00	ND	88.0	75-125	3.00	20	
2,3,5,6-Tetrachlorophenol	4.85	1.0	"	5.00	ND	87.4	69-115	2.93	20	

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Nena M. Burgess For Karen A. Daly
Project Manager

4/7/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/07/04 10:40
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403578	03/25/2004 15:30	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 AD40112 - Solvent Extraction										
Matrix Spike Dup (AD40112-MSD1)	**Source: A403571-06**			Prepared: 03/31/04		Analyzed: 04/01/04				
2,3,4,6-Tetrachlorophenol	9.51	1.0	"	5.00	5.1	88.2	66-117	11.1	20	
2,3,4,5-Tetrachlorophenol	7.82	1.0	"	5.00	3.8	80.4	70-115	10.5	20	
Pentachlorophenol	37.1	10	"	5.00	35	42.0	55-124	15.4	20	QM-4X
Surrogate: Tribromophenol	*24.5*		"	*25.0*		*98.0*	*79-119*			

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Project Manager

4/7/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/07/04 10:40
Project No: 030275.22
Project ID: SPI Arcata GW Monitoring

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403578	03/25/2004 15:30	GEOMAT	

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
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

0.3

MFG, INC.

CHAIN-OF-CUSTODY RECORD AND REQUEST FOR ANALYSIS

COC No. 46219

Arcata Office
5 Crescent Way
ata, CA 95521-6741
one (707) 826-8430- FAX (707) 826-8437

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Fax (949) 253-2954

☐CA - San Francisco
180 Howard St., Ste. 200
San Francisco, CA 94105
Tel (415) 495-7113
Fax (415) 495-7107

☐CO - Boulder
4900 Pearl East Cir
Ste. 300W
Boulder, CO 80301
Tel (303) 447-1823
Fax (303) 447-1836

☐ID - Osburn
PO Box 30
Wallace, ID 83873
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Fax (208) 556-7271

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☐PA - Pittsburgh
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☐TX - Austin
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☐TX - Texarkana
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Tel (903) 794-0625
Fax (903) 794-0628

☐WA - Seattle
19203 36th Ave. W.
Ste. 100
Lynnwood, WA 98036
Tel (425) 921-4000
Fax (425) 921-4040

& Geomatrix
210' Webster St 2nd floor
Oakland CA 94612
(510) 663-4107

PROJECT NO: 030275-22 PROJECT NAME: SPI Arcata GW Monitoring PAGE: 1 OF: 1

SAMPLER (Signature): Matt Hillyard PROJECT MANAGER: Ross Steenson DATE: 3/24/04

METHOD OF SHIPMENT: Courier CARRIER/WAYBILL NO: — DESTINATION: Alpha

Field Sample Identification	SAMPLES: Sample DATE	TIME	Matrix*	Preservation: HCl	HNO_3	H_2SO_4	COLD	FILTRATION*	Containers: VOLUME (ml/oz)	TYPE*	NO.	ANALYSIS REQUEST: Constituents/Method: PCP/TCP	MS/MSD	Handling: HOLD	RUSH	STANDARD	Remarks
MW-A	3/24		AQ				X	N	125ml	G	2	X				X	PCP/TCP by Canadian Pulp
MW-20	3/24	1305	AQ				X	N	125ml	G	1		X			X	A463578-01
Equip. Blank	3/24	1334	AQ				X	N	125ml	G	1	X		X			Use as MS/MSD - Hold - Do not run - PCP/TCP 3/26/04 09:15

TOTAL NUMBER OF CONTAINERS 4

LABORATORY COMMENTS/CONDITION OF SAMPLES Cooler Temp: 0.3

RELINQUISHED BY: SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME	RECEIVED BY: SIGNATURE	PRINTED NAME	COMPANY
Matt Hillyard	Matt Hillyard	MFG	3/25/04	1040		John Taylor	Alpha
John Taylor	John Taylor	Alpha	3/25/04	1530		Nora Burgess	alpha LABORATORY

*KEY: Matrix: AQ - aqueous, WW - wastewater, SO - soil, SL - sludge, P - petroleum, A - air, OT - other. Containers: P - plastic, G - glass, T - Teflon, B - brass, OT - other. Filtration: F - filtered, U - unfiltered.
DISTRIBUTION: PINK: Field Copy YELLOW: Laboratory Copy WHITE: Return to Originator

B-2 Pilot-Study Groundwater Sampling

FILE 4524

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208 Mason St. Ukiah, California 95482
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RECEIVED 4/7/04

06 April 2004

TASK 23 PILOT STUDY
GW Samples

Geomatrix Consultants
Attn: Ross Steenson
2101 Webster Street, 12th Floor
Oakland, CA 94612
RE: SPI - (GeoMatrix)
Work Order: A403570

Enclosed are the results of analyses for samples received by the laboratory on 03/25/04 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Karen Daly

Karen A. Daly For Sheri L. Speaks
Project Manager

Alpha Analytical Laboratories Inc.
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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: Ross Steenson

Report Date: 04/06/04 15:40
Project No: 9329.000.23
Project ID: SPI - (GeoMatrix)

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403570	03/25/2004 15:30	GEOMAT	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	A403570-01	Water	03/24/04 13:05	03/25/04 15:30
MW-2	A403570-02	Water	03/24/04 12:15	03/25/04 15:30
MW-3	A403570-03	Water	03/24/04 14:10	03/25/04 15:30
MW-5	A403570-04	Water	03/24/04 15:20	03/25/04 15:30
MW-7	A403570-05	Water	03/24/04 10:00	03/25/04 15:30
MW-20	A403570-06	Water	03/24/04 11:00	03/25/04 15:30
MW-21	A403570-07	Water	03/24/04 08:50	03/25/04 15:30
MW-14	A403570-08	Water	03/24/04 16:15	03/25/04 15:30

Karen A. Daly For Sheri L. Speaks
Project Manager

4/6/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/06/04 15:40
Project No: 9329.000.23
Project ID: SPI - (GeoMatrix)

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403570	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
MW-1 (A403570-01)			**Sample Type: Water**			**Sampled: 03/24/04 13:05**		
Organic Carbon by 415.1								
Total Organic Carbon	EPA 415.1	AC42911	03/29/04	03/29/04	1	**36.6 mg/l**	**1.00**	
Metals by EPA 200 Series Methods								
Calcium	EPA 200.7	AC43105	03/31/04	04/05/04	1	**41 mg/l**	**1.0**	
Magnesium	"	"	"	"	"	**63 "**	**1.0**	
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Alkalinity as CaCO3	SM2320B	AC42615	03/26/04	03/26/04	1	**830 mg/l**	**1.0**	
Carbonate Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Bicarbonate Alkalinity as CaCO3	"	"	"	"	"	**830 "**	**1.0**	
Hydroxide Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Anions by EPA Method 300.0								
Chloride	EPA 300.0	AC42512	03/25/04	03/25/04	50	**320 mg/l**	**25**	
Nitrate as N	"	"	"	03/26/04	1	**0.42 "**	**0.20**	
Sulfate as SO4	"	"	"	03/25/04	"	**0.71 "**	**0.50**	
MW-2 (A403570-02)			**Sample Type: Water**			**Sampled: 03/24/04 12:15**		
Organic Carbon by 415.1								
Total Organic Carbon	EPA 415.1	AC42911	03/29/04	03/29/04	1	**35.7 mg/l**	**1.00**	
Metals by EPA 200 Series Methods								
Calcium	EPA 200.7	AC43105	03/31/04	04/05/04	1	**65 mg/l**	**1.0**	
Magnesium	"	"	"	"	"	**39 "**	**1.0**	

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Karen A. Daly For Sheri L. Speaks
Project Manager

4/6/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/06/04 15:40
Project No: 9329.000.23
Project ID: SPI - (GeoMatrix)

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403570	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
MW-2 (A403570-02)			**Sample Type: Water**			**Sampled: 03/24/04 12:15**		
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Alkalinity as CaCO3	SM2320B	AC42615	03/26/04	03/26/04	1	**550 mg/l**	**1.0**	
Carbonate Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Bicarbonate Alkalinity as CaCO3	"	"	"	"	"	**550 "**	**1.0**	
Hydroxide Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Anions by EPA Method 300.0								
Chloride	EPA 300.0	AC42512	03/25/04	03/26/04	25	**160 mg/l**	**12**	
Nitrate as N	"	"	"	03/26/04	1	ND "	0.20	
Sulfate as SO4	"	"	"	"	"	ND "	0.50	
MW-3 (A403570-03)			**Sample Type: Water**			**Sampled: 03/24/04 14:10**		
Organic Carbon by 415.1								
Total Organic Carbon	EPA 415.1	AC42911	03/29/04	03/29/04	1	**36.3 mg/l**	**1.00**	
Metals by EPA 200 Series Methods								
Calcium	EPA 200.7	AC43105	03/31/04	04/05/04	1	**62 mg/l**	**1.0**	
Magnesium	"	"	"	"	"	**46 "**	**1.0**	
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Alkalinity as CaCO3	SM2320B	AC42615	03/26/04	03/26/04	1	**450 mg/l**	**1.0**	
Carbonate Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Bicarbonate Alkalinity as CaCO3	"	"	"	"	"	**450 "**	**1.0**	
Hydroxide Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	

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Project Manager

4/6/04

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Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/06/04 15:40
Project No: 9329.000.23
Project ID: SPI - (GeoMatrix)

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403570	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
MW-3 (A403570-03)			**Sample Type: Water**			**Sampled: 03/24/04 14:10**		
Anions by EPA Method 300.0								
Chloride	EPA 300.0	AC42512	03/25/04	03/26/04	5	**35 mg/l**	**2.5**	
Nitrate as N	"	"	"	03/26/04	1	ND "	0.20	
Sulfate as SO4	"	"	"	"	"	ND "	0.50	
MW-5 (A403570-04)			**Sample Type: Water**			**Sampled: 03/24/04 15:20**		
Organic Carbon by 415.1								
Total Organic Carbon	EPA 415.1	AC42911	03/29/04	03/29/04	1	**11.4 mg/l**	**1.00**	
Metals by EPA 200 Series Methods								
Calcium	EPA 200.7	AC43105	03/31/04	04/05/04	1	**29 mg/l**	**1.0**	
Magnesium	"	"	"	"	"	**50 "**	**1.0**	
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Alkalinity as CaCO3	SM2320B	AC42615	03/26/04	03/26/04	1	**310 mg/l**	**1.0**	
Carbonate Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Bicarbonate Alkalinity as CaCO3	"	"	"	"	"	**310 "**	**1.0**	
Hydroxide Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Anions by EPA Method 300.0								
Chloride	EPA 300.0	AC42512	03/25/04	03/26/04	1	**21 mg/l**	**0.50**	
Nitrate as N	"	"	"	"	"	ND "	0.20	
Sulfate as SO4	"	"	"	"	"	ND "	0.50	
MW-7 (A403570-05)			**Sample Type: Water**			**Sampled: 03/24/04 10:00**		
Organic Carbon by 415.1								
Total Organic Carbon	EPA 415.1	AC42911	03/29/04	03/29/04	1	**20.8 mg/l**	**1.00**	

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Karen A. Daly For Sheri L. Speaks
Project Manager

4/6/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/06/04 15:40
Project No: 9329.000.23
Project ID: SPI - (GeoMatrix)

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403570	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
MW-7 (A403570-05)			**Sample Type: Water**			**Sampled: 03/24/04 10:00**		
Metals by EPA 200 Series Methods								
Calcium	EPA 200.7	AC43105	03/31/04	04/05/04	1	**31 mg/l**	**1.0**	
Magnesium	"	"	"	"	"	**47 "**	**1.0**	
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Alkalinity as CaCO3	SM2320B	AC42615	03/26/04	03/26/04	1	**410 mg/l**	**1.0**	
Carbonate Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Bicarbonate Alkalinity as CaCO3	"	"	"	"	"	**410 "**	**1.0**	
Hydroxide Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Anions by EPA Method 300.0								
Chloride	EPA 300.0	AC42512	03/25/04	03/26/04	5	**46 mg/l**	**2.5**	
Nitrate as N	"	"	"	03/26/04	1	ND "	0.20	
Sulfate as SO4	"	"	"	"	"	ND "	0.50	
MW-20 (A403570-06)			**Sample Type: Water**			**Sampled: 03/24/04 11:00**		
Organic Carbon by 415.1								
Total Organic Carbon	EPA 415.1	AC42911	03/29/04	03/29/04	1	**9.48 mg/l**	**1.00**	
Metals by EPA 200 Series Methods								
Calcium	EPA 200.7	AC43105	03/31/04	04/05/04	1	**32 mg/l**	**1.0**	
Magnesium	"	"	"	"	"	**32 "**	**1.0**	

Karen A. Daly For Sheri L. Speaks
Project Manager

4/6/04

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: Ross Steenson

Report Date: 04/06/04 15:40
Project No: 9329.000.23
Project ID: SPI - (GeoMatrix)

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403570	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
MW-20 (A403570-06)			**Sample Type: Water**			**Sampled: 03/24/04 11:00**		
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Alkalinity as CaCO3	SM2320B	AC42615	03/26/04	03/26/04	1	**210 mg/l**	**1.0**	
Carbonate Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Bicarbonate Alkalinity as CaCO3	"	"	"	"	"	**210 "**	**1.0**	
Hydroxide Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Anions by EPA Method 300.0								
Chloride	EPA 300.0	AC42512	03/25/04	03/26/04	1	**21 mg/l**	**0.50**	
Nitrate as N	"	"	"	"	"	ND "	0.20	
Sulfate as SO4	"	"	"	"	"	**1.6 "**	**0.50**	
MW-21 (A403570-07)			**Sample Type: Water**			**Sampled: 03/24/04 08:50**		
Organic Carbon by 415.1								
Total Organic Carbon	EPA 415.1	AC42911	03/29/04	03/29/04	1	**21.4 mg/l**	**1.00**	
Metals by EPA 200 Series Methods								
Calcium	EPA 200.7	AC43105	03/31/04	04/05/04	1	**30 mg/l**	**1.0**	
Magnesium	"	"	"	"	"	**50 "**	**1.0**	
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Alkalinity as CaCO3	SM2320B	AC42615	03/26/04	03/26/04	1	**380 mg/l**	**1.0**	
Carbonate Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Bicarbonate Alkalinity as CaCO3	"	"	"	"	"	**380 "**	**1.0**	
Hydroxide Alkalinity as CaCO3	"	"	"	"	"	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.

Karen A. Daly For Sheri L. Speaks
Project Manager

4/6/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/06/04 15:40
Project No: 9329.000.23
Project ID: SPI - (GeoMatrix)

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403570	03/25/2004 15:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
MW-21 (A403570-07)			**Sample Type: Water**			**Sampled: 03/24/04 08:50**		
Anions by EPA Method 300.0								
Chloride	EPA 300.0	AC42512	03/25/04	03/26/04	5	**54 mg/l**	**2.5**	
Nitrate as N	"	"	"	03/26/04	1	ND "	0.20	
Sulfate as SO4	"	"	"	"	"	ND "	0.50	
MW-14 (A403570-08)			**Sample Type: Water**			**Sampled: 03/24/04 16:15**		
Organic Carbon by 415.1								
Total Organic Carbon	EPA 415.1	AC42911	03/29/04	03/29/04	2	**106 mg/l**	**2.00**	
Metals by EPA 200 Series Methods								
Calcium	EPA 200.7	AC43105	03/31/04	04/05/04	1	**23 mg/l**	**1.0**	
Magnesium	"	"	"	"	"	**50 "**	**1.0**	
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Alkalinity as CaCO3	SM2320B	AC42615	03/26/04	03/26/04	1	**1100 mg/l**	**1.0**	
Carbonate Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Bicarbonate Alkalinity as CaCO3	"	"	"	"	"	**1100 "**	**1.0**	
Hydroxide Alkalinity as CaCO3	"	"	"	"	"	ND "	1.0	
Anions by EPA Method 300.0								
Chloride	EPA 300.0	AC42512	03/25/04	03/26/04	25	**460 mg/l**	**12**	
Nitrate as N	"	"	"	03/26/04	1	ND "	0.20	
Sulfate as SO4	"	"	"	"	"	ND "	0.50	

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
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Attn: Ross Steenson

Report Date: 04/06/04 15:40
Project No: 9329.000.23
Project ID: SPI - (GeoMatrix)

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403570	03/25/2004 15:30	GEOMAT	

Organic Carbon by 415.1 - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AC42911 - General Prep										
Blank (AC42911-BLK1)				Prepared & Analyzed: 03/29/04						
Total Organic Carbon	ND	1.00	mg/l							
LCS (AC42911-BS1)				Prepared & Analyzed: 03/29/04						
Total Organic Carbon	9.80	1.00	mg/l	10.0		98.0	85-115			
LCS Dup (AC42911-BSD1)				Prepared & Analyzed: 03/29/04						
Total Organic Carbon	9.91	1.00	mg/l	10.0		99.1	85-115	1.12	20	
Duplicate (AC42911-DUP1)		Source: A403441-01		Prepared & Analyzed: 03/29/04						
Total Organic Carbon	3.29	1.00	mg/l		2.82			15.4	20	
Matrix Spike (AC42911-MS1)		Source: A403441-01		Prepared & Analyzed: 03/29/04						
Total Organic Carbon	14.2	1.00	mg/l	11.1	2.82	103	70-130			
Matrix Spike Dup (AC42911-MSD1)		Source: A403441-01		Prepared & Analyzed: 03/29/04						
Total Organic Carbon	14.2	1.00	mg/l	11.1	2.82	103	70-130	0.00	20	

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Karen A. Daly For Sheri L. Speaks
Project Manager

4/6/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/06/04 15:40
Project No: 9329.000.23
Project ID: SPI - (GeoMatrix)

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403570	03/25/2004 15:30	GEOMAT	

Metals by EPA 200 Series Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AC43105 - EPA 3005A SoftDigest										
Blank (AC43105-BLK1)				Prepared: 03/31/04		Analyzed: 04/02/04				
Calcium	ND	1.0	mg/l							
Magnesium	ND	1.0	"							
LCS (AC43105-BS1)				Prepared: 03/31/04		Analyzed: 04/02/04				
Calcium	10.2	1.0	mg/l	10.0		102	85-115			
Magnesium	10.0	1.0	"	10.0		100	85-115			
LCS Dup (AC43105-BSD1)				Prepared: 03/31/04		Analyzed: 04/02/04				
Calcium	10.1	1.0	mg/l	10.0		101	85-115	0.985	20	
Magnesium	10.0	1.0	"	10.0		100	85-115	0.00	20	
Duplicate (AC43105-DUP1)	**Source: A403607-01**			Prepared: 03/31/04		Analyzed: 04/02/04				
Calcium	12.7	1.0	mg/l		14			9.74	20	
Magnesium	6.77	1.0	"		7.4			8.89	20	
Matrix Spike (AC43105-MS1)	**Source: A403607-01**			Prepared: 03/31/04		Analyzed: 04/02/04				
Calcium	23.5	1.0	mg/l	10.0	14	95.0	70-130			
Magnesium	17.2	1.0	"	10.0	7.4	98.0	70-130			
Matrix Spike Dup (AC43105-MSD1)	**Source: A403607-01**			Prepared: 03/31/04		Analyzed: 04/02/04				
Calcium	23.6	1.0	mg/l	10.0	14	96.0	70-130	0.425	20	
Magnesium	17.5	1.0	"	10.0	7.4	101	70-130	1.73	20	

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Project Manager

4/6/04

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 04/06/04 15:40
Project No: 9329.000.23
Project ID: SPI - (GeoMatrix)

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403570	03/25/2004 15:30	GEOMAT	

Anions by EPA Method 300.0 - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AC42512 - General Preparation										
Blank (AC42512-BLK1)				Prepared & Analyzed: 03/25/04						
Chloride	ND	0.50	mg/l							
Nitrate as N	ND	0.20	"							
Sulfate as SO4	ND	0.50	"							
LCS (AC42512-BS1)				Prepared & Analyzed: 03/25/04						
Chloride	3.10	0.50	mg/l	3.00		103	90-110			
Nitrate as N	1.02	0.20	"	1.00		102	90-110			
Sulfate as SO4	8.25	0.50	"	8.00		103	90-110			
LCS Dup (AC42512-BSD1)				Prepared & Analyzed: 03/25/04						
Chloride	3.07	0.50	mg/l	3.00		102	90-110	0.972	10	
Nitrate as N	1.02	0.20	"	1.00		102	90-110	0.00	20	
Sulfate as SO4	8.22	0.50	"	8.00		103	90-110	0.364	10	
Duplicate (AC42512-DUP1)	**Source: A403540-03**			Prepared & Analyzed: 03/25/04						
Chloride	40.4	5.0	mg/l		39			3.53	30	
Nitrate as N	0.700	2.0	"		ND				200	
Sulfate as SO4	78.8	5.0	"		76			3.62	30	
Matrix Spike (AC42512-MS1)	**Source: A403540-03**			Prepared & Analyzed: 03/25/04						
Chloride	64.9	5.0	mg/l	25.0	39	104	83-115			
Nitrate as N	26.3	2.0	"	25.0	ND	103	80-120			
Sulfate as SO4	180	5.0	"	100	76	104	83-115			
Matrix Spike Dup (AC42512-MSD1)	**Source: A403540-03**			Prepared & Analyzed: 03/25/04						
Chloride	64.8	5.0	mg/l	25.0	39	103	83-115	0.154	10	
Nitrate as N	26.3	2.0	"	25.0	ND	103	80-120	0.00	20	
Sulfate as SO4	180	5.0	"	100	76	104	83-115	0.00	10	

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Karen A. Daly For Sheri L. Speaks
Project Manager

4/6/04

Alpha Analytical Laboratories Inc.
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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: Ross Steenson

Report Date: 04/06/04 15:40
Project No: 9329.000.23
Project ID: SPI - (GeoMatrix)

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A403570	03/25/2004 15:30	GEOMAT	

Notes and Definitions

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

K PRIME, Inc.
CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 04/14/04

TO: MS. SHERI L SPEAKS
ALPHA ANALYTICAL LABORATORIES, INC.
P O. BOX 1508 (208 MASON STREET)
UKIAH, CA 95482

Phone: 707-468-0401
Fax: 707-468-5267

ACCT: 9984
PROJ: M03570

FROM: Richard A. Kagel, Ph.D.
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT M03570

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	KPI LAB #
MW-1	WATER	03/24/04	45046
MW-2	WATER	03/24/04	45047
MW-3	WATER	03/24/04	45048
MW-5	WATER	03/24/04	45049
MW-7	WATER	03/24/04	45050
MW-20	WATER	03/24/04	45051
MW-21	WATER	03/24/04	45052
MW 14	WATER	03/24/04	45053

The above listed sample group was received on 03/26/04 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-1
LAB NO:	45046
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	13:05
BATCH ID:	040804W01

METHOD: DISSOLVED C1-C3 HYDROCARBONS
REFERENCE: RSK 175

DATE ANALYZED:	4/6/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
METHANE	74-82-8	1.58	6916

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT, NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: _____
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-2
LAB NO:	45047
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	12:15
BATCH ID:	040604W01

METHOD: DISSOLVED C1-C3 HYDROCARBONS
REFERENCE: RSK 175

DATE ANALYZED:	4/6/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
METHANE	74-82-8	1.58	4539

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT. NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: _____
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-3
LAB NO:	45048
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	14:10
BATCH ID:	040604W01

METHOD: DISSOLVED C1-C3 HYDROCARBONS
REFERENCE: RSK 175

DATE ANALYZED:	4/6/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
METHANE	74-82-8	1.58	9082

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT, NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: _____
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-5
LAB NO:	45049
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	15:20
BATCH ID:	040604W01

METHOD: DISSOLVED C1-C3 HYDROCARBONS
REFERENCE: RSK 175

DATE ANALYZED:	4/6/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
METHANE	74-82-8	1.58	6323

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT. NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: _____
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-7
LAB NO:	45050
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	10:00
BATCH ID:	040604W01

METHOD: DISSOLVED C1-C3 HYDROCARBONS
REFERENCE: RSK 175

DATE ANALYZED:	4/6/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
METHANE	74-82-8	1.58	10596

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT, NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: MK
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-20
LAB NO:	45051
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	11:00
BATCH ID:	040604W01

METHOD: DISSOLVED C1-C3 HYDROCARBONS
REFERENCE: RSK 175

DATE ANALYZED:	4/6/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
METHANE	74-82-8	1.58	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT. NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: _____
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-21
LAB NO:	45052
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	8:50
BATCH ID:	040604W01

METHOD: DISSOLVED C1-C3 HYDROCARBONS
REFERENCE: RSK 175

DATE ANALYZED:	4/6/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
METHANE	74-82-8	1.58	4.29

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT. NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: _____
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-14
LAB NO:	45053
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	15:15
BATCH ID:	040604W01

METHOD: DISSOLVED C1-C3 HYDROCARBONS
REFERENCE: RSK 175

DATE ANALYZED:	4/6/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
METHANE	74-82-8	1.59	5199

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT, NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: [signature]
DATE: 4/14/04

K PRIME, INC.
LABORATORY QC REPORT

METHOD: DISSOLVED GASSES
REFFERENCE: RSK175/SW3810

SAMPLE ID: LCS040604W01
DUPLICATE ID: LCSD040604W01
BLANK ID: MBLK040604W01
BATCH ID: 040604W01
ANALYZED DATE: 4/6/04
SAMPLE TYPE: WATER
UNITS: µg/L

ACCURACY (MATRIX SPIKE)

PARAMETER	SPIKE ADDED	SAMPLE RESULT	SPIKE RESULT	RECOVERY (%)	LIMITS (%)
METHANE	72.9	ND	64.6	89	50-150
ETHENE	128	ND	153	120	50-150
ETHANE	136	ND	121	89	50-150
PROPANE	200	ND	157	78	50-150

PRECISION (SPIKE DUPLICATE)

COMPOUND NAME	REPORTING LIMIT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)	LIMITS (%)
METHANE	1.58	64.6	64.0	0.9	±30
ETHENE	2.38	153	149	2.7	±30
ETHANE	1.63	121	125	2.9	±30
PROPANE	2.21	157	155	1.2	±30

METHOD BLANK

COMPOUND NAME	CAS NO.	REPORTING LIMIT	METHOD LIMIT	SAMPLE CONC
METHANE	74-82-8	1.58	0.331	ND
ETHENE	74-85-1	2.38	0.547	ND
ETHANE	74-84-0	1.63	0.278	ND
PROPANE	74-84-1	2.21	0.353	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED MDL, NA - NOT APPLICABLE OR AVAILABLE,
MRL - METHOD REPORTING LIMIT, MDL - METHOD DETECTION LIMIT.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-1
LAB NO:	45046
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	13:05

METHOD: DISSOLVED GASES
REFERENCE: RSK 175

DATE ANALYZED:	4/14/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
CARBON DIOXIDE	124-38-9	165	255000

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT, NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: CMC
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-2
LAB NO:	45047
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	12:15

METHOD: DISSOLVED GASES
REFERENCE: RSK 175

DATE ANALYZED:	4/14/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
CARBON DIOXIDE	124-38-9	165	232000

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT, NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: _____
DATE: 4/19/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-3
LAB NO:	45048
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	14:10

METHOD: DISSOLVED GASES
REFERENCE: RSK 175

DATE ANALYZED:	4/14/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
CARBON DIOXIDE	124-38-9	165	179000

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT, NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: RAK
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-5
LAB NO:	45049
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	15:20

METHOD: DISSOLVED GASES
REFERENCE: RSK 175

DATE ANALYZED:	4/14/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
CARBON DIOXIDE	124-38-9	165	122000

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT, NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: MMC
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403670

SAMPLE ID:	MW-7
LAB NO:	45050
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	10:00

METHOD: DISSOLVED GASES
REFERENCE: RSK 175

DATE ANALYZED:	4/14/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
CARBON DIOXIDE	124-38-9	185	147000

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT. NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: _____
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-20
LAB NO:	45051
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	11:00

METHOD: DISSOLVED GASES
REFERENCE: RSK 175

DATE ANALYZED:	4/14/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
CARBON DIOXIDE	124-38-9	165	30500

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT. NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: _____
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-21
LAB NO:	45052
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	8:50

METHOD: DISSOLVED GASES
REFERENCE: RSK 175

DATE ANALYZED:	4/14/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
CARBON DIOXIDE	124-38-9	165	135000

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT. NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: _____
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9984
CLIENT PROJECT: A403570

SAMPLE ID:	MW-14
LAB NO:	15053
SAMPLE TYPE:	WATER
DATE SAMPLED:	03/24/04
TIME SAMPLED:	16:15

METHOD: DISSOLVED GASES
REFERENCE: RSK 175

DATE ANALYZED:	4/14/04
UNITS:	µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
CARBON DIOXIDE	124-38-9	165	290000

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT, NA - NOT APPLICABLE OR AVAILABLE.

APPROVED BY: _____
DATE: 4/14/04

K PRIME, INC.
LABORATORY REPORT

LAB NO: MBLK041404W01
BATCH ID: 041404W01

METHOD: DISSOLVED GASES
REFERENCE: RSK 175

DATE ANALYZED: 4/14/04
UNITS: µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
CARBON DIOXIDE	124-38-9	166	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT, NA - NOT APPLICABLE OR AVAILABLE.

K PRIME, INC.
LABORATORY QUALITY CONTROL REPORT

SAMPLE ID: LCS041404W01
SAMPLE TYPE: WATER
BATCH #: 041404W01

METHOD: DISSOLVED GASES
REFERENCE: RSK 175

DATE ANALYZED: 4/14/04

COMPOUND NAME	SPIKE % REC	DUP % REC	RPD	QC LIMITS RPD	QC LIMITS % REC
CARBON DIOXIDE	116	108	7.14	50.0	50 - 150

NOTES:
NA - NOT APPLICABLE OR AVAILABLE

STL

Submission#: 2004-03-0923

Alpha Analytical, Inc

April 06, 2004

P.O. Box 1508
Ukiah, CA 95482
Attn.: Sheri L. Speaks
Project#: A403570

Attached is our report for your samples received on 03/30/2004 10:30
This report has been reviewed and approved for release. Reproduction of this report is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after 05/14/2004 unless you have requested otherwise.
We appreciate the opportunity to be of service to you. If you have any questions, please call me at (925) 484-1919.
You can also contact me via email. My email address is: ssidhu@stl-inc.com

Sincerely,

Surinder Sidhu

Surinder Sidhu
Project Manager

STL

Submission #: 2004-03-0923

Dissolved Metals

Alpha Analytical, Inc
Attn.: Sheri L. Speaks

P.O. Box 1508
Ukiah, CA 95482
Phone: (707) 468-0401 Fax: (701) 468-5267

Project: A403570

Received: 03/30/2004 10:30

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
A403570-01 MW-1	03/24/2004 13:05	Water	1
A403570-01 MW-2	03/24/2004 12:15	Water	2
A403570-01 MW-3	03/24/2004 14:10	Water	3
A403570-01 MW-5	03/24/2004 15:20	Water	4
A403570-01 MW-7	03/24/2004 10:00	Water	5
A403570-01 MW-20	03/24/2004 11:00	Water	6
A403570-01 MW-21	03/24/2004 08:50	Water	7
A403570-01 MW-14	03/24/2004 16:15	Water	8

STL

Submission #: 2004-03-0923

Dissolved Metals

Alpha Analytical, Inc
Attn.: Sheri L. Speaks

P.O. Box 1508
Ukiah, CA 95482
Phone: (707) 468-0401 Fax: (701) 468-5267

Project: A403570

Received: 03/30/2004 10:30

Prep(s):	3005A	Test(s):	6010B
Sample ID:	**A403570-01 MW-1**	Lab ID:	2004-03-0923 - 1
Sampled:	03/24/2004 13:05	Extracted:	3/30/2004 15:33
Matrix:	Water	QC Batch#:	2004/03/30-05.15

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Iron	42	0.20	mg/L	1.00	03/31/2004 10:23	
Manganese	1.8	0.0050	mg/L	1.00	03/31/2004 10:23	

SEVERN TRENT STL

Submission #: 2004-03-0923

Dissolved Metals

Alpha Analytical, Inc
Attn.: Sheri L. Speaks

P.O. Box 1508
Ukiah, CA 95482
Phone: (707) 468-0401 Fax: (701) 468-5267

Project: A403570

Received: 03/30/2004 10:30

Prep(s):	3005A	Test(s):	6010B
Sample ID:	**A403570-01 MW-2**	Lab ID:	2004-03-0923 - 2
Sampled:	03/24/2004 12:15	Extracted:	3/30/2004 15:33
Matrix:	Water	QC Batch#:	2004/03/30-05.15

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Iron	61	0.20	mg/L	1.00	03/31/2004 10:28	
Manganese	4.0	0.0050	mg/L	1.00	03/31/2004 10:28	

SEVERN TRENT STL

Submission #: 2004-03-0923

Dissolved Metals

Alpha Analytical, Inc
Attn.: Sheri L. Speaks

P.O. Box 1508
Ukiah, CA 95482
Phone: (707) 468-0401 Fax: (701) 468-5267

Project: A403570

Received: 03/30/2004 10:30

Prep(s):	3005A	Test(s):	6010B
Sample ID:	**A403570-01 MW-3**	Lab ID:	2004-03-0923 - 3
Sampled:	03/24/2004 14:10	Extracted:	3/30/2004 15:33
Matrix:	Water	QC Batch#:	2004/03/30-05.15

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Iron	66	0.20	mg/L	1.00	03/31/2004 10:32	
Manganese	5.3	0.0050	mg/L	1.00	03/31/2004 10:32	

SEVERN TRENT STL

Submission #: 2004-03-0923

Dissolved Metals

Alpha Analytical, Inc
Attn.: Sheri L. Speaks

P.O. Box 1508
Ukiah, CA 95482
Phone: (707) 468-0401 Fax: (701) 468-5267

Project: A403570

Received: 03/30/2004 10:30

Prep(s):	3005A	Test(s):	6010B
Sample ID:	**A403570-01 MW-5**	Lab ID:	2004-03-0923 - 4
Sampled:	03/24/2004 15:20	Extracted:	3/30/2004 15:33
Matrix:	Water	QC Batch#:	2004/03/30-05.15

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Iron	4.0	0.20	mg/L	1.00	03/31/2004 10:45	
Manganese	0.48	0.0050	mg/L	1.00	03/31/2004 10:45	

STL

Submission #: 2004-03-0923

Dissolved Metals

Alpha Analytical, Inc
Attn.: Sheri L Speaks

P.O. Box 1508
Ukiah, CA 95482
Phone: (707) 468-0401 Fax: (701) 468-5267

Project: A403570

Received: 03/30/2004 10:30

Prep(s):	3005A	Test(s):	6010B
Sample ID:	**A403570-01 MW-7**	Lab ID:	2004-03-0923 - 5
Sampled:	03/24/2004 10:00	Extracted:	3/30/2004 15:33
Matrix:	Water	QC Batch#:	2004/03/30-05.15

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Iron	55	0.20	mg/L	1.00	03/31/2004 10:50	
Manganese	3.0	0.0050	mg/L	1.00	03/31/2004 10:50	

SEVERN TRENT STL

Submission #: 2004-03-0923

Dissolved Metals

Alpha Analytical, Inc
Attn.: Sheri L. Speaks

P.O. Box 1508
Ukiah, CA 95482
Phone: (707) 468-0401 Fax: (701) 468-5267

Project: A403570

Received: 03/30/2004 10:30

Prep(s):	3005A	Test(s):	6010B
Sample ID:	**A403570-01 MW-20**	Lab ID:	2004-03-0923 - 6
Sampled:	03/24/2004 11:00	Extracted:	3/30/2004 15:33
Matrix:	Water	QC Batch#:	2004/03/30-05.15

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Iron	0.20	0.20	mg/L	1.00	03/31/2004 10:54	
Manganese	1.0	0.0050	mg/L	1.00	03/31/2004 10:54	

Dissolved Metals

Alpha Analytical, Inc
Attn.: Sheri L. Speaks

P.O. Box 1508
Ukiah, CA 95482
Phone: (707) 468-0401 Fax: (701) 468-5267

Project: A403570

Received: 03/30/2004 10:30

Prep(s):	3005A	Test(s):	6010B
Sample ID:	**A403570-01 MW-21**	Lab ID:	2004-03-0923 - 7
Sampled:	03/24/2004 08:50	Extracted:	3/30/2004 15:33
Matrix:	Water	QC Batch#:	2004/03/30-05.15

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Iron	67	0.20	mg/L	1.00	03/31/2004 10:59	
Manganese	2.7	0.0050	mg/L	1.00	03/31/2004 10:59	

Dissolved Metals

Alpha Analytical, Inc
Attn.: Sheri L. Speaks

P.O. Box 1508
Ukiah, CA 95482
Phone: (707) 468-0401 Fax: (701) 468-5267

Project: A403570

Received: 03/30/2004 10:30

Prep(s):	3005A	Test(s):	6010B
Sample ID:	**A403570-01 MW-14**	Lab ID:	2004-03-0923 - 8
Sampled:	03/24/2004 16:15	Extracted:	3/30/2004 15:33
Matrix:	Water	QC Batch#:	2004/03/30-05.15

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Iron	41	0.20	mg/L	1.00	03/31/2004 11:03	
Manganese	1.5	0.0050	mg/L	1.00	03/31/2004 11:03	

Dissolved Metals

Alpha Analytical, Inc
Attn.: Sheri L. Speaks

P.O. Box 1508
Ukiah, CA 95482
Phone: (707) 468-0401 Fax: (701) 468-5267

Project: A403570

Received: 03/30/2004 10:30

Batch QC Report

Prep(s): 3005A
Method Blank

Water

Test(s): 6010B
QC Batch # 2004/03/30-05.15

MB: 2004/03/30-05.15-030

Date Extracted: 03/30/2004 15:33

Compound	Conc.	RL	Unit	Analyzed	Flag
Iron	ND	0.20	mg/L	03/31/2004 09:17	
Manganese	ND	0.0050	mg/L	03/31/2004 09:17	

SEVERN TRENT STL

Submission #: 2004-03-0923

Dissolved Metals

Alpha Analytical, Inc
Attn.: Sheri L. Speaks

P.O. Box 1508
Ukiah, CA 95482
Phone: (707) 468-0401 Fax: (701) 468-5267

Project: A403570

Received: 03/30/2004 10:30

Batch QC Report

Prep(s): 3005A

Test(s): 6010B

Laboratory Control Spike **Water** **QC Batch # 2004/03/30-05.15**

LCS 2004/03/30-05.15-031 Extracted: 03/30/2004 Analyzed: 03/31/2004 09:21
LCSD 2004/03/30-05.15-032 Extracted: 03/30/2004 Analyzed: 03/31/2004 09:25

Compound	Conc.	mg/L	Exp.Conc	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Iron	4.87	4.96	5.00	97.4	99.2	1.8	80-120	20		
Manganese	0.503	0.511	0.500	100.6	102.2	1.6	80-120	20		

017817

Chain-of Custody Record

Date: 3/24/04 Page 1 of 1

Project No.: 9329.000.23

Samplers (Signature:)

Date	Time	Sample Number
3/24/04	1305	MW-1
	1215	MW-2
	210	MW-3
	520	MW-5
	1000	MW-7
	1100	MW-20
	850	MW-21
	415	MW-14

ANALYSES

Sample Number	EPA Method 8021 (Full Scan)	EPA Method 8021 (Hal VOCs only)	EPA Method 8021 (BETX 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)	TOC	Mn++	Fe++	CO_2 & CH_4	MAGNESIUM & CALCIUM
MW-1	A	40	35	70			-1			X	X	X	X	X
MW-2							-2			X	X	X	X	X
MW-3							-3			X	X	X	X	X
MW-5							-4			X	X	X	X	X
MW-7							-5			X	X	X	X	X
MW-20							-6			X	X	X	X	X
MW-21							-7			X	X	X	X	X
MW-14							-8			X	X	X	X	X

REMARKS

Sample Number	Soil (S), Water (W) Vapor (V), or Other (o)	Filtered	Preserved	Cooled	No. of Containers	Additional Comments
MW-1	W	Y/N	Y/N	Y	6	① = Nitrate, sulfate, chloride & alkalinity
MW-2					6	
MW-3					6	
MW-5					6	
MW-7					6	
MW-20					6	
MW-21					6	
MW-14					6	

Laboratory: ALPHA ANALYTICAL JHH 3/25/04

Turnaround Time: NORMAL

Results to: RUSS STEENSON

Total No. of Containers: 48

Relinquished by (Signature)	Date	Time	Received by (Signature)
Printed Name: Russ Hunsucker			Printed Name: Matt Hillyard
Company: Geomatrix			Company: MFG
Received by: Matt Hillyard	Date: 3/25		Relinquished by (Signature):
Printed Name: Matt Hillyard	Time: 740		Printed Name: John Taylor
Company: MFG			Company: Alpha

Relinquished by (Signature)	Date	Time	Received by (Signature)
Printed Name: John Taylor	3/25	1040	Received by:
Company: Alpha	Date: 3/25		Printed Name: Lila Burgess
	Time: 1:40		Company: Alpha

Method of Shipment: LAB PICKUP AT MFG

Laboratory Comments and Log No.:

Date: 3/25 Time: 1530

Date: 3/25 Time: 1530

Geomatrix Consultants
2101 Webster Street, 12th Floor • Oakland, CA 94612
Phone: 510-663-4100 Fax: 510-663-4141

FILE 9329

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

April 20, 2004

RECEIVED 4/27/2004

TASK 23 REMEDIATION PILOT STUDY
GW SAMPLES

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

Dear Mr. Steenson:

Included are the amended results from the testing of material submitted on March 26, 2004 from the 9329.000.23, F&BI 403218 project. Results for 2,4-dichlorophenol and 2,4,5-trichlorophenol have been reported.

We apologize for any inconvenience this may have caused and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Charlene Morrow

Charlene Morrow
Chemist

Enclosures
GMC0416R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-1	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-01
Date Analyzed:	03/31/04	Data File:	033107.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	56	23	74
Phenol-d6	37	12	51
2,4,6-Tribromophenol	92	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<1
2-Chlorophenol	<1
2,4-Dichlorophenol	<1
2,3-Dichlorophenol	<1
2,6-Dichlorophenol	<1
3-Chlorophenol+4-Chlorophenol	3
2,5-Dichlorophenol	<1
2,3,5-Trichlorophenol	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	<1
2,3,4-Trichlorophenol	<1
3,5-Dichlorophenol	<1
2,3,6-Trichlorophenol	<1
3,4-Dichlorophenol	<1
2,3,4,6-Tetrachlorophenol	<1
2,3,4,5-Tetrachlorophenol	<1
2,3,5,6-Tetrachlorophenol	<1
3,4,5-Trichlorophenol	<1
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-2	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-02
Date Analyzed:	03/31/04	Data File:	033108.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	52	23	74
Phenol-d6	37	12	51
2,4,6-Tribromophenol	100	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<1
2-Chlorophenol	<1
2,4-Dichlorophenol	<1
2,3-Dichlorophenol	<1
2,6-Dichlorophenol	<1
3-Chlorophenol+4-Chlorophenol	<2
2,5-Dichlorophenol	<1
2,3,5-Trichlorophenol	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	<1
2,3,4-Trichlorophenol	<1
3,5-Dichlorophenol	<1
2,3,6-Trichlorophenol	<1
3,4-Dichlorophenol	<1
2,3,4,6-Tetrachlorophenol	<1
2,3,4,5-Tetrachlorophenol	<1
2,3,5,6-Tetrachlorophenol	<1
3,4,5-Trichlorophenol	<1
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-3	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-03
Date Analyzed:	03/31/04	Data File:	033109.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	57	23	74
Phenol-d6	37	12	51
2,4,6-Tribromophenol	98	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<1
2-Chlorophenol	<1
2,4-Dichlorophenol	<1
2,3-Dichlorophenol	<1
2,6-Dichlorophenol	<1
3-Chlorophenol+4-Chlorophenol	<2
2,5-Dichlorophenol	<1
2,3,5-Trichlorophenol	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	<1
2,3,4-Trichlorophenol	<1
3,5-Dichlorophenol	<1
2,3,6-Trichlorophenol	<1
3,4-Dichlorophenol	<1
2,3,4,6-Tetrachlorophenol	<1
2,3,4,5-Tetrachlorophenol	<1
2,3,5,6-Tetrachlorophenol	<1
3,4,5-Trichlorophenol	<1
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID.	MW-5	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000 23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-04
Date Analyzed:	03/31/04	Data File:	033110.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	51	23	74
Phenol-d6	35	12	51
2,4,6-Tribromophenol	98	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<1
2-Chlorophenol	<1
2,4-Dichlorophenol	<1
2,3-Dichlorophenol	<1
2,6-Dichlorophenol	<1
3-Chlorophenol+4-Chlorophenol	<2
2,5-Dichlorophenol	<1
2,3,5-Trichlorophenol	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	<1
2,3,4-Trichlorophenol	<1
3,5-Dichlorophenol	<1
2,3,6-Trichlorophenol	<1
3,4-Dichlorophenol	<1
2,3,4,6-Tetrachlorophenol	<1
2,3,4,5-Tetrachlorophenol	<1
2,3,5,6-Tetrachlorophenol	<1
3,4,5-Trichlorophenol	<1
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-7	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-05
Date Analyzed:	04/01/04	Data File:	033116.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	58	23	74
Phenol-d6	38	12	51
2,4,6-Tribromophenol	109	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	2
2-Chlorophenol	<1
2,4-Dichlorophenol	4
2,3-Dichlorophenol	<1
2,6-Dichlorophenol	<1
3-Chlorophenol+4-Chlorophenol	160 ve
2,5-Dichlorophenol	<1
2,3,5-Trichlorophenol	2
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	58 ve
2,3,4-Trichlorophenol	1
3,5-Dichlorophenol	18
2,3,6-Trichlorophenol	<1
3,4-Dichlorophenol	270 ve
2,3,4,6-Tetrachlorophenol	23
2,3,4,5-Tetrachlorophenol	17
2,3,5,6-Tetrachlorophenol	270 ve
3,4,5-Trichlorophenol	93 ve
Pentachlorophenol	8,900 J

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID:	MW-7	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-05 1/50
Date Analyzed:	04/03/04	Data File:	040219.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	50	23	74
Phenol-d6	29	12	51
2,4,6-Tribromophenol	109	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<50
2-Chlorophenol	<50
2,4-Dichlorophenol	<50
2,3-Dichlorophenol	<50
2,6-Dichlorophenol	<50
3-Chlorophenol+4-Chlorophenol	460
2,5-Dichlorophenol	<50
2,3,5-Trichlorophenol	<50
2,4,6-Trichlorophenol	<50
2,4,5-Trichlorophenol	56
2,3,4-Trichlorophenol	<50
3,5-Dichlorophenol	<50
2,3,6-Trichlorophenol	<50
3,4-Dichlorophenol	390
2,3,4,6-Tetrachlorophenol	<50
2,3,4,5-Tetrachlorophenol	<50
2,3,5,6-Tetrachlorophenol	320
3,4,5-Trichlorophenol	92
Pentachlorophenol	9,100 ve

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration is an estimate.

Note: The sample was diluted due to the presence of high levels of material. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-7	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-05 1/1000
Date Analyzed:	03/31/04	Data File:	033112.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	0 vo	23	74
Phenol-d6	0 vo	12	51
2,4,6-Tribromophenol	0 vo	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<1000
2-Chlorophenol	<1000
2,4-Dichlorophenol	<1,000
2,3-Dichlorophenol	<1,000
2,6-Dichlorophenol	<1,000
3-Chlorophenol+4-Chlorophenol	<1,000
2,5-Dichlorophenol	<1,000
2,3,5-Trichlorophenol	<1,000
2,4,6-Trichlorophenol	<1,000
2,4,5-Trichlorophenol	<1,000
2,3,4-Trichlorophenol	<1,000
3,5-Dichlorophenol	<1,000
2,3,6-Trichlorophenol	<1,000
3,4-Dichlorophenol	<1,000
2,3,4,6-Tetrachlorophenol	<1,000
2,3,4,5-Tetrachlorophenol	<1,000
2,3,5,6-Tetrachlorophenol	<1,000
3,4,5-Trichlorophenol	<1,000
Pentachlorophenol	15,000

Note: The sample was diluted due to the presence of high levels of material. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID:	MW-20	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-06
Date Analyzed:	04/03/04	Data File:	040216.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	50	23	74
Phenol-d6	33	12	51
2,4,6-Tribromophenol	99	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<1
2-Chlorophenol	<1
2,4-Dichlorophenol	<1
2,3-Dichlorophenol	<1
2,6-Dichlorophenol	<1
3-Chlorophenol+4-Chlorophenol	2
2,5-Dichlorophenol	<1
2,3,5-Trichlorophenol	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	1
2,3,4-Trichlorophenol	<1
3,5-Dichlorophenol	<1
2,3,6-Trichlorophenol	<1
3,4-Dichlorophenol	8
2,3,4,6-Tetrachlorophenol	<1
2,3,4,5-Tetrachlorophenol	2
2,3,5,6-Tetrachlorophenol	2
3,4,5-Trichlorophenol	2
Pentachlorophenol	9

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-21	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-07
Date Analyzed:	04/01/04	Data File:	033118.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	60	23	74
Phenol-d6	41	12	51
2,4,6-Tribromophenol	101	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<1
2-Chlorophenol	<1
2,4-Dichlorophenol	<1
2,3-Dichlorophenol	<1
2,6-Dichlorophenol	<1
3-Chlorophenol+4-Chlorophenol	140 ve
2,5-Dichlorophenol	<1
2,3,5-Trichlorophenol	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	3
2,3,4-Trichlorophenol	<1
3,5-Dichlorophenol	9
2,3,6-Trichlorophenol	<1
3,4-Dichlorophenol	110 ve
2,3,4,6-Tetrachlorophenol	7
2,3,4,5-Tetrachlorophenol	16
2,3,5,6-Tetrachlorophenol	16
3,4,5-Trichlorophenol	52 ve
Pentachlorophenol	430 ve

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration is an estimate.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID:	MW-21	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-07 1/50
Date Analyzed:	04/03/04	Data File:	040218.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	50	23	74
Phenol-d6	31	12	51
2,4,6-Tribromophenol	73	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<50
2-Chlorophenol	<50
2,4-Dichlorophenol	<50
2,3-Dichlorophenol	<50
2,6-Dichlorophenol	<50
3-Chlorophenol+4-Chlorophenol	200
2,5-Dichlorophenol	<50
2,3,5-Trichlorophenol	<50
2,4,6-Trichlorophenol	<50
2,4,5-Trichlorophenol	<50
2,3,4-Trichlorophenol	<50
3,5-Dichlorophenol	<50
2,3,6-Trichlorophenol	<50
3,4-Dichlorophenol	130
2,3,4,6-Tetrachlorophenol	<50
2,3,4,5-Tetrachlorophenol	<50
2,3,5,6-Tetrachlorophenol	<50
3,4,5-Trichlorophenol	<50
Pentachlorophenol	520

Note: The sample was diluted due to the presence of high levels of material. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-21B	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-08
Date Analyzed:	04/01/04	Data File:	033119.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	54	23	74
Phenol-d6	38	12	51
2,4,6-Tribromophenol	98	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	1
2-Chlorophenol	<1
2,4-Dichlorophenol	<1
2,3-Dichlorophenol	<1
2,6-Dichlorophenol	<1
3-Chlorophenol+4-Chlorophenol	130 ve
2,5-Dichlorophenol	<1
2,3,5-Trichlorophenol	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	3
2,3,4-Trichlorophenol	<1
3,5-Dichlorophenol	9
2,3,6-Trichlorophenol	<1
3,4-Dichlorophenol	98 ve
2,3,4,6-Tetrachlorophenol	6
2,3,4,5-Tetrachlorophenol	14
2,3,5,6-Tetrachlorophenol	17
3,4,5-Trichlorophenol	50 ve
Pentachlorophenol	460 ve

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration is an estimate.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID:	MW-21B	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-08 1/50
Date Analyzed:	04/03/04	Data File:	040217.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	49	23	74
Phenol-d6	32	12	51
2,4,6-Tribromophenol	80	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<50
2-Chlorophenol	<50
2,4-Dichlorophenol	<50
2,3-Dichlorophenol	<50
2,6-Dichlorophenol	<50
3-Chlorophenol+4-Chlorophenol	200
2,5-Dichlorophenol	<50
2,3,5-Trichlorophenol	<50
2,4,6-Trichlorophenol	<50
2,4,5-Trichlorophenol	<50
2,3,4-Trichlorophenol	<50
3,5-Dichlorophenol	<50
2,3,6-Trichlorophenol	<50
3,4-Dichlorophenol	120
2,3,4,6-Tetrachlorophenol	<50
2,3,4,5-Tetrachlorophenol	<50
2,3,5,6-Tetrachlorophenol	<50
3,4,5-Trichlorophenol	<50
Pentachlorophenol	570

Note. The sample was diluted due to the presence of high levels of material. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-14	Client:	Geomatrix Consultants, Inc.
Date Received:	03/26/04	Project:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	403218-09
Date Analyzed:	03/31/04	Data File:	033111.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	56	23	74
Phenol-d6	39	12	51
2,4,6-Tribromophenol	80	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<1
2-Chlorophenol	<1
2,4-Dichlorophenol	<1
2,3-Dichlorophenol	<1
2,6-Dichlorophenol	<1
3-Chlorophenol+4-Chlorophenol	<2
2,5-Dichlorophenol	<1
2,3,5-Trichlorophenol	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	<1
2,3,4-Trichlorophenol	<1
3,5-Dichlorophenol	<1
2,3,6-Trichlorophenol	<1
3,4-Dichlorophenol	<1
2,3,4,6-Tetrachlorophenol	<1
2,3,4,5-Tetrachlorophenol	<1
2,3,5,6-Tetrachlorophenol	<1
3,4,5-Trichlorophenol	<1
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:	9329.000.23, F&BI 403218
Date Extracted:	03/31/04	Lab ID:	mb 04-296
Date Analyzed:	03/31/04	Data File:	033106.D
Matrix:	Water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery	Lower Limit	Upper Limit
2-Fluorophenol	62	23	74
Phenol-d6	41	12	51
2,4,6-Tribromophenol	90	33	134

Compounds:	Concentration ug/L (ppb)
Phenol	<1
2-Chlorophenol	<1
2,4-Dichlorophenol	<1
2,3-Dichlorophenol	<1
2,6-Dichlorophenol	<1
3-Chlorophenol+4-Chlorophenol	<2
2,5-Dichlorophenol	<1
2,3,5-Trichlorophenol	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	<1
2,3,4-Trichlorophenol	<1
3,5-Dichlorophenol	<1
2,3,6-Trichlorophenol	<1
3,4-Dichlorophenol	<1
2,3,4,6-Tetrachlorophenol	<1
2,3,4,5-Tetrachlorophenol	<1
2,3,5,6-Tetrachlorophenol	<1
3,4,5-Trichlorophenol	<1
Pentachlorophenol	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 04/16/04
Date Received: 03/26/04
Project: 9329.000.23, F&BI 403218

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)
Phenol	µg/L (ppb)	10	38	39	18-51	4
2-Chlorophenol	µg/L (ppb)	10	86	91	49-118	6
2,3-Dichlorophenol	µg/L (ppb)	10	100	103	70-130	4
2,6-Dichlorophenol	µg/L (ppb)	10	91	102	70-130	11
3-+ -4-Chlorophenol	µg/L (ppb)	10	73	76	70-130	3
2,5-Dichlorophenol	µg/L (ppb)	10	91	94	70-130	4
2,3,5-Trichlorophenol	µg/L (ppb)	10	92	96	70-130	4
2,4,5-Trichlorophenol	µg/L (ppb)	10	82	86	70-130	4
2,3,4-Trichlorophenol	µg/L (ppb)	10	89	93	70-130	4
3,5-Dichlorophenol	µg/L (ppb)	10	97	87	70-130	11
2,3,6-Trichlorophenol	µg/L (ppb)	10	88	91	70-130	4
3,4-Dichlorophenol	µg/L (ppb)	10	91	94	70-130	3
2,3,4,6-Tetrachlorophenol	µg/L (ppb)	10	99	99	70-130	1
2,3,4,5-Tetrachlorophenol	µg/L (ppb)	10	95	99	70-130	4
2,3,5,6-Tetrachlorophenol	µg/L (ppb)	10	90	92	70-130	2
3,4,5-Trichlorophenol	µg/L (ppb)	10	97	99	70-130	3
Pentachlorophenol	µg/L (ppb)	10	61	67	17-118	9

017819

Chain-of Custody Record

Date: 3/24/04 Page 1 of 1

Project No.: 9329.00.23

Samplers (Signature:)

Date	Time	Sample Number
3/24/04	1305	MW-1
	1215	MW-2
	210	MW-3
	320	MW-5
	1000	MW-7
	1100	MW-20
	850	MW-21
	230	MW-21B
	415	MW-14

ANALYSES

EPA Method 8021 (Full Scan)	EPA Method 8021 (Mid. VOCs only)	EPA Method 8021 (BETX 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	① (PHENOLS BY 8270 SIM)	PHENOLS 8270 SIM
										X	X
										X	X
										X	X
										X	X
										X	X
										X	X
										X	X
										X	X
										X	X

REMARKS

Soil (S), Water (W) Vapor (V), or Other (o)	Filtered	Preserved	Cooled	No. of Containers
W	No	NO	YES	4
				4
				4
				4
				4
				4
				4
				4
				4

Additional Comments

1= chlorinated phenols or PCP-breakdown products (i.e. tetrachlorophenol, trichlorophenol, dichlorophenol & chlorophenol) BY EPA METHOD 8270 with Selective Ion Monitoring

FOUR COOLERS

Laboratory: FRIEDMAN & BRUYA 3012 16th Ave, West Seattle, WA 98119-2029

Turnaround Time: NORMAL

Results to: RUSS EXTENSION

Total No. of Containers: 36

Relinquished by (Signature):	Date: 3/24/04
Printed Name: James Hamilton	Time: 5:00pm
Company: Geomatrix	
Received by:	Date:
Printed Name:	Time:
Company:	

Relinquished by (Signature):	Date:
Printed Name:	Time:
Company:	
Received by:	Date:
Printed Name:	Time:
Company:	

Relinquished by (Signature):	Date:
Printed Name:	Time:
Company:	
Received by:	Date:
Printed Name:	Time:
Company:	

Method of Shipment: FEDEX 8166 0179 3029

Laboratory Comments and Log No.:

Geomatrix Consultants
2101 Webster Street, 12th Floor • Oakland, CA 94612
Phone: 510-663-4100 Fax: 510-663-4141

FILE 9329

FRONTIER
ANALYTICAL LABORATORY

April 11, 2004

RECEIVED 4/13/2004

FAL Project ID: 2513

TASK 23 Pilot Study
GW Samples 3/24/04

Mr. Ross Steenson
Geomatrix Consultants, Inc.
2101 Webster Street, 12th Floor
Oakland, CA 94612

Dear Mr. Steenson,

Enclosed are the results for Frontier Analytical Laboratory project **2513**. This corresponds to your Project No. 9329.000.23. The eight aqueous samples received on 3/26/04 were extracted and analyzed by EPA Method 1613 for tetra through octa chlorinated dibenzo dioxins and furans. Geomatrix Consultants, Inc. requested a turnaround time of ten business days for project **2513**. Frontier Analytical Laboratory successfully fulfilled this request.

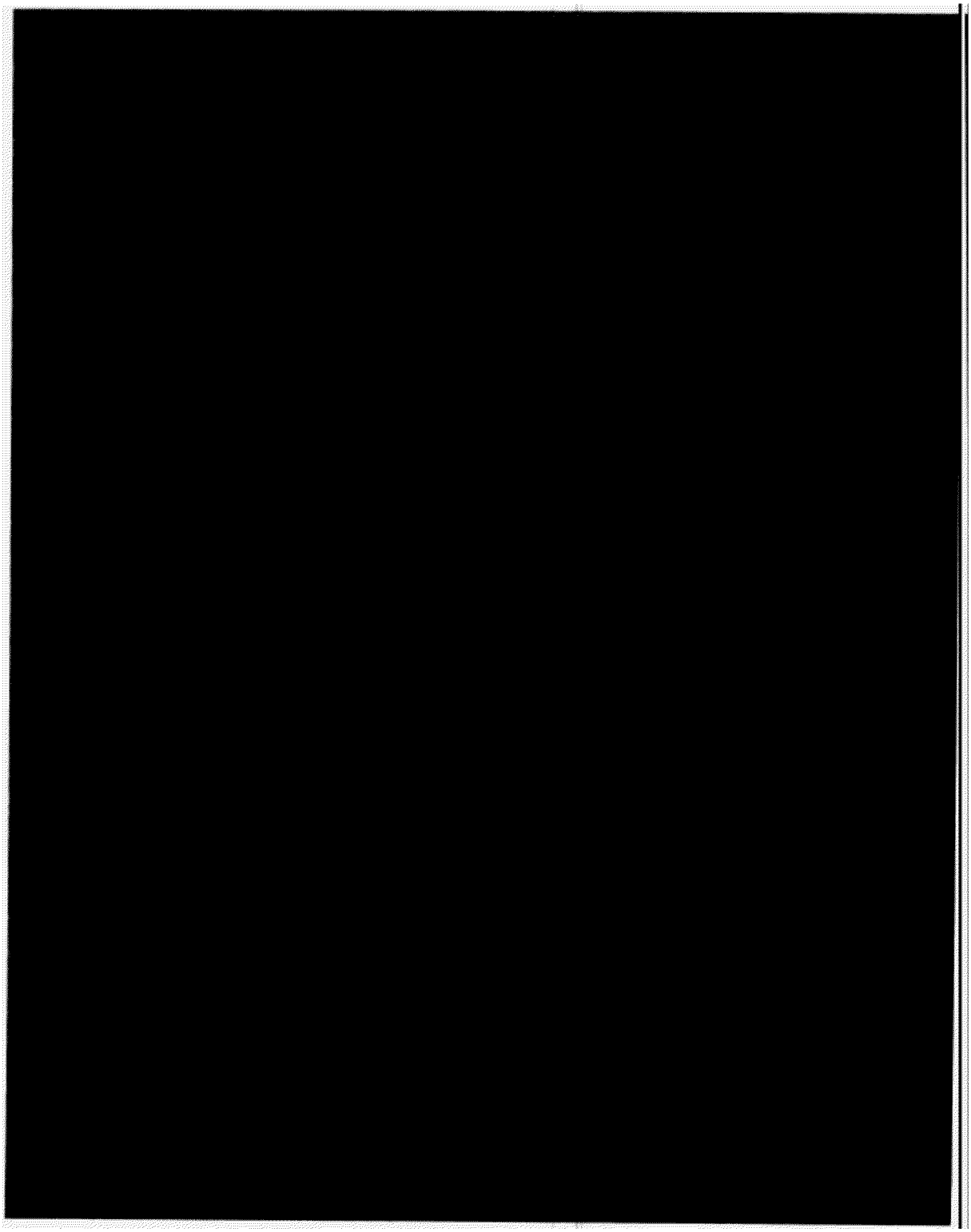
The following report consists of an Analytical Data section and a Sample Receipt section. The Analytical Data section contains the project-sample tracking log, qualifier reference guide, ML/MDL form and the analytical results. The Sample Receipt section contains the chain of custody, sample login form and sample photo. Also included is the Electronic Disk Deliverable (EDD) you requested.

If you have any questions regarding project **2513**, please feel free to contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

Bradley B. Silverbush
Director of Operations

FRONTIER ANALYTICAL LABORATORY
5172 Hillsdale Circle • El Dorado Hills, CA 95762
Tel (916) 934-0900 • Fax (916) 934-0999
dioxin@frontieranalytical.com



Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: **2513**

Received on: **03/26/2004** Project Due: **04/12/2004** Storage: **R1**

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
2513-001-0001-SA	1	9329.000.23	MW-1	EPA 1613 D/F	Aqueous	03/24/2004	01:05 am	03/24/2005
2513-002-0001-SA	1	9329.000.23	MW-2	EPA 1613 D/F	Aqueous	03/24/2004	12:15 pm	03/24/2005
2513-003-0001-SA	1	9329.000.23	MW-3	EPA 1613 D/F	Aqueous	03/24/2004	02:10 am	03/24/2005
2513-004-0001-SA	1	9329.000.23	MW-5	EPA 1613 D/F	Aqueous	03/24/2004	03:20 am	03/24/2005
2513-005-0001-SA	1	9329.000.23	MW-7	EPA 1613 D/F	Aqueous	03/24/2004	10:00 am	03/24/2005
2513-006-0001-SA	1	9329.000.23	MW-20	EPA 1613 D/F	Aqueous	03/24/2004	11:00 am	03/24/2005
2513-007-0001-SA	1	9329.000.23	MW-21	EPA 1613 D/F	Aqueous	03/24/2004	08:50 am	03/24/2005
2513-008-0001-SA	1	9329.000.23	MW-14	EPA 1613 D/F	Aqueous	03/24/2004	04:15 am	03/24/2005

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Qualifier Reference Guide

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J‡	Analyte concentration is below calibration range
M	Maximum possible concentration
NP	Not Provided
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection
-	Analyte Not Detected

‡ "J" values are equivalent to DNQ (detected but not quantified) for California Toxics Rule (CTR)/National Pollutant Discharge Elimination System (NPDES) samples

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EPA Method 1613/8290 Aqueous MDL
(SPE Extraction)

ANALYTICAL LABORATORY

Analyte	ML	MDL
2,3,7,8-TCDD	5.00	1.32
1,2,3,7,8-PeCDD	25.0	1.97
1,2,3,4,7,8-HxCDD	25.0	2.86
1,2,3,6,7,8-HxCDD	25.0	2.82
1,2,3,7,8,9-HxCDD	25.0	2.68
1,2,3,4,6,7,8-HpCDD	25.0	2.40
OCDD	50.0	4.89
2,3,7,8-TCDF	5.00	1.01
1,2,3,7,8-PeCDF	25.0	1.80
2,3,4,7,8-PeCDF	25.0	1.77
1,2,3,4,7,8-HxCDF	25.0	1.00
1,2,3,6,7,8-HxCDF	25.0	1.01
1,2,3,7,8,9-HxCDF	25.0	1.01
2,3,4,6,7,8-HxCDF	25.0	1.06
1,2,3,4,6,7,8-HpCDF	25.0	1.03
1,2,3,4,7,8,9-HpCDF	25.0	1.25
OCDF	50.0	3.97

Project **2413**, extracted 1/22/04; analyzed 2/10/04. Based on a 1.0 Liter sample, pg/L.

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EPA Method 1613
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 2513-001-MB
Client ID: Method Blank
Matrix: Aqueous
Extraction Batch No.: X0214

Date Extracted: 4/5/04
Date Received: NA
Amount: 1.000 L

ICal: PCDDFAL1-2-26-04 Acquired: 9-APR-04
GC Column: db5
Units: pg/L WHO TEQ: 0.00
MS/MSD Batch No.: X0198

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	1.25		-					
1,2,3,7,8-PeCDD	-	2.00		-					
1,2,3,4,7,8-HxCDD	-	3.47		-					
1,2,3,6,7,8-HxCDD	-	3.61		-	Total Tetra-Dioxins	-	1.25		0
1,2,3,7,8,9-HxCDD	-	3.07		-	Total Penta-Dioxins	-	2.00		0
1,2,3,4,6,7,8-HpCDD	-	4.03		-	Total Hexa-Dioxins	-	3.61		0
OCDD	-	6.66		-	Total Hepta-Dioxins	-	4.03		0
2,3,7,8-TCDF	-	1.14		-					
1,2,3,7,8-PeCDF	-	2.28		-					
2,3,4,7,8-PeCDF	-	2.20		-					
1,2,3,4,7,8-HxCDF	-	0.918		-					
1,2,3,6,7,8-HxCDF	-	1.29		-					
2,3,4,6,7,8-HxCDF	-	1.39		-					
1,2,3,7,8,9-HxCDF	-	1.69		-	Total Tetra-Furans	-	1.14		0
1,2,3,4,6,7,8-HpCDF	-	1.70		-	Total Penta-Furans	-	2.28		0
1,2,3,4,7,8,9-HpCDF	-	2.22		-	Total Hexa-Furans	-	1.69		0
OCDF	-	5.20		-	Total Hepta-Furans	-	2.22		0

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	88.8	25.0 - 164	
13C-1,2,3,7,8-PeCDD	101	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	90.0	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	83.1	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	94.6	23.0 - 140	
13C-OCDD	96.5	17.0 - 157	
13C-2,3,7,8-TCDF	93.7	24.0 - 169	
13C-1,2,3,7,8-PeCDF	94.5	24.0 - 185	
13C-2,3,4,7,8-PeCDF	97.3	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	95.2	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	92.2	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	95.1	29.0 - 147	
13C-1,2,3,7,8,9-HxCDF	96.1	28.0 - 136	
13C-1,2,3,4,6,7,8-HpCDF	101	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	103	26.0 - 138	
13C-OCDF	99.1	17.0 - 157	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	91.3	35.0 - 197	

Analyst: _____
Date: 4/11/04

Reviewed by: _____
Date: 4/12/04

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EPA Method 1613
PCDD/F

FAL ID: 2513-001-OPR | Date Extracted: 4/5/04 | ICal: PCDDFAL1-2-26-04 | Acquired: 9-APR-04
Client ID: OPR | Date Received: NA | GC Column: db5
Matrix: Aqueous | Amount: 1.000 L | Units: ng/mL | WHO TEQ: NA
Extraction Batch No.: X0214 | MS/MSD Batch No.: X0198

Compound	Conc	QC Limits
2,3,7,8-TCDD	9.48	6.70 - 15.8
1,2,3,7,8-PeCDD	54.2	35.0 - 71.0
1,2,3,4,7,8-HxCDD	53.2	35.0 - 82.0
1,2,3,6,7,8-HxCDD	55.3	38.0 - 67.0
1,2,3,7,8,9-HxCDD	55.2	32.0 - 81.0
1,2,3,4,6,7,8-HpCDD	53.7	35.0 - 70.0
OCDD	107	78.0 - 144
2,3,7,8-TCDF	10.8	7.50 - 15.8
1,2,3,7,8-PeCDF	53.3	40.0 - 67.0
2,3,4,7,8-PeCDF	51.8	34.0 - 80.0
1,2,3,4,7,8-HxCDF	54.2	36.0 - 67.0
1,2,3,6,7,8-HxCDF	54.8	42.0 - 65.0
2,3,4,6,7,8-HxCDF	54.3	39.0 - 65.0
1,2,3,7,8,9-HxCDF	55.2	35.0 - 78.0
1,2,3,4,6,7,8-HpCDF	54.9	41.0 - 61.0
1,2,3,4,7,8,9-HpCDF	55.7	39.0 - 69.0
OCDF	108	63.0 - 170

Internal Standards	% Rec	QC Limits
13C-2,3,7,8-TCDD	61.8	20.0 - 175
13C-1,2,3,7,8-PeCDD	66.6	21.0 - 227
13C-1,2,3,4,7,8-HxCDD	65.6	21.0 - 193
13C-1,2,3,6,7,8-HxCDD	63.6	25.0 - 163
13C-1,2,3,4,6,7,8-HpCDD	64.6	26.0 - 166
13C-OCDD	62.1	13.0 - 198
13C-2,3,7,8-TCDF	67.5	22.0 - 152
13C-1,2,3,7,8-PeCDF	64.6	21.0 - 192
13C-2,3,4,7,8-PeCDF	66.0	13.0 - 328
13C-1,2,3,4,7,8-HxCDF	72.2	19.0 - 202
13C-1,2,3,6,7,8-HxCDF	71.0	21.0 - 159
13C-2,3,4,6,7,8-HxCDF	70.1	17.0 - 205
13C-1,2,3,7,8,9-HxCDF	69.9	22.0 - 176
13C-1,2,3,4,6,7,8-HpCDF	72.7	21.0 - 158
13C-1,2,3,4,7,8,9-HpCDF	71.3	20.0 - 186
13C-OCDF	66.0	13.0 - 198

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	64.0	31.0 - 191

Analyst: _____ Reviewed by: _____
Date: 4/8/04 Date: 4/12/04

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EPA Method 1613
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 2485-001-MS/MSD
Client ID: P403069-01
Matrix: Aqueous

Date Extracted: 3/15/04
Date Received: 2/27/04
Sample Amount: 1.022 L
MS Amount: 1.025 L
MSD Amount: 1.019 L

ICal: PCDDFAL1-2-26-04
Batch No.: X0198
Units: pg/L

MS Acquired: 18-MAR-04
MSD Acquired: 18-MAR-04
GC Column: db5

Compound	Amount Spiked	Sample Amount	MS Amount	MSD Amount	% RSD	Qual
2,3,7,8-TCDD	200	-	193	182	6.79	
1,2,3,7,8-PeCDD	1000	-	1060	988	7.62	
1,2,3,4,7,8-HxCDD	1000	-	1040	1000	4.78	
1,2,3,6,7,8-HxCDD	1000	-	1090	1020	7.41	
1,2,3,7,8,9-HxCDD	1000	-	1090	1040	5.50	
1,2,3,4,6,7,8-HpCDD	1000	-	1070	993	8.53	
OCDD	2000	23.5	2110	1990	6.28	
2,3,7,8-TCDF	200	-	200	188	6.55	
1,2,3,7,8-PeCDF	1000	-	1080	1020	6.51	
2,3,4,7,8-PeCDF	1000	-	1080	1030	5.56	
1,2,3,4,7,8-HxCDF	1000	-	1110	1020	9.17	
1,2,3,6,7,8-HxCDF	1000	-	1100	1060	4.52	
2,3,4,6,7,8-HxCDF	1000	-	1070	1020	5.61	
1,2,3,7,8,9-HxCDF	1000	-	1090	1030	6.45	
1,2,3,4,6,7,8-HpCDF	1000	-	1140	1060	8.00	
1,2,3,4,7,8,9-HpCDF	1000	-	1130	1050	8.07	
OCDF	2000	-	2180	2010	8.41	
Internal Standards		**% Rec**	**% Rec**	**% Rec**	**QC Limits**	
13C-2,3,7,8-TCDD	2000	72.4	68.5	84.0	25.0 - 150	
13C-1,2,3,7,8-PeCDD	2000	67.8	67.6	80.5	25.0 - 150	
13C-1,2,3,4,7,8-HxCDD	2000	76.3	72.0	83.7	25.0 - 150	
13C-1,2,3,6,7,8-HxCDD	2000	72.4	68.5	80.7	25.0 - 150	
13C-1,2,3,4,6,7,8-HpCDD	2000	74.6	67.8	82.9	25.0 - 150	
13C-OCDD	4000	74.0	66.9	82.0	25.0 - 150	
13C-2,3,7,8-TCDF	2000	82.7	79.5	87.5	25.0 - 150	
13C-1,2,3,7,8-PeCDF	2000	73.1	71.8	83.2	25.0 - 150	
13C-2,3,4,7,8-PeCDF	2000	75.3	73.9	83.0	25.0 - 150	
13C-1,2,3,4,7,8-HxCDF	2000	73.8	69.8	87.0	25.0 - 150	
13C-1,2,3,6,7,8-HxCDF	2000	74.0	70.2	84.1	25.0 - 150	
13C-2,3,4,6,7,8-HxCDF	2000	79.1	72.5	85.6	25.0 - 150	
13C-1,2,3,7,8,9-HxCDF	2000	77.4	72.5	87.6	25.0 - 150	
13C-1,2,3,4,6,7,8-HpCDF	2000	75.2	69.6	85.4	25.0 - 150	
13C-1,2,3,4,7,8,9-HpCDF	2000	75.2	70.2	85.3	25.0 - 150	
13C-OCDF	4000	74.4	66.7	83.0	25.0 - 150	
Cleanup Surrogate						
37Cl-2,3,7,8-TCDD	800	87.0	86.0	88.0	25.0 - 150	

Analyst: _____
Date: 4/11/04

Reviewed by: _____
Date: 4/12/04

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EPA Method 1613
PCDD/F

FAL ID: 2513-001-SA | Date Extracted: 4/5/04 | ICal: PCDDFAL1-2-26-04 | Acquired: 9-APR-04
Client ID: MW-1 | Date Received: 3/26/04 | GC Column: db5
Matrix: Aqueous | Amount: 1.031 L | Units: pg/L | WHO TEQ: 0.00870
Extraction Batch No.: X0214 | MS/MSD Batch No.: X0198

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	1.69		-					
1,2,3,7,8-PeCDD	-	2.85		-					
1,2,3,4,7,8-HxCDD	-	5.19		-					
1,2,3,6,7,8-HxCDD	-	6.00		-	Total Tetra-Dioxins	-	1.69		0
1,2,3,7,8,9-HxCDD	-	5.29		-	Total Penta-Dioxins	-	2.85		0
1,2,3,4,6,7,8-HpCDD	-	4.87		-	Total Hexa-Dioxins	-	6.00		0
OCDD	87.0	-		0.00870	Total Hepta-Dioxins	13.5	-	J	1
2,3,7,8-TCDF	-	1.10		-					
1,2,3,7,8-PeCDF	-	3.21		-					
2,3,4,7,8-PeCDF	-	2.84		-					
1,2,3,4,7,8-HxCDF	-	1.20		-					
1,2,3,6,7,8-HxCDF	-	1.61		-					
2,3,4,6,7,8-HxCDF	-	1.47		-					
1,2,3,7,8,9-HxCDF	-	1.91		-	Total Tetra-Furans	-	1.10		0
1,2,3,4,6,7,8-HpCDF	-	2.21		-	Total Penta-Furans	-	3.21		0
1,2,3,4,7,8,9-HpCDF	-	2.57		-	Total Hexa-Furans	-	1.91		0
OCDF	-	7.41		-	Total Hepta-Furans	-	2.57		0

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	61.0	25.0 - 164	
13C-1,2,3,7,8-PeCDD	62.2	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	46.1	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	46.6	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	44.4	23.0 - 140	
13C-OCDD	43.0	17.0 - 157	
13C-2,3,7,8-TCDF	71.1	24.0 - 169	
13C-1,2,3,7,8-PeCDF	57.3	24.0 - 185	
13C-2,3,4,7,8-PeCDF	67.4	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	45.9	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	48.4	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	57.3	29.0 - 147	
13C-1,2,3,7,8,9-HxCDF	50.2	28.0 - 136	
13C-1,2,3,4,6,7,8-HpCDF	43.2	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	45.3	26.0 - 138	
13C-OCDF	39.0	17.0 - 157	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	96.3	35.0 - 197

Analyst: _____ Reviewed by: _____
Date: 4/11/04 Date: 4/12/04

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EPA Method 1613
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 2513-002-SA | Date Extracted: 4/5/04 | ICal: PCDDFAL1-2-26-04 | Acquired: 9-APR-04
Client ID: MW-2 | Date Received: 3/26/04 | GC Column: db5
Matrix: Aqueous | Amount: 1.027 L | Units: pg/L | WHO TEQ: 0.00611
Extraction Batch No.: X0214 | MS/MSD Batch No.: X0198

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	1.63		-					
1,2,3,7,8-PeCDD	-	2.60		-					
1,2,3,4,7,8-HxCDD	-	4.86		-					
1,2,3,6,7,8-HxCDD	-	5.67		-	Total Tetra-Dioxins	-	1.63		0
1,2,3,7,8,9-HxCDD	-	4.89		-	Total Penta-Dioxins	-	2.60		0
1,2,3,4,6,7,8-HpCDD	-	7.48		-	Total Hexa-Dioxins	-	7.01		0
OCDD	61.1	-		0.00611	Total Hepta-Dioxins	-	9.92		0
2,3,7,8-TCDF	-	1.37		-					
1,2,3,7,8-PeCDF	-	3.65		-					
2,3,4,7,8-PeCDF	-	3.00		-					
1,2,3,4,7,8-HxCDF	-	1.30		-					
1,2,3,6,7,8-HxCDF	-	1.79		-					
2,3,4,6,7,8-HxCDF	-	1.73		-					
1,2,3,7,8,9-HxCDF	-	2.42		-	Total Tetra-Furans	9.62	-		2
1,2,3,4,6,7,8-HpCDF	-	3.01		-	Total Penta-Furans	-	3.65		0
1,2,3,4,7,8,9-HpCDF	-	3.67		-	Total Hexa-Furans	-	2.42		0
OCDF	-	7.05		-	Total Hepta-Furans	-	3.67		0

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	60.9	25.0 - 164	
13C-1,2,3,7,8-PeCDD	65.6	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	53.1	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	51.2	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	54.4	23.0 - 140	
13C-OCDD	56.1	17.0 - 157	
13C-2,3,7,8-TCDF	69.7	24.0 - 169	
13C-1,2,3,7,8-PeCDF	56.4	24.0 - 185	
13C-2,3,4,7,8-PeCDF	69.0	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	56.6	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	54.9	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	65.4	29.0 - 147	
13C-1,2,3,7,8,9-HxCDF	57.3	28.0 - 136	
13C-1,2,3,4,6,7,8-HpCDF	53.9	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	56.1	26.0 - 138	
13C-OCDF	52.6	17.0 - 157	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	96.0	35.0 - 197

Analyst: _____ Reviewed by: _____

Date: 4/11/04 Date: 4/12/04

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EPA Method 1613
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 2513-003-SA | Date Extracted: 4/5/04 | ICal: PCDDFAL1-2-26-04 | Acquired: 9-APR-04
Client ID: MW-3 | Date Received: 3/26/04 | GC Column: db5
Matrix: Aqueous | Amount: 1.022 L | Units: pg/L | WHO TEQ: 1.06
Extraction Batch No.: X0214 | MS/MSD Batch No.: X0198

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	1.90		-					
1,2,3,7,8-PeCDD	-	2.46		-					
1,2,3,4,7,8-HxCDD	-	4.74		-					
1,2,3,6,7,8-HxCDD	-	6.23		-	Total Tetra-Dioxins	4.44	-	J	1
1,2,3,7,8,9-HxCDD	-	4.81		-	Total Penta-Dioxins	24.6	-		2
1,2,3,4,6,7,8-HpCDD	74.6	-		0.746	Total Hexa-Dioxins	32.1	-		2
OCDD	976	-		0.0976	Total Hepta-Dioxins	158	-		2
2,3,7,8-TCDF	-	1.46		-					
1,2,3,7,8-PeCDF	-	3.76		-					
2,3,4,7,8-PeCDF	-	2.88		-					
1,2,3,4,7,8-HxCDF	-	1.15		-					
1,2,3,6,7,8-HxCDF	-	1.53		-					
2,3,4,6,7,8-HxCDF	-	1.44		-					
1,2,3,7,8,9-HxCDF	-	1.99		-	Total Tetra-Furans	4.83	-	J	1
1,2,3,4,6,7,8-HpCDF	21.6	-	J	0.216	Total Penta-Furans	10.8	-	J	1
1,2,3,4,7,8,9-HpCDF	-	2.22		-	Total Hexa-Furans	33.4	-		4
OCDF	33.9	-	J	0.00339	Total Hepta-Furans	60.0	-		2

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	60.8	25.0 - 164	
13C-1,2,3,7,8-PeCDD	62.9	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	54.4	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	52.1	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	57.6	23.0 - 140	
13C-OCDD	58.0	17.0 - 157	
13C-2,3,7,8-TCDF	68.9	24.0 - 169	
13C-1,2,3,7,8-PeCDF	53.1	24.0 - 185	
13C-2,3,4,7,8-PeCDF	65.8	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	58.4	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	56.4	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	65.6	29.0 - 147	
13C-1,2,3,7,8,9-HxCDF	58.9	28.0 - 136	
13C-1,2,3,4,6,7,8-HpCDF	55.2	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	58.2	26.0 - 138	
13C-OCDF	55.3	17.0 - 157	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	93.6	35.0 - 197	

Analyst: _____ Reviewed by: _____
Date: 4/11/04 Date: 4/12/04

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EPA Method 1613
PCDD/F

FAL ID: 2513-004-SA | Date Extracted: 4/5/04 | ICal: PCDDFAL1-2-26-04 | Acquired: 9-APR-04
Client ID: MW-5 | Date Received: 3/26/04 | GC Column: db5
Matrix: Aqueous | Amount: 1.022 L | Units: pg/L | WHO TEQ: 0.286
Extraction Batch No.: X0214 | MS/MSD Batch No.: X0198

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	1.45		-					
1,2,3,7,8-PeCDD	-	2.24		-					
1,2,3,4,7,8-HxCDD	-	3.67		-					
1,2,3,6,7,8-HxCDD	-	4.31		-	Total Tetra-Dioxins	-	1.45		0
1,2,3,7,8,9-HxCDD	-	3.72		-	Total Penta-Dioxins	-	2.24		0
1,2,3,4,6,7,8-HpCDD	19.5	-	J	0.195	Total Hexa-Dioxins	-	4.89		0
OCDD	121	-		0.0121	Total Hepta-Dioxins	36.9	-		2
2,3,7,8-TCDF	-	1.29		-					
1,2,3,7,8-PeCDF	-	3.17		-					
2,3,4,7,8-PeCDF	-	2.80		-					
1,2,3,4,7,8-HxCDF	-	0.747		-					
1,2,3,6,7,8-HxCDF	-	1.02		-					
2,3,4,6,7,8-HxCDF	-	1.05		-					
1,2,3,7,8,9-HxCDF	-	1.38		-	Total Tetra-Furans	-	1.29		0
1,2,3,4,6,7,8-HpCDF	7.60	-	J	0.0760	Total Penta-Furans	-	3.17		0
1,2,3,4,7,8,9-HpCDF	-	2.45		-	Total Hexa-Furans	5.86	-	J	1
OCDF	20.2	-	J	0.00202	Total Hepta-Furans	22.9	-	J	2

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	68.8	25.0 - 164	
13C-1,2,3,7,8-PeCDD	74.1	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	66.2	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	62.0	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	70.8	23.0 - 140	
13C-OCDD	74.0	17.0 - 157	
13C-2,3,7,8-TCDF	77.2	24.0 - 169	
13C-1,2,3,7,8-PeCDF	68.1	24.0 - 185	
13C-2,3,4,7,8-PeCDF	74.3	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	73.4	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	70.8	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	74.5	29.0 - 147	
13C-1,2,3,7,8,9-HxCDF	71.0	28.0 - 136	
13C-1,2,3,4,6,7,8-HpCDF	71.2	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	73.8	26.0 - 138	
13C-OCDF	74.6	17.0 - 157	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	95.7	35.0 - 197	

Analyst: _____
Date: 4/14/04

Reviewed by: _____
Date: 4/12/04

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EPA Method 1613
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 2513-005-SA | Date Extracted: 4/5/04 | ICal: PCDDFAL1-2-26-04 | Acquired: 9-APR-04
Client ID: MW-7 | Date Received: 3/26/04 | GC Column: db5
Matrix: Aqueous | Amount: 1.028 L | Units: pg/L | WHO TEQ: 53.0
Extraction Batch No.: X0214 | MS/MSD Batch No.: X0198

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	1.76		-					
1,2,3,7,8-PeCDD	46.5	-		46.5					
1,2,3,4,7,8-HxCDD	56.4	-		5.64					
1,2,3,6,7,8-HxCDD	-	5.29		-	Total Tetra-Dioxins	17.1	-	M	3
1,2,3,7,8,9-HxCDD	-	4.61		-	Total Penta-Dioxins	69.1	-		2
1,2,3,4,6,7,8-HpCDD	71.4	-		0.714	Total Hexa-Dioxins	74.1	-		2
OCDD	1370	-		0.137	Total Hepta-Dioxins	129	-		2
2,3,7,8-TCDF	-	1.41		-					
1,2,3,7,8-PeCDF	-	3.57		-					
2,3,4,7,8-PeCDF	-	2.67		-					
1,2,3,4,7,8-HxCDF	-	1.13		-					
1,2,3,6,7,8-HxCDF	-	1.57		-					
2,3,4,6,7,8-HxCDF	-	1.28		-					
1,2,3,7,8,9-HxCDF	-	1.95		-	Total Tetra-Furans	106	-		5
1,2,3,4,6,7,8-HpCDF	8.00	-	J	0.0800	Total Penta-Furans	-	3.57		0
1,2,3,4,7,8,9-HpCDF	-	3.17		-	Total Hexa-Furans	18.3	-	J	2
OCDF	31.3	-	J	0.00313	Total Hepta-Furans	33.0	-		2

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	54.1	25.0 - 164	
13C-1,2,3,7,8-PeCDD	54.8	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	42.9	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	41.8	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	40.5	23.0 - 140	
13C-OCDD	40.7	17.0 - 157	
13C-2,3,7,8-TCDF	67.5	24.0 - 169	
13C-1,2,3,7,8-PeCDF	48.8	24.0 - 185	
13C-2,3,4,7,8-PeCDF	64.9	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	44.4	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	44.7	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	57.2	29.0 - 147	
13C-1,2,3,7,8,9-HxCDF	46.0	28.0 - 136	
13C-1,2,3,4,6,7,8-HpCDF	38.2	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	40.4	26.0 - 138	
13C-OCDF	36.3	17.0 - 157	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	92.6	35.0 - 197

Analyst: _____
Date: 4/11/04

Reviewed by: _____
Date: 4/12/04

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EPA Method 1613
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 2513-006-SA
Client ID: MW-20
Matrix: Aqueous
Extraction Batch No.: X0214

Date Extracted: 4/5/04
Date Received: 3/26/04
Amount: 1.025 L

ICal: PCDDFAL1-2-26-04 Acquired: 9-APR-04
GC Column: db5
Units: pg/L WHO TEQ: 1430
MS/MSD Batch No.: X0198

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	4.05	-	J	4.05					
1,2,3,7,8-PeCDD	22.7	-	J	22.7					
1,2,3,4,7,8-HxCDD	60.2	-		6.02					
1,2,3,6,7,8-HxCDD	2060	-		206	Total Tetra-Dioxins	17.2	-		3
1,2,3,7,8,9-HxCDD	466	-		46.6	Total Penta-Dioxins	350	-		6
1,2,3,4,6,7,8-HpCDD	93600	-		936	Total Hexa-Dioxins	14000	-		8
OCDD	1240000	-	*	124	Total Hepta-Dioxins	196000	-		2
2,3,7,8-TCDF	6.50	-	F	0.670					
1,2,3,7,8-PeCDF	19.5	-	J	0.977					
2,3,4,7,8-PeCDF	15.3	-	J	7.65					
1,2,3,4,7,8-HxCDF	52.6	-		5.26					
1,2,3,6,7,8-HxCDF	226	-	D,M	22.6					
2,3,4,6,7,8-HxCDF	57.6	-		5.76					
1,2,3,7,8,9-HxCDF	11.4	-	J	1.14	Total Tetra-Furans	540	-	D,M	18
1,2,3,4,6,7,8-HpCDF	3220	-	D,M	32.2	Total Penta-Furans	1820	-	D,M	12
1,2,3,4,7,8,9-HpCDF	251	-		2.51	Total Hexa-Furans	7280	-	D,M	13
OCDF	13600	-		1.36	Total Hepta-Furans	16600	-	D,M	4

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	55.0	25.0 - 164	
13C-1,2,3,7,8-PeCDD	60.0	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	48.7	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	48.3	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	63.3	23.0 - 140	
13C-OCDD	65.6	17.0 - 157	*
13C-2,3,7,8-TCDF	64.9	24.0 - 169	
13C-1,2,3,7,8-PeCDF	53.4	24.0 - 185	
13C-2,3,4,7,8-PeCDF	63.6	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	52.0	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	50.3	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	58.4	29.0 - 147	
13C-1,2,3,7,8,9-HxCDF	51.5	28.0 - 136	
13C-1,2,3,4,6,7,8-HpCDF	48.4	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	51.7	26.0 - 138	
13C-OCDF	59.6	17.0 - 157	

* = Dilution

Acquired: 10-APR-04

F = DB225 Confirmation

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	87.3	35.0 - 197	

Acquired: 11-APR-04

Analyst: [signature]
Date: 4/12/04

Reviewed by: [signature]
Date: 4/12/2004

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EPA Method 1613
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 2513-007-SA | Date Extracted: 4/5/04 | ICal: PCDDFAL1-2-26-04 | Acquired: 9-APR-04
Client ID: MW-21 | Date Received: 3/26/04 | GC Column: db5
Matrix: Aqueous | Amount: 1.014 L | Units: pg/L | WHO TEQ: 29.6
Extraction Batch No.: X0214 | MS/MSD Batch No.: X0198

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	1.82		-					
1,2,3,7,8-PeCDD	-	2.92		-					
1,2,3,4,7,8-HxCDD	8.76	-	J	0.876					
1,2,3,6,7,8-HxCDD	56.1	-		5.61	Total Tetra-Dioxins	8.40	-		1
1,2,3,7,8,9-HxCDD	9.46	-	J	0.946	Total Penta-Dioxins	40.4	-		2
1,2,3,4,6,7,8-HpCDD	1050	-		10.5	Total Hexa-Dioxins	364	-		6
OCDD	12800	-		1.28	Total Hepta-Dioxins	2130	-		2
2,3,7,8-TCDF	-	1.39		-					
1,2,3,7,8-PeCDF	-	7.15		-					
2,3,4,7,8-PeCDF	-	3.28		-					
1,2,3,4,7,8-HxCDF	6.89	-	J	0.689					
1,2,3,6,7,8-HxCDF	20.9	-	J	2.09					
2,3,4,6,7,8-HxCDF	10.3	-	J	1.03					
1,2,3,7,8,9-HxCDF	-	2.55		-	Total Tetra-Furans	42.1	-	D,M	4
1,2,3,4,6,7,8-HpCDF	605	-		6.05	Total Penta-Furans	124	-	D,M	4
1,2,3,4,7,8,9-HpCDF	32.6	-		0.327	Total Hexa-Furans	771	-	D,M	8
OCDF	1960	-		0.196	Total Hepta-Furans	2540	-		3

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	53.3	25.0 - 164	
13C-1,2,3,7,8-PeCDD	55.2	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	46.7	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	44.2	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	48.9	23.0 - 140	
13C-OCDD	49.6	17.0 - 157	
13C-2,3,7,8-TCDF	59.1	24.0 - 169	
13C-1,2,3,7,8-PeCDF	49.1	24.0 - 185	
13C-2,3,4,7,8-PeCDF	57.8	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	49.1	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	48.6	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	57.7	29.0 - 147	
13C-1,2,3,7,8,9-HxCDF	50.3	28.0 - 136	
13C-1,2,3,4,6,7,8-HpCDF	46.6	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	49.5	26.0 - 138	
13C-OCDF	46.4	17.0 - 157	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	95.9	35.0 - 197

Analyst: _____
Date: 4/11/04

Reviewed by: _____
Date: 4/12/04

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EPA Method 1613
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 2513-008-SA | Date Extracted: 4/5/04 | ICal: PCDDFAL1-2-26-04 | Acquired: 9-APR-04
Client ID: MW-14 | Date Received: 3/26/04 | GC Column: db5
Matrix: Aqueous | Amount: 1.031 L | Units: pg/L | WHO TEQ: 0.109
Extraction Batch No.: X0214 | MS/MSD Batch No.: X0198

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	1.74		-					
1,2,3,7,8-PeCDD	-	3.36		-					
1,2,3,4,7,8-HxCDD	-	5.32		-					
1,2,3,6,7,8-HxCDD	-	5.84		-	Total Tetra-Dioxins	-	1.74		0
1,2,3,7,8,9-HxCDD	-	5.14		-	Total Penta-Dioxins	-	3.36		0
1,2,3,4,6,7,8-HpCDD	10.2	-	J	0.102	Total Hexa-Dioxins	-	5.84		0
OCDD	70.4	-		0.00704	Total Hepta-Dioxins	19.9	-	J	2
2,3,7,8-TCDF	-	1.31		-					
1,2,3,7,8-PeCDF	-	3.96		-					
2,3,4,7,8-PeCDF	-	3.01		-					
1,2,3,4,7,8-HxCDF	-	1.13		-					
1,2,3,6,7,8-HxCDF	-	1.64		-					
2,3,4,6,7,8-HxCDF	-	1.33		-					
1,2,3,7,8,9-HxCDF	-	1.97		-	Total Tetra-Furans	-	1.31		0
1,2,3,4,6,7,8-HpCDF	-	2.42		-	Total Penta-Furans	-	3.96		0
1,2,3,4,7,8,9-HpCDF	-	2.97		-	Total Hexa-Furans	-	1.97		0
OCDF	-	8.53		-	Total Hepta-Furans	-	2.97		0

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	55.5	25.0 - 164	
13C-1,2,3,7,8-PeCDD	55.8	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	45.6	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	45.3	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	44.8	23.0 - 140	
13C-OCDD	41.3	17.0 - 157	
13C-2,3,7,8-TCDF	66.6	24.0 - 169	
13C-1,2,3,7,8-PeCDF	50.6	24.0 - 185	
13C-2,3,4,7,8-PeCDF	62.9	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	45.2	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	44.2	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	57.1	29.0 - 147	
13C-1,2,3,7,8,9-HxCDF	48.7	28.0 - 136	
13C-1,2,3,4,6,7,8-HpCDF	40.1	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	42.3	26.0 - 138	
13C-OCDF	37.7	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	93.2	35.0 - 197	

Analyst: _____
Date: 4/7/04

Reviewed by: _____
Date: 4/12/04

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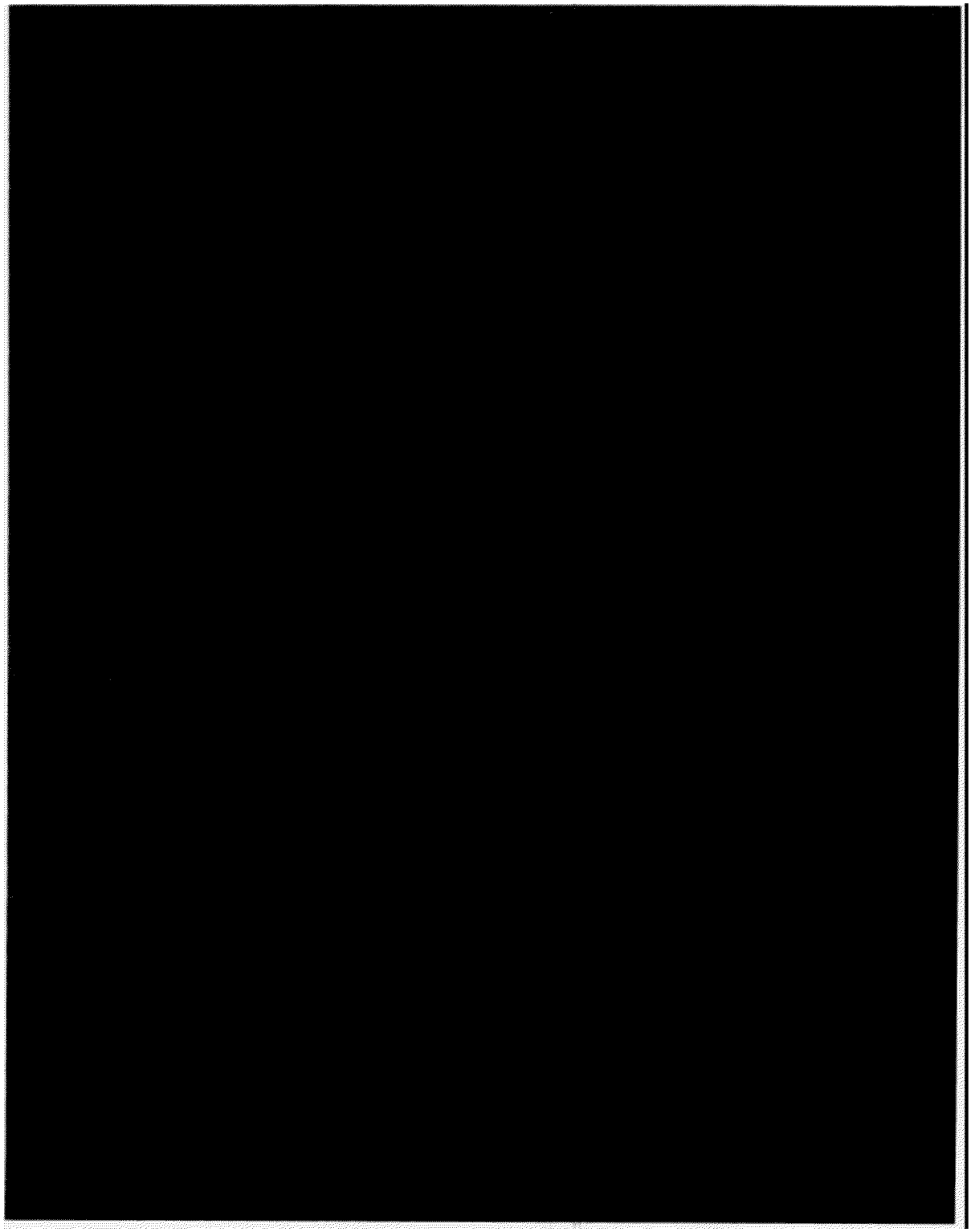

2513/0°C (both coolers)

017818

Chain-of Custody Record

Date: 3/24/04 Page 1 of 1

Project No.: 9329.000.23

Samplers (Signature):

Date	Time	Sample Number
3/24/04	1305	MW-1
	1215	MW-2
	210	MW-3
	320	MW-5
	1000	MW-7
	1100	MW-20
	850	MW-21
	415	MW-14

ANALYSES

EPA Method 8021 (Full Scan)	EPA Method 8021 (Hal. VOCs only)	EPA Method 8021 (BETX 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	BROXNS	FUELANS
										X	X
										X	X
										X	X
										X	X
										X	X
										X	X
										X	X
										X	X

REMARKS

Soil (S), Water (W) Vapor (V), or Other (o)	Filtered	Preserved	Cooled	No. of Containers	Additional Comments
W	NO	Y/N	Y/N	2	TWO COOLERS
				2	
				2	
				2	
				2	
				2	
				2	
				2	
				2	
				16	

Laboratory: FRONTIER ANALYTICAL
5172 HILLSDALE CIRCLE
EL DORADO HILLS CA 95762

Turnaround Time: NORMAL

Results to: ROSS STEENSON

Total No. of Containers: 16

Relinquished by (Signature):	Date: 3/24/04	Relinquished by (Signature):	Date:	Relinquished by (Signature):	Date:
Printed Name: JAMES HANNABAL	Time: 5:30 pm	Printed Name:	Time:	Printed Name:	Time:
Company: Geomatrix		Company:		Company:	
Received by: Sam Vickers	Date: 3/24/04	Received by:	Date:	Received by:	Date:
Printed Name: Sam Vickers	Time: 10:30AM	Printed Name:	Time:	Printed Name:	Time:
Company: Frontier Analytical Laboratory		Company:		Company:	

Method of Shipment: FED EX 3268 0179 3030

Laboratory Comments and Log No.

Geomatrix Consultants
2101 Webster Street, 12th Floor • Oakland, CA 94612
Phone 510-663 4100 Fax 510-663-4141

Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **2513**

Client:	Geomatrix Consultants, Inc.
Client Project ID:	9329.000.23
Date Received:	03/26/2004
Time Received:	10:30 am
Received By:	DV
Logged In By:	DV
# of Samples Received:	8
Duplicates:	8
Storage Location:	R1

Method of Delivery:	Fed-Ex
Tracking Number:	826801793030
Shipping Container Received Intact	Yes
Custody seals(s) present?	No
Custody seals(s) intact?	No
Sample Arrival Temperature (C)	0
Cooling Method	Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	No
Test for residual Chlorine	Yes
Thiosulfate Added	No
Earliest Sample Hold Time Expiration	03/24/2005
Adequate Sample Volume	Yes
Anomalies or additional comments:	

5172 Hillsdale Circle • El Dorado Hills, CA 95762 • Tel (916) 934-0900 • Fax (916) 934-0999 • www.frontieranalytical.com

3172 Hillcrest Circle • El Dorado Hills, CA 95762 • Tel (916) 934-0900 • Fax (916) 934-0999 • www.frontieranalytical.com

5172 Hillsdale Circle • El Dorado Hills, CA 95762 • Tel (916) 934-0900 • Fax (916) 934-0999 • www.frontieranalytical.com

B-3 Storm Water Sampling

Alpha Analytical Laboratories Inc.
208 Mason St. Ukiah, California 95482
e-mail: clientservices@alpha-labs.com • Phone (707) 468-0401 • Fax (707) 468-5267

TASK 6 STORM WATER
2/6/04 ~~OUTFALL~~ STORM WATER SAMPLING
SL-1 → SL-4

20 February 2004

Geomatrix Consultants
Attn: Ross Steenson
2101 Webster Street, 12th Floor
Oakland, CA 94612
RE: SPI - Arcata Stormwater
Work Order: A402242

Enclosed are the results of analyses for samples received by the laboratory on 02/09/04 13:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Melanie B. Neece

Melanie B. Neece For Karen A. Daly
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

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 02/20/04 14:05
Project No: 030275.6
Project ID: SPI - Arcata Stormwater

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402242	02/09/2004 13:30	GEOMAT	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SL-1	A402242-01	Water	02/06/04 15:40	02/09/04 13:30
SL-2	A402242-02	Water	02/06/04 14:50	02/09/04 13:30
SL-3	A402242-03	Water	02/06/04 15:00	02/09/04 13:30
SL-4	A402242-04	Water	02/06/04 15:25	02/09/04 13:30

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.

Melanie B. Neece For Karen A. Daly
Project Manager

2/20/2004

Alpha Analytical Laboratories Inc.
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208 Mason St. Ukiah, California 95482

CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 02/20/04 14:05
Project No: 030275.6
Project ID: SPI - Arcata Stormwater

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402242	02/09/2004 13:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT		PQL	NOTE
SL-1 (A402242-01)			**Sample Type: Water**			**Sampled: 02/06/04 15:40**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AB41815	02/12/04	02/19/04	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	"	"	"	"		*97.2 %*	*79-119*		
Conventional Chemistry Parameters by APHA/EPA Methods									
Total Dissolved Solids	EPA 160.1	AB41319	02/13/04	02/19/04	1	**140 mg/l**		**10**	
SL-2 (A402242-02)			**Sample Type: Water**			**Sampled: 02/06/04 14:50**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AB41815	02/12/04	02/19/04	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	"	"	"	"	"	**1.6 "**		**1.0**	
Surrogate: Tribromophenol	"	"	"	"		*108 %*	*79-119*		
Conventional Chemistry Parameters by APHA/EPA Methods									
Total Dissolved Solids	EPA 160.1	AB41319	02/13/04	02/19/04	1	**150 mg/l**		**10**	
SL-3 (A402242-03)			**Sample Type: Water**			**Sampled: 02/06/04 15:00**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AB41815	02/12/04	02/19/04	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 %*	*79-119*		

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.

Melanie B. Neece For Karen A. Daly
Project Manager

2/20/2004

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: Ross Steenson

Report Date: 02/20/04 14:05
Project No: 030275.6
Project ID: SPI - Arcata Stormwater

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402242	02/09/2004 13:30	GEOMAT	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT		PQL	NOTE
SL-3 (A402242-03)			**Sample Type: Water**			**Sampled: 02/06/04 15:00**			
Conventional Chemistry Parameters by APHA/EPA Methods									
Total Dissolved Solids	EPA 160.1	AB41319	02/13/04	02/19/04	1	**270 mg/l**		**10**	
SL-4 (A402242-04)			**Sample Type: Water**			**Sampled: 02/06/04 15:25**			
Chlorinated Phenols by Canadian Pulp Method									
2,4,6-Trichlorophenol	EnvCan	AB41815	02/12/04	02/19/04	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	"	"	"	"		*109 %*	*79-119*		
Conventional Chemistry Parameters by APHA/EPA Methods									
Total Dissolved Solids	EPA 160.1	AB41319	02/13/04	02/19/04	1	**96 mg/l**		**10**	

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Melanie B. Neece For Karen A. Daly
Project Manager

2/20/2004

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 02/20/04 14:05
Project No: 030275.6
Project ID: SPI - Arcata Stormwater

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402242	02/09/2004 13:30	GEOMAT	

SourceResult

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 AB41815 - Solvent Extraction										
Blank (AB41815-BLK1)				Prepared: 02/12/04 Analyzed: 02/18/04						
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	"							
Surrogate: Tribromophenol	*26.4*		"	*25.0*		*106*	*79-119*			
LCS (AB41815-BS1)				Prepared: 02/12/04 Analyzed: 02/18/04						
2,4,6-Trichlorophenol	4.88	1.0	ug/l	5.00		97.6	81-120			
2,3,5,6-Tetrachlorophenol	5.12	1.0	"	5.00		102	78-108			
2,3,4,6-Tetrachlorophenol	5.05	1.0	"	5.00		101	76-108			
2,3,4,5-Tetrachlorophenol	5.25	1.0	"	5.00		105	80-116			
Pentachlorophenol	5.48	1.0	"	5.00		110	86-109			QL-03
Surrogate: Tribromophenol	*29.3*		"	*25.0*		*117*	*79-119*			
Matrix Spike (AB41815-MS1)	**Source: A402225-01**			Prepared: 02/12/04 Analyzed: 02/18/04						
2,4,6-Trichlorophenol	4.78	1.0	ug/l	5.00	ND	95.6	75-125			
2,3,5,6-Tetrachlorophenol	4.97	1.0	"	5.00	ND	99.4	69-115			
2,3,4,6-Tetrachlorophenol	4.93	1.0	"	5.00	ND	98.6	66-117			
2,3,4,5-Tetrachlorophenol	5.03	1.0	"	5.00	ND	101	70-115			
Pentachlorophenol	5.36	1.0	"	5.00	ND	107	55-124			
Surrogate: Tribromophenol	*27.8*		"	*25.0*		*111*	*79-119*			
Matrix Spike Dup (AB41815-MSD1)	**Source: A402225-01**			Prepared: 02/12/04 Analyzed: 02/18/04						
2,4,6-Trichlorophenol	4.96	1.0	ug/l	5.00	ND	99.2	75-125	3.70	20	
2,3,5,6-Tetrachlorophenol	5.10	1.0	"	5.00	ND	102	69-115	2.58	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.

Melanie B. Neece For Karen A. Daly
Project Manager

2/20/2004

Alpha Analytical Laboratories Inc.
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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 02/20/04 14:05
Project No: 030275.6
Project ID: SPI - Arcata Stormwater

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402242	02/09/2004 13:30	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 AB41815 - Solvent Extraction										
Matrix Spike Dup (AB41815-MSD1)	**Source: A402225-01**			Prepared: 02/12/04		Analyzed: 02/18/04				
2,3,4,6-Tetrachlorophenol	5.04	1.0	"	5.00	ND	101	66-117	2.21	20	
2,3,4,5-Tetrachlorophenol	5.06	1.0	"	5.00	ND	101	70-115	0.595	20	
Pentachlorophenol	5.47	1.0	"	5.00	ND	109	55-124	2.03	20	
Surrogate: Tribromophenol	*28.8*		"	*25.0*		*115*	*79-119*			

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Melanie B. Neece For Karen A. Daly
Project Manager

2/20/2004

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 02/20/04 14:05
Project No: 030275.6
Project ID: SPI - Arcata Stormwater

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402242	02/09/2004 13:30	GEOMAT	

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AB41319 - General Preparation										
Blank (AB41319-BLK1)				Prepared: 02/13/04 Analyzed: 02/19/04						
Total Dissolved Solids	ND	10	mg/l							
Duplicate (AB41319-DUP1)		**Source: A402244-01**		Prepared: 02/13/04 Analyzed: 02/19/04						
Total Dissolved Solids	18600	10	mg/l		19000			2.13	30	

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Melanie B. Neece For Karen A. Daly
Project Manager

2/20/2004

Alpha Analytical Laboratories Inc.
208 Mason St. Ukiah, California 95482
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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 02/20/04 14:05
Project No: 030275.6
Project ID: SPI - Arcata Stormwater

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402242	02/09/2004 13:30	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

MFG, INC.

CHAIN-OF-CUSTODY RECORD AND REQUEST FOR ANALYSIS

COC No. 46211

Arcata Office
675 Crannell Way
Arcata, CA 95521-6741
Phone (707) 826-8430 FAX (707) 826-8417

☐ CA - Irvine
17770 Cartwright Rd.
Ste. 500
Irvine, CA 92614
Tel (949) 253-2661
Fax (949) 253-2664

☐ CA - San Francisco
180 Howard St., Ste. 200
San Francisco, CA 94105
Tel (415) 495-7110
Fax (415) 495-7107

☐ CO - Boulder
4900 Pearl East Cir.
Ste. 300W
Boulder, CO 80301
Tel (303) 447-1823
Fax (303) 447-1836

☐ ID - Osburn
PO Box 30
Wallace, ID 83873
Tel (208) 556-0811
Fax (208) 556-7271

☐ MT - Missoula
PO Box 7158
Missoula, MT 59807
Tel (406) 728-4600
Fax (406) 728-4698

☐ NJ - Edison
1090 King Georges Post Rd.
Ste. 108
Edison, NJ 08837
Tel (732) 738-8700
Fax (732) 738-8711

☐ OR - Portland
9620 SW Taylor St.
Ste. 330
Portland, OR 97225
Tel (503) 228-8616
Fax (503) 228-8651

☐ PA - Pittsburgh
800 Vinial St., Bldg. A
Pittsburgh, PA 15212
Tel (412) 321-2278
Fax (412) 321-2283

☐ TX - Austin
4807 Spicewood Springs Rd.
Bldg. IV, 3rd Floor
Austin, TX 78759
Tel (512) 338-1667
Fax (512) 338-1331

☐ TX - Houston
12337 Jones Rd.
Ste. 230
Houston, TX 77070
Tel (281) 890-5068
Fax (281) 890-5044

☐ TX - Port Lavaca
320 East Main
Port Lavaca, TX 77979
Tel (361) 552-5639
Fax (361) 553-6115

☐ TX - Texarkana
4532 Summerhill Rd.
Texarkana, TX 75503
Tel (903) 794-0625
Fax (903) 794-0626

☐ WA - Seattle
19203 36th Ave. W.
Ste. 100
Lynnwood, WA 98036
Tel (425) 921-4000
Fax (425) 921-4040

Geomatrix
2101 Webster St, 12th Floor
Oakland, CA 94612

PROJECT NO: 030275.6 PROJECT NAME: SPI Arcata Storm Water PAGE: 1 OF: 2

SAMPLER (Signature): Matt Hillyard PROJECT MANAGER: DATE: 2/9/04

METHOD OF SHIPMENT: Courier CARRIER/WAYBILL NO: DESTINATION:

Field Sample Identification	SAMPLES: Sample DATE	TIME	Matrix*	Preservation: HCl	HNO_3	H_2SO_4	COLD	FILTRATION*	Containers: VOLUME (ml/oz)	TYPE*	NO.	ANALYSIS REQUEST: Constituents/Method: PCP/TCP	Handling: HOLD	RUSH	STANDARD	Remarks
SL-1	2/6	1540	AQ				X	U	125ml	G	2	X	A4022402-01		X	Chlorophenols by Canadian pulp method
SL-2		1450									2	X	-02			
SL-3		1500									2	X	-03			
SL-4		1525									2	X	-04			

TOTAL NUMBER OF CONTAINERS 8

LABORATORY COMMENTS/CONDITION OF SAMPLES Cooler Temp: 1.0°C

RELINQUISHED BY: SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME	RECEIVED BY: SIGNATURE	PRINTED NAME	COMPANY
Matt Hillyard	Matt Hillyard	MFG	2/9/04	9:30		John Taylor	Alpha
John Taylor	John Taylor	Alpha	2/9/04	13:30		K. Daly	Alpha Laboratory

*SLT Matrix: AQ - aqueous; SO - soil; SL - sludge; P - pesticide; A - air; OT - other Containers: P - plastic; G - glass; T - teflon; B - brass; OT - other Filtration: F - filtered; U - unfiltered

DISTRIBUTION: PINK: Field Copy YELLOW: Laboratory Copy WHITE: Return to Originator

MFG, INC.

CHAIN-OF-CUSTODY RECORD AND REQUEST FOR ANALYSIS

COC No. 46210

Geomatrix
Oakland

Arcata Office
1 Creekside Way
ata, CA 95521-6341
ne (707) 826-8430- FAX (707) 826-8437

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San Francisco, CA 94105
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☐MT - Missoula
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Missoula, MT 59807
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Fax (512) 338-1331

☐TX - Houston
12337 Jones Rd.
Ste. 230
Houston, TX 77070
Tel (281) 890-5066
Fax (281) 890-5044

☐TX - Port Lavaca
320 East Main
Port Lavaca, TX 77979
Tel (361) 552-4626
Fax (361) 553-6115

☐TX - Texarkana
4532 Summerhill Rd.
Texarkana, TX 75503
Tel (903) 794-0625
Fax (903) 794-0526

☐WA - Seattle
19203 36th Ave. W
Ste. 100
Lynnwood, WA 98036
Tel (425) 921-4000
Fax (425) 921-4040

PROJECT NO: 030275.6 PROJECT NAME: SPI Arcata Storm Water PAGE: 2 OF: 2

SAMPLER (Signature): Matt Hillyard PROJECT MANAGER: Ross Stevenson DATE: 2/9/04

METHOD OF SHIPMENT: Courier CARRIER/WAYBILL NO: _____ DESTINATION: Alpha

Field Sample Identification	SAMPLES: Sample DATE	TIME	Matrix*	Preservation: HCl	HNO_3	H_2SO_4	COLD	FILTRATION*	Containers: VOLUME (ml/oz)	TYPE*	NO.	ANALYSIS REQUEST: Constituents/Method: TDS	Handling: HOLD	RUSH	STANDARD	Remarks
SL-1	2/6	1540	AQ				X		1 Qt	P	1	X			X	A402242-01
SL-2	↓	1450	↓				↓		↓	↓	1	X			↓	-02
SL-3		1500									1	X				-03
SL-4		1525									1	X				-04

TOTAL NUMBER OF CONTAINERS 4

LABORATORY COMMENTS/CONDITION OF SAMPLES Cooler Temp: 1.0E

RELINQUISHED BY: SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME	RECEIVED BY: SIGNATURE	PRINTED NAME	COMPANY
	Matt Hillyard	MFG	2/9/04	9:30		John Taylor	Alpha
	John Taylor	Alpha	2/9/04	13:30		R. Daly	Alpha Laboratory

*MET: Matrix: AQ - aqueous; SO - soil; SL - sludge; P - pellet; O - oil; OT - other. Containers: P - plastic; G - glass; T - teflon; B - brass; OT - other. Filtration: F - filtered; U - unfiltered.

DISTRIBUTION: WHITE: Field Copy YELLOW: Laboratory Copy PINK: Return to Originator

Alpha Analytical Laboratories Inc.
208 Mason St. Ukiah, California 95482
e-mail clientservices@alpha-labs.com • Phone (707) 468-0401 • Fax: (707) 468-5267

TASK 6 STORM WATER
2/6/04 SLOUGH SAMPLING
SL-1 → SL-4

20 February 2004

Geomatrix Consultants
Attn: Ross Steenson
2101 Webster Street, 12th Floor
Oakland, CA 94612
RE: SPI - Arcata Stormwater
Work Order: A402244

Enclosed are the results of analyses for samples received by the laboratory on 02/09/04 13:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Melanie B. Neece

Melanie B. Neece For Karen A. Daly
Project Manager

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CHEMICAL EXAMINATION REPORT

Geomatrix Consultants
2101 Webster Street, 12th Floor
Oakland, CA 94612
Attn: Ross Steenson

Report Date: 02/20/04 14:10
Project No: 030275.6
Project ID: SPI - Arcata Stormwater

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402244	02/09/2004 13:30	GEOMAT	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SL-1 Slough	A402244-01	Water	02/06/04 15:40	02/09/04 13:30
SL-2 Slough	A402244-02	Water	02/06/04 14:50	02/09/04 13:30
SL-3 Slough	A402244-03	Water	02/06/04 15:00	02/09/04 13:30
SL-4 Slough	A402244-04	Water	02/06/04 15:25	02/09/04 13:30

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.

Melanie B. Neece For Karen A. Daly
Project Manager

2/20/2004

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Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
SL-1 Slough (A402244-01)			**Sample Type: Water**			**Sampled: 02/06/04 15:40**		
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Dissolved Solids	EPA 160.1	AB41319	02/13/04	02/19/04	1	**19000 mg/l**	10	
SL-2 Slough (A402244-02)			**Sample Type: Water**			**Sampled: 02/06/04 14:50**		
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Dissolved Solids	EPA 160.1	AB41319	02/13/04	02/19/04	1	**18000 mg/l**	10	
SL-3 Slough (A402244-03)			**Sample Type: Water**			**Sampled: 02/06/04 15:00**		
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Dissolved Solids	EPA 160.1	AB41319	02/13/04	02/19/04	1	**21000 mg/l**	10	
SL-4 Slough (A402244-04)			**Sample Type: Water**			**Sampled: 02/06/04 15:25**		
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Dissolved Solids	EPA 160.1	AB41319	02/13/04	02/19/04	1	**23000 mg/l**	10	

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Project Manager

2/20/2004

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A402244	02/09/2004 13:30	GEOMAT	

SourceResult

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AB41319 - General Preparation										
Blank (AB41319-BLK1)				Prepared: 02/13/04 Analyzed: 02/19/04						
Total Dissolved Solids	ND	10	mg/l							
Duplicate (AB41319-DUP1)		**Source: A402244-01**		Prepared: 02/13/04 Analyzed: 02/19/04						
Total Dissolved Solids	18600	10	mg/l		19000			2.13	30	

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Project Manager

2/20/2004

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Report Date: 02/20/04 14:10
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Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402244	02/09/2004 13:30	GEOMAT	

Notes and Definitions

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

MFG, INC.

CHAIN-OF-CUSTODY RECORD AND REQUEST FOR ANALYSIS

COC No. 46209

☐ Arcata Office
875 Cressee Way
Arcata, CA 95521-6741
Phone (707) 826-8430 FAX (707) 826-8437

☐ CA - Irvine
17770 Cartwright Rd.
Ste. 300
Irvine, CA 92614
Tel (949) 253-2951
Fax (949) 253-2954

☐ CA - San Francisco
180 Howard St., Ste. 208
San Francisco, CA 94105
Tel (415) 495-7110
Fax (415) 495-7107

☐ CO - Boulder
4900 Pearl East Cir.
Ste. 300W
Boulder, CO 80301
Tel (303) 447-1823
Fax (303) 447-1836

☐ ID - Osburn
PO Box 30
Wallace, ID 83873
Tel (208) 556-6811
Fax (208) 556-7271

☐ MT - Missoula
PO Box 7158
Missoula, MT 59807
Tel (406) 728-4600
Fax (406) 728-4698

☐ NJ - Edison
1040 King Georges Post Rd.
Ste. 703
Edison, NJ 08837
Tel (732) 738-5707
Fax (732) 738-5711

☐ OR - Portland
1020 SW Taylor St.
Ste. 530
Portland, OR 97205
Tel (503) 226-9615
Fax (503) 226-9631

☐ PA - Pittsburgh
800 Vinial St., Bldg. A
Pittsburgh, PA 15212
Tel (412) 321-2275
Fax (412) 321-2283

☐ TX - Austin
4807 Spicewood Springs Rd.
Bldg. IV, 1st Floor
Austin, TX 78759
Tel (512) 338-1667
Fax (512) 338-1351

☐ TX - Houston
12337 Jones Rd.
Ste. 230
Houston, TX 77070
Tel (281) 890-5068
Fax (281) 890-5044

☐ TX - Port Lavaca
320 East Main
Port Lavaca, TX 77979
Tel (361) 552-8626
Fax (361) 553-6115

☐ TX - Texarkana
4532 Summerhill Rd.
Texarkana, TX 75503
Tel (903) 794-0625
Fax (903) 794-0626

☐ WA - Seattle
19203 36th Ave W.
Ste. 100
Lynnwood, WA 98036
Tel (425) 921-4000
Fax (425) 921-4040

* Geomatrix
2101 Webster St, 12th Floor
Oakland, CA 94612

PROJECT NO: 030275.6 PROJECT NAME: SPI Arcata Storm Water PAGE: 1 OF: 1

SAMPLER (Signature): Matt Hillyard PROJECT MANAGER: Ross Steenson DATE: 2/9/04

METHOD OF SHIPMENT: Courier CARRIER/WAYBILL NO: _____ DESTINATION: Alpha

	SAMPLES											ANALYSIS REQUEST								
	Sample			Preservation					Containers			Constituents/Method					Handling			Remarks
Field Sample Identification	DATE	TIME	Matrix*	HCl	HNO_3	H_2SO_4	COLD	FILTRATION*	VOLUME (ml/oz)	TYPE*	NO.	TDS					HOLD	RUSH	STANDARD	
SL-1 Slough	2/6	1540	AQ				X	N	1Q+	P	1	X							X	A40244-01
SL-2 Slough	2/6	1450	↓				↓	↓	↓	↓	1	↓							↓	-02
SL-3 Slough	2/6	1500	↓				↓	↓	↓	↓	1	↓							↓	-03
SL-4 Slough	2/6	1525	↓				↓	↓	↓	↓	1	↓							↓	-04
							TOTAL NUMBER OF CONTAINERS				4	LABORATORY COMMENTS/CONDITION OF SAMPLES								Cooler Temp: 1.0°C

RELINQUISHED BY:					RECEIVED BY:		
SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME	SIGNATURE	PRINTED NAME	COMPANY
Matt Hillyard	Matt Hillyard	MFG	2/9/04	9:34	John Taylor	John Taylor	Alpha
John Taylor	John Taylor	Alpha	2/9/04	13:30	K. Daly	K. Daly	Alpha Laboratory

*KEY: Matrix: AQ - aqueous, NA - miscellaneous, SO - soil, SL - sludge, P - petroleum, A - air, OT - other. Containers: P - plastic, G - glass, T - Teflon, B - brass, OT - other. Filtration: F - filtered, U - unfiltered.

DISTRIBUTION: PINK: Field Copy YELLOW: Laboratory Copy WHITE: Return to Originator

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. We performed the data quality review using U.S. Environmental Protection Agency National Functional Guidelines for Organic Data Review (U.S. EPA, 1999), for Inorganic Review (U.S. EPA, 2002a), and for Chlorinated Dioxin/Furan Data Review (U.S. EPA, 2002b).

PRECISION

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

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

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 analysis are reported in laboratory analytical reports, included in Appendix B.

RPDs for quarterly groundwater, pilot study groundwater, and storm water sampling data were acceptable, except for the RPDs for primary sample MW-7 and duplicate sample MW-A. These field samples were collected from monitoring well MW-7 during quarterly groundwater sampling. Previous results for samples collected from this well have been variable.

ACCURACY

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

- **Hold times.** Samples were analyzed within the holding time for each analytical method.
- **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/LCSD analysis.** RPDs were acceptable.

COMPLETENESS

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

GEOMATRIX

TABLE C-1

RELATIVE PERCENT DIFFERENCES BETWEEN DUPLICATE SAMPLES[1]

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Concentrations reported in micrograms per liter (µg/L).

Constituent	Reporting Limit	Quarterly Groundwater Sampling			Pilot Study Groundwater Sampling		
		Sample Concentration MW-7	Duplicate Sample Concentration MW-A	RPD[2]	Sample Concentration MW-21	Duplicate Sample Concentration MW-21B	RPD[2]
PCP	1	19000	7400	87.9%	520	570	9.2%
2,3,4,5-TeCP	1	19	9.9	63.0%	16	14	13.3%
2,3,4,6-TeCP	1	450	150	100.0%	7	6	15.4%
2,3,5,6-TeCP	1	19	8.7	74.4%	16	17	6.1%
2,4,5-TCP	1	--	--	NC	3	3	0.0%
3,4,5-TCP	1	--	--	NC	52	50	3.9%
3,4-DCP	1	--	--	NC	130	120	8.0%
3,5-DCP	1	--	--	NC	9	9	0.0%
3-CP + 4-CP	1	--	--	NC	200	200	0.0%

Notes:

1. Quarterly groundwater samples collected on March 24, 2004 and analyzed by Alpha Analytical Laboratory, of Ukiah, California, for chlorinated phenols using the Canadian Pulp Method, and Pilot Study groundwater samples collected on March 24, 2004 and analyzed by Friedman & Bruya, of Seattle, Washington, for chlorinated phenols using U.S. Environmental Protection Agency Method 8270 SIM. Only constituents with detections in either the primary and/or secondary sample are listed in this table.
2. RPD calculated as ([2(S-D)]/[S+D]) x 100 where S is the sample concentration and D is the blind duplicate sample concentration.
3. "--" indicates chemical not analyzed.
4. For sample concentrations less than two times the reporting limit, the absolute difference between the sample concentration and the blind duplicate sample is calculated.

Abbreviations:

DCP = dichlorophenol
NC = not calculated
PCP = pentachlorophenol
RPD = relative percent difference
TCP = trichlorophenol
TeCP = tetrachlorophenol