# Truck Shop Area Monitoring Wells and Piezometers Installation and Sampling Report

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

Prepared for:

**Sierra Pacific Industries** 

January 27, 2006

Project No. 9329.000





January 27, 2006 Project 9329

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

Attention: Kasey Ashley

Subject: Truck Shop Area Monitoring Wells and Piezometers

Installation and Sampling Report

Sierra Pacific Industries Arcata Division Sawmill

Arcata, California

Dear Ms. Ashley:

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

Sincerely yours, GEOMATRIX CONSULTANTS, INC.

Mike Keim

Senior Environmental Scientist

Edward P. Conti, CEG, CHG

Principal Geologist

RAS/EPC\abr\ms

I:\Doc\_Safe\9000s\9329\14-Task\Well Install Rpt\Word Files\cover Ltr.doc

Enclosure

cc: Bob Ellery, Sierra Pacific Industries (with enclosure)

Gordie Amos, Sierra Pacific Industries (with enclosure)

Fred Evenson, Law Offices of Frederic Evenson (with enclosure)

Jim Lamport, Ecological Rights Foundation (with enclosure)

# Truck Shop Area Monitoring Wells and Piezometers Installation and Sampling Report

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

Prepared for:

**Sierra Pacific Industries** 

Prepared by:

**Geomatrix Consultants, Inc.** 

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

January 27, 2006

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#### PROFESSIONAL CERTIFICATION

#### TRUCK SHOP AREA MONITORING WELLS AND PIEZOMETERS INSTALLATION AND SAMPLING REPORT

Sierra Pacific Industries Arcata Division Sawmill Arcata, California

January 27, 2006 Project No. 9329.000

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

Edward P. Conti, CEG, CHG

Principal Geologist



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## TRUCK SHOP AREA MONITORING WELLS AND PIEZOMETERS INSTALLATION AND SAMPLING REPORT

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

#### 1.0 INTRODUCTION

Geomatrix Consultants, Inc. (Geomatrix) has prepared this report on behalf of Sierra Pacific Industries, Inc. (SPI) to document the installation and sampling of two monitoring wells (MW-22 and MW-23) and two piezometers (P-24 and P-25) at the SPI Arcata Division Sawmill located in Arcata, California (Figure 1). The well and piezometer installations and sampling were performed to assess the possible presence of chemicals in soil and groundwater in the vicinity of a former waste oil underground storage tank (UST) near the truck shop at the site (Figures 2 and 3). The work was performed in accordance with Geomatrix's May 20, 2005 work plan that was approved (with modification<sup>1</sup>) by the California Regional Water Quality Control Board, North Coast Region (RWQCB) on July 14, 2005.

The field methods for the monitoring well and piezometer installations and sampling, the results of soil and groundwater sample analyses, our conclusions, and the planned additional work are discussed in this report.

#### 2.0 MONITORING WELL AND PIEZOMETER INSTALLATION

Monitoring wells MW-22 and MW-23 and piezometers P-24 and P-25 were installed by Fisch Environmental (Fisch) of Valley Springs, California (C57 License Number 683865) on August 1, 2005 under the supervision of a Geomatrix, Professional Geologist. Prior to drilling, well installation permits were obtained from the Humboldt County Division of Environmental Health (HCDEH; Well and Boring Permit Number 27-M, Appendix A), and Underground Service Alert (USA) was notified of the work area (ticket number 274707 was issued for this work). All field activities were conducted pursuant to the requirements of a site-specific health and safety plan.

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<sup>&</sup>lt;sup>1</sup> The work plan was approved with the condition that an additional piezometer (P-25) be installed approximately 30 feet south of the former waste oil UST in the vicinity of former boring WO-3.



The two monitoring wells (MW-22 and MW-23) and piezometer P-25 were installed in the downgradient direction from the former UST, whereas piezometer P-24 was installed in the upgradient direction (Figure 3). Mr. Norm Crawford of the HCDEH inspected the well and piezometer installations on August 1, 2005. The following sections document the field and analytical methodology of the well and piezometer installations and related soil and groundwater sampling activities.

#### 2.1 SOIL BORING AND SOIL SAMPLING

Fisch performed the drilling and sampling using a Geoprobe 6600 hollow-stem-auger drill rig. Each boring was advanced to a total depth of 10 below ground surface (bgs). At each location, Fisch initially used a continuous core sampling system to collect soil cores from the ground surface to the total depth of the boring, except in the boring for monitoring well MW-23, where Fisch inadvertently collected a continuous core sample only to a depth of 5 feet bgs. After the initial core sampling, Fisch overdrilled each boring to total depth using an 8-inch-diameter hollow-stem auger. Geomatrix screened recovered soil cores for organic vapors at approximately 2-foot intervals, using an organic vapor meter with a photoionization detector, and described the soil using American Society of Testing and Materials Standard D2488-90, based on the Unified Soil Classification System, for guidance. Logs of the borings and well/piezometer construction information are included in Appendix B.

Geomatrix collected a soil sample from a 6-inch section of the soil core located at a depth just above the first observed wet soil in each boring. Soil was recovered during the core sampling in plastic tubing; samples were collected from the tubing by cutting the tubing into approximately 6-inch sections and sealing each end of the cut sections with Teflon<sup>TM</sup> sheets and plastic end caps secured with silicon tape. Soil samples collected for volatile organic analyses were collected in Encore<sup>®</sup> samplers. These soil samples were submitted for the analyses described in Section 3.0.

Each sample was then labeled, tightly wrapped in a zip-sealed bag, and placed in an ice-chilled cooler for transfer to Friedman & Bruya, Inc. of Seattle, Washington (Friedman & Bruya), a California Department of Health Services-certified analytical laboratory, under Geomatrix chain-of-custody procedures. Analytical methods are described in Section 3.0, and results are described in Section 4.0.



#### 2.2 WELL AND PIEZOMETER CONSTRUCTION

The monitoring wells and piezometers were constructed using 2-inch-diameter, Schedule 40 PVC blank casing and 0.020-inch slot size, Schedule 40 PVC well screen. Well casings and annular materials were installed through the hollow-stem augers as they were retracted from the boreholes. The well screens were installed from approximately 2.5 to 9.5 feet bgs (the lower approximately 6 inches in each borehole was sloughed in with native material). Approximately 7 feet of filter pack sand (size 2/12) was added, followed by 6 inches of bentonite grout seal placed on the filter pack sand above the screened interval. Surface completion consisted of an 8-inch-diameter, traffic-rated well box that was encased in concrete from grade to depths of 1.5 to 2.5 feet bgs. Well construction details are summarized in Table 1 and are graphically represented on the soil boring logs in Appendix B.

#### 2.3 DEVELOPMENT OF MONITORING WELLS AND PIEZOMETERS

Geomatrix developed the monitoring wells and piezometers on August 30 and 31, 2005 using a combination of surging and pumping techniques. The wells and piezometers were surged with a 2-inch-diameter rubber swab that was cleaned with potable water using a pressure-washer. A diaphragm pump was then used to both remove sediment from the wells and pump groundwater from the screened intervals.

MW-22 was developed until purged groundwater was visibly clear and water quality parameters stabilized to within 10 percent for specific conductance, 0.05 pH units for pH, and 1 degree Celsius for temperature. A total of approximately 74 gallons (about 123 casing volumes) of groundwater were extracted from monitoring well MW-22.

Due to very slow recharge in well MW-23 and piezometers P-24 and P-25, development was performed by repeatedly purging the wells dry and allowing them to recharge. A total of approximately 8.5 gallons (about 14 casing volumes), 7.5 gallons (about 10 casing volumes) and 4.5 gallons (about 9 casing volumes) of groundwater were extracted from well MW-23 and piezometers P-24 and P-25, respectively.

#### 2.4 GROUNDWATER SAMPLING OF MONITORING WELLS AND PIEZOMETERS

The newly installed groundwater monitoring wells and piezometers were sampled on September 8, 2005. Prior to sampling, the depth to water was measured using an electronic sounder, which was cleaned with an Alconox® detergent solution and rinsed with distilled water prior to use at each location. Depth-to-water measurements are summarized in Table 2.



The monitoring wells and piezometers were purged and sampled on September 8, 2005 using dedicated, disposable Teflon<sup>®</sup> bailers to remove standing water in the well casings. Field personnel measured and recorded readings of temperature, pH, and specific conductance during groundwater purging activities. The purging activities were ceased when a minimum of three well casing volumes of water had been removed and water quality parameters stabilized to within 10 percent of specific conductance, 0.05 pH units for pH, and 1 degree Celsius for temperature. Copies of the field records for groundwater monitoring and sampling activities are included in Appendix B.

After purging, groundwater samples were collected from each well or piezometer using dedicated Teflon® bailers. An additional groundwater sample was collected from monitoring well MW-22 and submitted to the laboratory as a blind duplicate sample, labeled BD-01-200509. A field sample of groundwater was monitored for temperature, pH, and specific conductance just prior to collecting the groundwater sample to record the water quality parameters of the groundwater being sampled. These field parameters are summarized in Table 3.

Groundwater collected from the monitoring wells and piezometers was placed in three 1-Liter amber glass bottles, two 500-milliliter (mL) amber glass bottles, and four 40-mL hydrochloric acid-preserved glass vials that were all sealed with Teflon®-lined screw caps. After filling, the sample containers were labeled and placed in an ice-cooled, insulated chest for transport to Friedman & Bruya for analysis.

#### 2.5 INVESTIGATION-DERIVED WASTE

Drilling equipment used during the soil sampling and well installation activities was cleaned with potable water using a pressure-washer at the facility's steam cleaning pad. The equipment wash water generated at the steam cleaning pad collected in a sump and passed through an oilwater separator before discharging to the sanitary sewer system.

Soil generated during the well and piezometer installation activities and development and purge water from development and sampling activities were placed in 55-gallon steel drums and labeled. The drums are temporarily stored in a covered and secondarily contained waste accumulation location at the site pending characterization and disposal at an appropriate off-site waste-disposal facility.



#### 2.6 WELL SURVEY

Omsberg & Preston (Omsberg), a California-licensed land surveyor from Eureka, California, surveyed monitoring wells MW-22 and MW-23 and piezometers P-24 and P-25 on August 11, 2005. Omsberg located the wells relative to regional datums for horizontal (latitude and longitude) and vertical (elevation) control. The horizontal datum was the North American Datum of 1983 and the vertical datum was the North American Vertical Datum of 1988. For vertical control, both the top of the north side of the well casing and the ground surface were surveyed. Survey data are summarized in Table 1 with the well construction details. Survey data from Omsberg are included in Appendix C.

#### 3.0 LABORATORY ANALYTICAL METHODS AND DATA QUALITY REVIEW

Soil samples taken from the borings and groundwater samples taken from the developed piezometers and monitoring wells were submitted to Friedman & Bruya under Geomatrix chain-of-custody procedures for analyses for the following constituents:

- Volatile Organic Compounds—EPA Method 8260;
- Polycyclic Aromatic Hydrocarbons—EPA Method 8270 SIM;
- Phenol—EPA Method 8270;
- Total Petroleum Hydrocarbon as gasoline—EPA 8015M; and
- Total Petroleum Hydrocarbon as diesel and motor oil—EPA Method 8015M after silica gel preparation (EPA Method 3630).

Geomatrix evaluated data quality using data verification procedures described in the *U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (U.S. EPA, 1999). A check of laboratory quality assurance and quality control (QA/QC) procedures, such as method blank analyses, surrogate recoveries, and laboratory control spikes and duplicate spikes, was included in the review. Based on the procedures, data quality review, and qualifications to some of the soil results, as discussed in Appendix D, the analytical data quality is satisfactory and the soil and groundwater sample results are considered representative.

#### 4.0 RESULTS

This section presents results of soil and groundwater sampling activities. Observations of subsurface conditions (lithology and groundwater occurrence) are discussed relative to previous investigation and well monitoring results.



#### 4.1 SITE GEOLOGY AND HYDROGEOLOGY

In general, subsurface conditions encountered during the monitoring well and piezometer installations, including lithology and occurrence of groundwater, were similar to those encountered in previous investigations in this area of the site (MFG and Geomatrix, 2004). Non-native soil encountered included baserock beneath the asphalt in the borings for MW-22, MW-23, and P-24 and a 0.25- to 1.5-foot layer of wood fragments in the depths interval of 4.5 to 9.5 feet bgs in the borings for MW-22, P-24, and P-25. Native soil encountered consisted of fine- to medium-grained sand that has been characterized as being of sand dune origin, silt, silt with sand, sandy silt, and clay.

Depth to first groundwater in the borings ranged from about 5.0 to 6.5 feet bgs. These depths are similar to the depth-to-groundwater measurements that have been measured in the vicinity during previous boring activities (MFG and Geomatrix, 2004).

During the groundwater monitoring event, depth to groundwater measured in the monitoring wells and piezometers ranged from 4.84 to 5.76 feet below the measuring point, with associated groundwater elevations ranging from 9.36 to 10.49 feet relative to the North American Vertical Datum of 1988. Groundwater elevation data from these monitoring wells indicate that the direction of shallow groundwater flow is generally to the southeast (Figure 4). The magnitude of the lateral hydraulic gradient is approximately 0.02 foot/foot based upon the 9.5- and 10-foot estimated contour intervals.

#### 4.2 SOIL ANALYTICAL RESULTS

Laboratory analytical results (Appendix E) for soil samples collected during the installation of the monitoring wells and piezometers are summarized in Table 4 and Figure 5 and discussed below.

VOCs and phenol were not detected above their respective laboratory reporting limits.

The only PAHs detected were phenanthrene, detected at a concentration of 0.0072 milligrams per kilogram (mg/kg) in the 4.0 ft bgs sample from MW-23, and benzo(b)fluoranthene, detected at a concentration of 0.068 mg/kg in the 5.5 ft bgs sample from P-24.

TPH as gasoline was detected at 2 mg/kg in the 6.0 ft bgs sample from MW-22. TPH as diesel was detected at 130 mg/kg in the 6.5 ft bgs sample from MW-22 and at 410 mg/kg in the 5.0 ft bgs sample from P-25. TPH as motor oil was detected at 470 mg/kg in the 6.5 ft bgs sample



from MW-22, at 53 mg/kg in the 5.5 ft bgs sample from P-24, and at 98 mg/kg in the 5.0 ft bgs sample from P-25.

#### 4.3 GROUNDWATER ANALYTICAL RESULTS

Laboratory analytical results (Appendix F) for groundwater samples collected from the monitoring wells and piezometers are summarized in Table 5 and Figure 6 and discussed below.

The only VOCs detected were acetone and toluene. Acetone was detected in the groundwater samples collected from MW-22 at 28 micrograms per liter ( $\mu$ g/L) and 36  $\mu$ g/L (for primary and blind duplicate samples, respectively). Toluene was detected in the groundwater samples collected from MW-22 at 23  $\mu$ g/L and 29  $\mu$ g/L (for primary and blind duplicate samples, respectively) and in the groundwater sample collected from P-25 at 130  $\mu$ g/L.

Phenol and PAHs were not detected in any of the samples.

TPH as gasoline was detected only in the groundwater sample collected from piezometer P-25, at a concentration of 330  $\mu$ g/L. TPH as diesel was detected at a concentration of 76  $\mu$ g/L in the groundwater sample collected from piezometer P-24 and at 80  $\mu$ g/L in the groundwater sample collected from piezometer P-25. TPH as motor oil was detected at 280  $\mu$ g/L, 350  $\mu$ g/L, and 750  $\mu$ g/L in the groundwater samples collected from MW-23, P-24, and P-25, respectively.

#### 5.0 CONCLUSIONS

Based on the results of the soil samples collected, soil in the former waste oil UST area appears to be impacted by low concentrations of petroleum hydrocarbons and two PAHs. Groundwater in the truck shop area appears to be impacted by low concentrations of petroleum hydrocarbons. No benzene or PAHs were detected in the groundwater samples. Monitoring wells MW-22 and MW-23 will be monitored for petroleum hydrocarbons and sampled semiannually, and piezometers P-24 and P-25 will be used to measure depth to water to provide information on the occurrence and movement of groundwater. The results will be reported semiannually in accordance with the RWQCB-approved work plan. The next monitoring and sampling event for these wells and piezometers is scheduled for March 2006.



#### 6.0 REFERENCES

- MFG, 2003, Waste Oil Underground Storage Tank Investigation and Closure Report, Sierra Pacific Industries Arcata Division Sawmill, June 10.
- MFG and Geomatrix, 2004, Former Waste Oil Underground Storage Tank Additional Investigation Report, Arcata Division Sawmill, Sierra Pacific Industries, Arcata, California, March 30.
- U.S. EPA, 1999, Contract Laboratory Program National Functional Guidelines for Organic Data Review (OSWER 9240.1-05A-P PB99-963506, EPA 540/R-99-008; October 1999).





#### MONITORING WELL AND PIEZOMETER CONSTRUCTION DETAILS

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 <sup>1</sup>	Longitude <sup>1</sup>	Ground Level Elevation <sup>1</sup> (ft msl)	Top of Casing Elevation <sup>1</sup> (ft msl)	Screened Interval (ft bgs)	Screen Slot Size (inches)	Filter Pack Interval (ft bgs)	Bentonite Seal Interval (ft bgs)	Surface Seal Interval <sup>2</sup> (ft bgs)
Shallow We	ells												
MW-22	1-Aug-05	10	10	2	40.8631428	124.1555472	15.37	15.12	3.5 - 9.0	0.02	3.0 - 10	2.5 - 3.0	0 - 2.5
MW-23	1-Aug-05	10	10	2	40.8632724	124.1553765	15.34	15.11	2.5 - 9.0	0.02	2.0 - 10	1.5 - 2.0	0 - 1.5
P-24	1-Aug-05	10	10	2	40.8634773	124.1557306	15.56	15.33	3.5 - 9.0	0.02	3.0 - 10	2.5 - 3.0	0 - 2.5
P-25	1-Aug-05	10	10	2	40.8632884	124.1556166	16.04	15.75	3.5 - 9.0	0.02	3.0 - 10	2.5 - 3.0	0 - 2.5

#### Notes:

- 1. Monitoring wells surveyed by Omsberg and Preston of Eureka California on August 11, 2005; latitude and longitude surveyed relative to North American Datum (NAD) of 1983 and elevations surveyed relative to the North American Vertical Datum (NAVD) of 1988.
- 2. Surface seal interval consists of the concrete surface completion and a neat cement sanitary seal, if applicable.

#### Abbreviations:

ft bgs = feet below ground surface

ft msl = feet mean sea level



#### SUMMARY OF WATER LEVEL MEASUREMENTS

Sierra Pacific Industries Arcata Division Sawmill Arcata, California

Well No.	Measurement Date	MP Elevation <sup>1</sup> (ft NAVD 88)	Depth to Water (ft bMP)	Water Level Elevation (ft NAVD 88)
MW-22	9/8/2005	15.12	5.76	9.36
MW-23	9/8/2005	15.11	5.44	9.67
P-24	9/8/2005	15.33	4.84	10.49
P-25	9/8/2005	15.75	5.47	10.28

#### Note

 Monitoring wells surveyed by Omsberg & Preston of Eureka, California. Wells were surveyed on August 11, 2005; elevations shown are relative to the Northern American Vertical Datum of 1988.

#### Abbreviations:

ft NAVD 88 = feet above North American Vertical Datum of 1988 ft bMP = feet below measuring point



#### SUMMARY OF WATER QUALITY PARAMETERS

Sierra Pacific Industries Arcata Division Sawmill Arcata, California

		F	ield Measurements	, <sup>1</sup>
Well No.	Date Sampled	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (pH Units)
MW-22	9/8/2005	19	740	6.6
MW-23	9/8/2005	18	4,400	6.7
P-24	9/8/2005	21	1,500	6.2
P-25	9/8/2005	18	410	6.1

#### Note:

1. Water quality parameters measured in the field using an Ultrameter instrument; reported measurements recorded towards end of purge after parameters stabilized or from the last purge volume if a well was repeatedly purged dry.

#### Abbreviations:

°C = degrees Celsius

μmhos/cm = micromhos per centimeter at 25 °C



#### SOIL LABORATORY ANALYTICAL RESULTS 1

Sierra Pacific Industries Arcata Division Sawmill Arcata, California

			Hydrod	carbon Coi	nstituents			
Sample ID	Date	Depth (ft bgs)	TPH as Gasoline (mg/kg)	TPH as Diesel <sup>2</sup> (mg/kg)	TPH as Motor Oil <sup>2</sup> (mg/kg)	VOCs (mg/kg)	Phenol (mg/kg)	PAHs (mg/kg)
MW-22-6.0	8/1/2005	6.0	2			ND <sup>3,4</sup>		
MW-22-6.5	8/1/2005	6.5	1	130	470	1	< 0.3	ND
MW-23-3.5	8/1/2005	3.5	<2			ND		
MW-23-4.0	8/1/2005	4.0	1	< 50	< 50	- 1	< 0.3	phenanthrene 0.0072
P-24-5.0	8/1/2005	5.0	<2			ND		
P-24-5.5	8/1/2005	5.5	1	< 50	53	1	< 0.3	benzo(b)fluoranthene 0.068
P-25-4.5	8/1/2005	4.5	<2			ND		
P-25-5.0	8/1/2005	5.0		410	98		< 0.3	ND

#### Notes:

- 1. Samples analyzed by Friedman & Bruya, Inc., in Seattle, Washington, for total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, and TPH as motor oil by EPA Method 8015 Modified; for volatile organic compounds (VOCs) by EPA Method 8260B; for phenol by EPA Method 8270C; and for polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270C SIM.
- 2. Sample extracts passed through a silica gel column prior to analysis.
- 3. Methylene chloride was detected in the sample at a concentration of 0.89 mg/kg; however, it was also detected in the method blank at a concentration of 0.82 mg/kg, and therefore, the sample result is considered as not detected above the reporting limit.
- 4. ND = not detected at or above the analytical laboratory reporting limit. Reporting limits vary for each compound; see the analytical laboratory reports (Appendix E) for compound-specific reporting limits.

#### Abbreviations:

ft bgs = feet below ground surface

EPA = U.S. Environmental Protection Agency

mg/kg = milligrams per kilogram; parts per million

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





#### GROUNDWATER LABORATORY ANALYTICAL RESULTS 1

Sierra Pacific Industries Arcata Division Sawmill Arcata, California

		Hydrocarbon Constituents					
Sample Location	Date	TPH as Gasoline (µg/L)	TPH as Diesel <sup>2</sup> (μg/L)	TPH as Motor Oil <sup>2</sup> (µg/L)	VOCs <sup>3</sup> (μg/L)	Phenol (µg/L)	PAHs (μg/L)
					acetone 28		
MW-22	9/8/2005	<100	< 50	<250	toluene 23	<10	$ND^4$
11111 22					acetone 36		
	9/8/2005	<100	< 50	<250	toluene 29	<10	ND
MW-23	9/8/2005	<100	< 50	280	ND	<10	ND
P-24	9/8/2005	<100	76	350	ND	<10	ND
P-25	9/8/2005	330	80	750	toluene 130	<10	ND

#### Notes:

- 1. Samples analyzed by Friedman & Bruya, Inc., in Seattle Washington, for total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel and TPH as motor oil by EPA Method 8015 Modified, for volatile organic compounds (VOCs) by EPA Method 8260B, for phenol by EPA Method 8270C, and for polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270C SIM.
- 2. Sample extracts passed through a silica gel column prior to analysis.
- 3. Only detected compounds are presented.
- 4. ND = not detected at or above the analytical laboratory reporting limit. Reporting limits vary for each compound; see the analytical laboratory reports (Appendix F) for compound-specific reporting limits.
- 5. Duplicate sample.

#### Abbreviations:

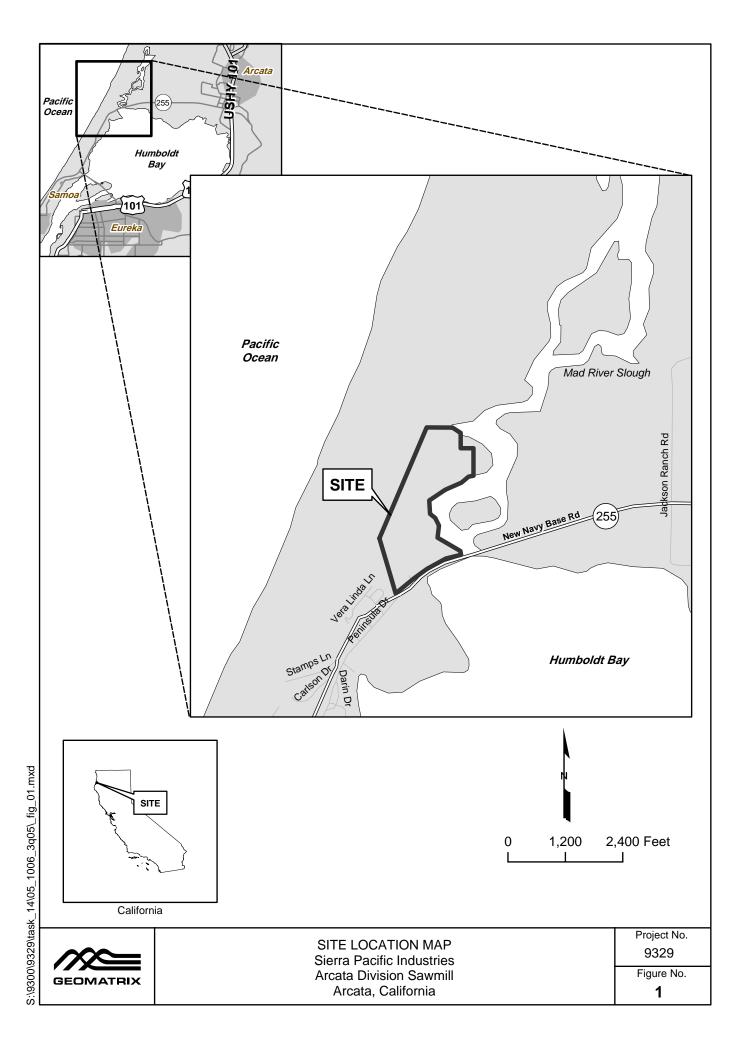
 $\mu$ g/L = micrograms per liter; parts per billion

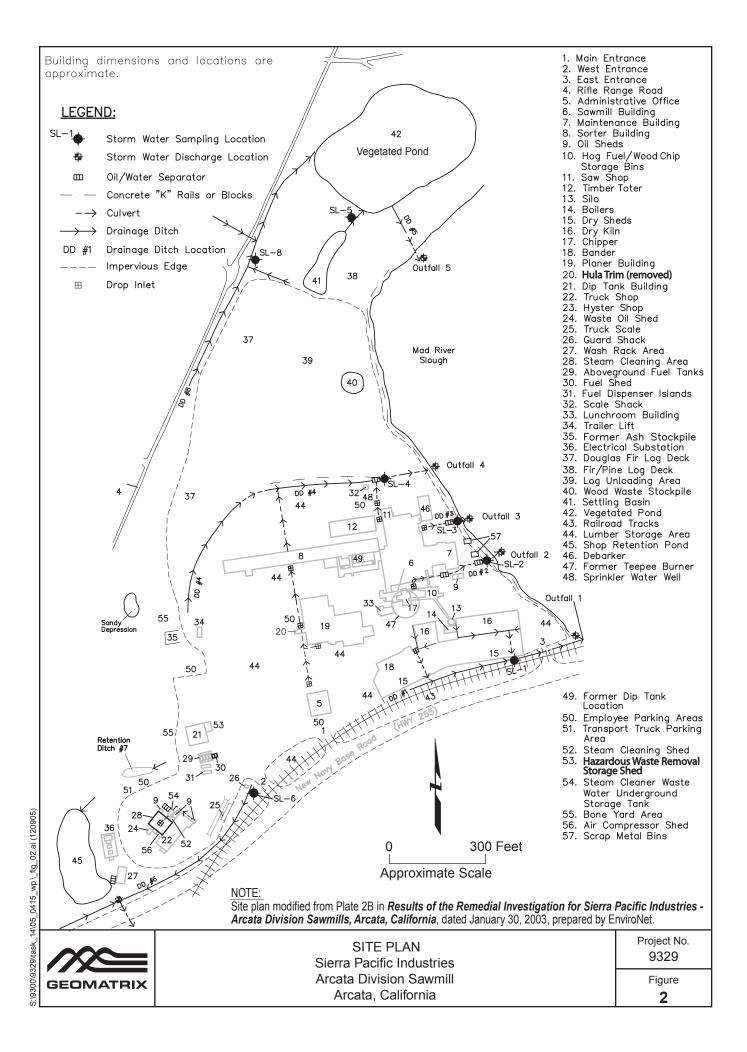
<= target analyte was not detected at or above the laboratory reporting limit shown

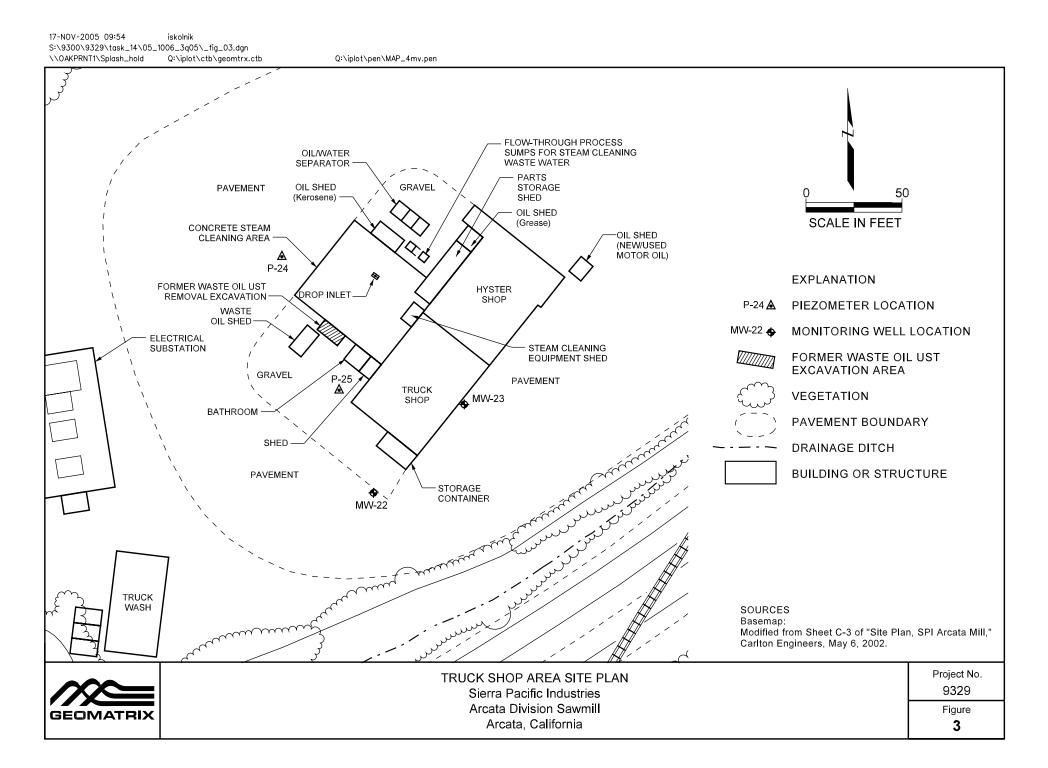
EPA = U.S. Environmental Protection Agency

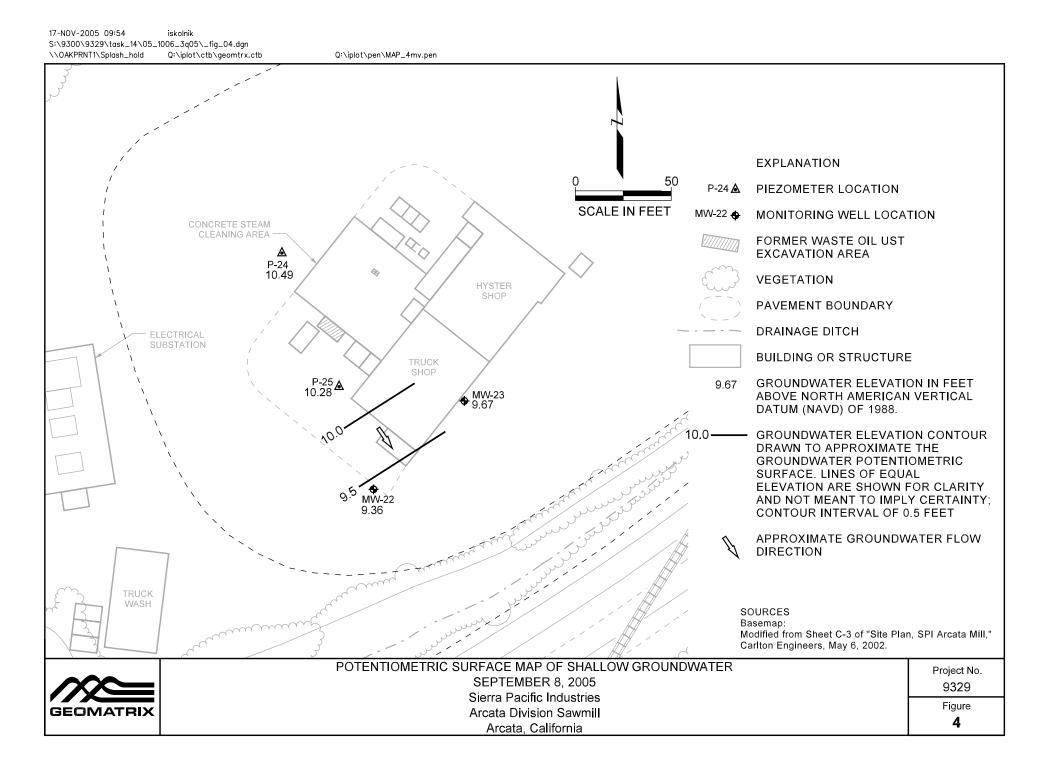


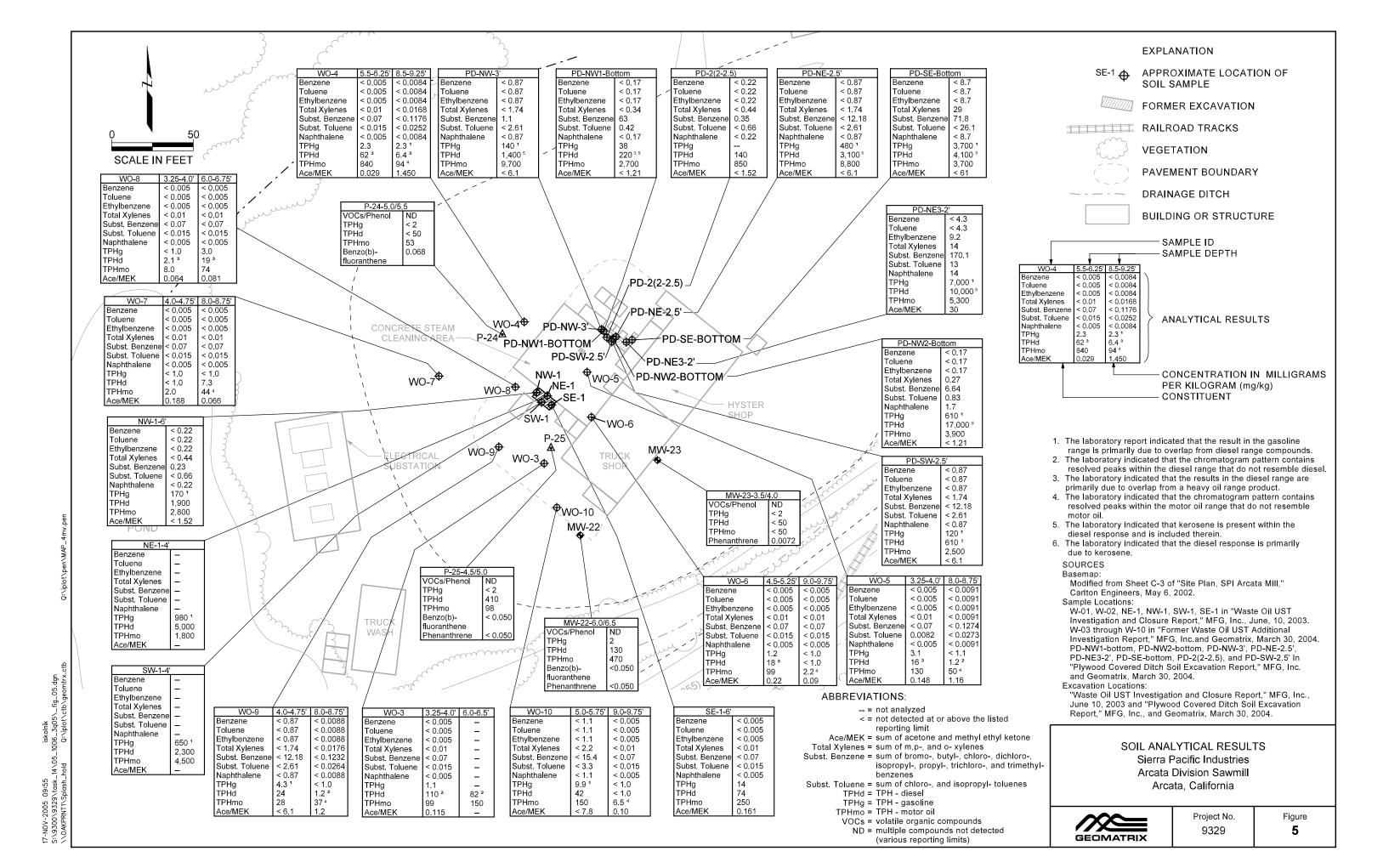
## **FIGURES**





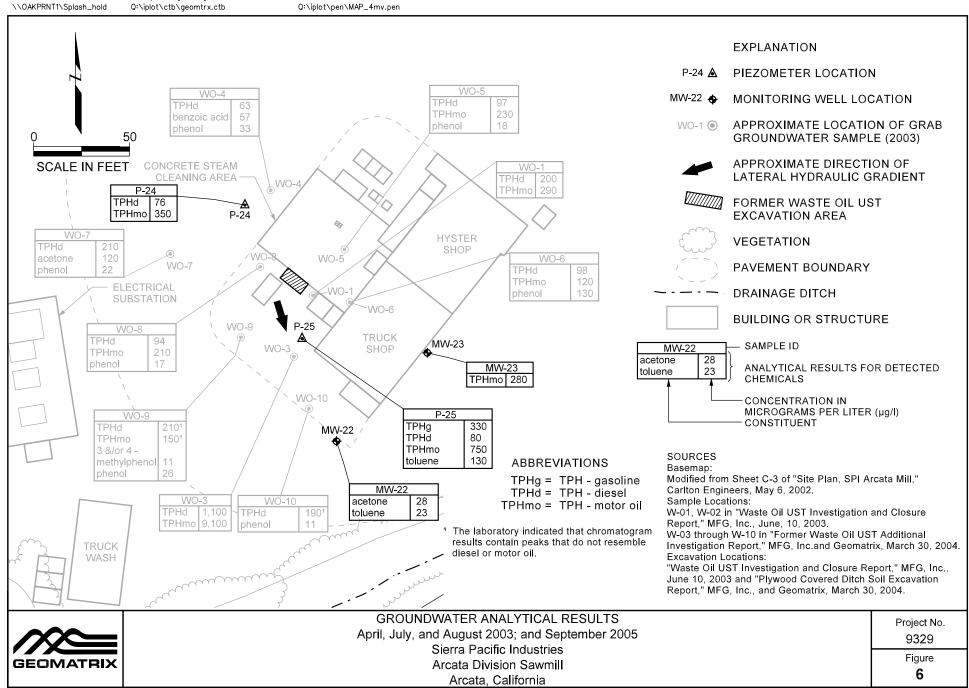






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## **APPENDIX A**

## Permits – Humboldt County Division of Environmental Health

## RECEIVED

HUMBOLDT COUNTY DIVISION of ENVIRONMENTAL HEALTH - HAZARDOUS MATERIALS UNIT 2 5 2005 WELL and BORING PERMIT APPLICATION

Facility ID # 1NHU526	Permit #	7 - MOF ENVIRONMENTAL HEALTH
Facility Name: Sierra Pacific Indust Site Address: 2593 New Navy Ba.	ries, Arcat	ta Division Sawmill
Site Owner: Sierra Pacific Industrie Address: P.O. Box 496028 Redding		Telephone: 530 - 378-8000
RP Name: Bob Ellery Address: Same as owner		Telephone: 530-376-8000
Consultant: Geomotrix Consultants, Inc 1		d Telephone: 707-444-7800
Address: 525 2nd St, Ste 203 Eurek	a, CA 95501	Reg.#/Type:
Driller: FISCH Environmental		Telephone: 209-772-3570
Address: 399 Shewis Pl Valley Spring	IS CA 7575	2 C-57 Lic.#: <u>683865</u>
# On-site		# Off-site
Wells Borings	Wells	Borings
Activity:	Electrode T	ype:
	Vapor Point  Direct Push Boring  actice  UST	
Investigation Phase:   Initial   Subsequent   Remediation	☐ Closure	
Suspected Contaminants: Waste Oil		
Disposal/Containment for Soil Cuttings: ASbury/Disposal/Containment for Rinsate: Asbury/DOT Disposal/Containment for Development Water: Asbur	-55 gal Dra	ms
Permits will not be processed with out the follow	ing information	:
Lead Agency Approval Letter	nte Fees Vorkplan (if not on f	
Encroachment Permit		
Coastal Zone Permit		

### HUMBOLDT COUNTY DIVISION of ENVIRONMENTAL HEALTH - HAZARDOUS MATERIALS UNIT WELL and BORING PERMIT APPLICATION

2

Facility ID # 1NHU526 Permit # 27 - M

I hereby agree to comply with all laws, ordinances and regulations of the county of Humboldt and State of California pertaining to water well construction. I will contact the Humboldt County Hazardous Materials Unit at (707) 445-6215 five (5) working days prior to commencing this work. I will furnish to the County of Humboldt, Division of Environmental Health, and the owner a legible copy of the State Water Well Completion Report (form DWR 188) within fifteen (15) days after completion of work to obtain final approval of the well(s). I acknowledge that the application will become a permit ONLY after site approval by the Local Implementing Agency (HCDEH, NCRWQCB, DTSC, EPA). I understand this permit is not transferable and expires one hundred twenty (120) days from the date of issuance.

ě	Carti	ficate	of I	neura	nee.
- 7				41 > 41 2 34	

- A currently effective General Liability Certificate of Insurance is on file with this office, endorsed to include the Humboldt County Division of Environmental Health as additional named insured.
- A currently effective Worker's Compensation Certificate of Insurance is on file with this office, endorsed to include the Humboldt County Division of Environmental Health as additional named insured.

2-18-05

Signature of Well Driller - no proxies - original signature only in blue ink

- Well identification number and type must be affixed to exterior surface of security structure.
- The applicant is responsible for notifying Underground Services Alert at least 48 hours prior to the scheduled work date.
- A State of California Department of Water resources Well Completion Report (Form DWR 1-88)
  must be filed within 15 days of completion of work for all well completions and destructions.
- A licensed California C-57 Well Driller is required for all wells and direct push work.

	FOR OFF	ICE USE ONLY		
Permit Approval:	Norman	Onun fur	Date:	7-25-2005
Fee: \$336°	Date: 7 25 7	2005 Receipt: 2	24132	
Initial Inspection:		Date:	<u> </u>	
Final Inspection:		Date:		

Humboldt County Dept. of Health & Human Services 224132 Public Health Branch
1/25 2005 GLOWATTIX CONSULTANTS 336 2
PROGRAM Construct 4 wells Zike: #036949 Sierra Pacific Endustries + #086961 2593 New Nowy Base Rd (aka Somba Blvd) Arcata, CA
Received By  Received By  Received By  RB CORE # 1NHUSZIG  AMOUNT OF ACCT.  AMOUNT PAID 336  BAL DUE



## **APPENDIX B**

## Boring Logs, Well Construction Details, Well Development Records, and Groundwater Sampling Field Records

PROJECT:			PACI Califor	FIC INDUSTRIES	AND 100 100 100 100 100 100 100 100 100 10	Log of Well No. I	MW-22
BORING L				0.8631428; Long: 124.1555472		CASING ELEVATION AND DAMSL (NAVD 88)	ATUM:
DRILLING	CONT	RACT	ror: F	risch Environmental Exploration Services	DATE ST 8/1/05		FINISHED: 5
DRILLING	METH	OD:	Direct	push/Hollow-stem auger	10.0	3.5-9	
DRILLING	EQUIP	MEN	T: Ge	eoprobe 6600	WATER (		ig: h. 40 PVC
SAMPLING	METH	HOD:	Geop	probe macro-core sampler [4' x 1.5"]		enson/M. Hillyard	
HAMMER	WEIGH	HT: N	A	DROP: NA	RESPON	NSIBLE PROFESSIONAL: enson	REG. NO. PG 6592
DEPTH (feet)	Sample MA		OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. densi cementation, react. w/HCl, geo. inter.	ity, structure,	DET	CONSTRUCTION FAILS AND/OR
Sar Sar	Sar		- A	Surface Elevation: 15.37' MSL	(NAVD 88)	DRILI	LING REMARKS
			-	ASPHALTIC CONCRETE		Locking	steel monument
1-		-	61	AGGREGATE BASE		Concrete	e ment grout
2-				SILT with SAND (ML): greenish black (10Y 2 moist, 80% fines, 20% fine sand, low plasticity rootlets [FILL]		2" diame	eter Schedule 40 sing
3-	$ \Lambda $					Bentonit	te chip seal
4-						#2/12 fill	ter pack sand
7						2" diame	eter, 0.020" slot,
5-			16	WOOD DEBRIS: black (2.5/N), moist, 95% w 5% fines [FILL]	ood debris,	Schedul screen	le 40 PVC
9   -   -   -   -						8" diame	eter borehole
7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 -			4	LEAN CLAY (CL): greenish black (10Y 2.5/1 90% fines, 10% plant material (brown), mediu			oldi baranala
′			1				
8-				POORLY GRADED SAND with CLAY (SP-SC greenish gray (5GY 4/1), wet, 90% fine to me 10% low plasticity fines	,		
9-	H		6.6			Schedul	le 40 PVC
40	$\mathbb{N}$					Native n	material
10-				Bottom of boring at 10.0 feet			
11-						OVM = 1	
-						I	mentai ents 580B PID
12-							ed with 100 ppm
_						isobutyl	ene standard.
13							
1.4							
14							
15—						OA	KWELLV_TOC(REV. 9/0
		1	<b>%</b>	Geomatrix Consultants		Project No. 9329.000	Page 1 of 1

PROJECT:	SIERRA Arcata,		IFIC INDUSTRIES		Log of Well	No. MW-23
BORING LC			40.8632724; Long: 124.1553765		CASING ELEVATION  MSL (NAVD 88)	AND DATUM:
DRILLING C	CONTRAC	TOR: I	Fisch Environmental Exploration Services	DATE ST 8/1/05	ARTED:	DATE FINISHED: 8/1/05
DRILLING N	METHOD:	Direc	t push/Hollow-stem auger	10.0	EPTH (ft.):	SCREEN INTERVAL (ft.): 2.5-9.0
DRILLING E	EQUIPMEN	NT: G	eoprobe 6600	WATER (f		. CASING: 2" Sch. 40 PVC
SAMPLING	METHOD	Geo	probe macro-core sampler [4' x 1.5"]		nson/M. Hillyard	
HAMMER V		IA	DROP: NA	RESPON R. Stee	SIBLE PROFESSION	NAL: REG. NO. PG 6592
(feet) Sample S	Sample Blows/ Sample Foot	OVM Reading	DESCRIPTION  NAME (USCS): color, moist, % by wt., plast. density cementation, react. w/HCl, geo. inter.	, structure,		WELL CONSTRUCTION DETAILS AND/OR
Sar	Sar Blo Fc	28	Surface Elevation: 15.34' MSL (N	NAVD 88)	1	DRILLING REMARKS
			ASPHALTIC CONCRETE		9 9	Locking steel monument
-			AGGREGATE BASE		4 4 4 4	
1-		2			TXXXXI   XXXXI	Concrete
			SILT (ML): greenish black (5GY 2.5/1), moist,	90%	1 100000 100000	Neat cement grout
			fines, 10% fine sand, nonplastic, trace plant ma			Bentonite chip seal
2-			(black)			#2/12 filter pack sand
- 6						2" diameter Schedule 40
3- MW-23-3.5		462				PVC casing
W			POORLY GRADED SAND (SP): greenish blac			
0.4			2.5/1), moist, 95% fine to medium sand, 5% fine	es		
4 A		1				2" diameter, 0.020" slot,
- 2	IXI					Schedule 40 PVC
5-						screen
						5616611
1			wet			
6-						8" diameter borehole
-						
7-						
'						
8-			CLAYEY SAND (SC): greenish black (5GY 2.9			
			80% fine to medium sand, 20% medium plastic			
9-				,		Schedule 40 PVC
9						endcap
-						Native material
10-	$\vdash$		Bottom of boring at 10.0 feet		-	ivative material
1	-		Bottom of boning at 10.0 leet			
11						OVM = Thorns
11-						OVM = Thermo Environmental
+						Instruments 580B PID
12-						calibrated with 100 ppm
						isobutylene standard.
40						•
13-					.	
-						
14-						
15—		1				OAKWELLV_TOC(REV. 9/00
	/	<b>%</b>	Geomatrix Consultants		Project No. 9329.00	0 Page 1 of 1

ROJECT: SIERRA Arcata,		L	og of Wel	l No. P-24	
ORING LOCATION:			SING ELEVATION L (NAVD 88)		
RILLING CONTRAC	TOR: F	isch Environmental Exploration Services	8/1/05		DATE FINISHED: 8/1/05
RILLING METHOD:	Direct	push/Hollow-stem auger	TOTAL DEP		SCREEN INTERVAL (ft.): 3.5-9.0
RILLING EQUIPMEN	IT: Ge	oprobe 6600	DEPTH TO WATER (ft.):	5.5 NA	CASING: 2" Sch. 40 PVC
AMPLING METHOD	Geop	R. Steens	on/M. Hillyard		
AMMER WEIGHT: N	Α	DROP: NA	RESPONSIE R. Steens	BLE PROFESSION on	IAL: REG. NO. PG 6592
Sample No. Sample Blows/ Sample Foot	OVM	DESCRIPTION  NAME (USCS): color, moist, % by wt., plast. density, cementation, react. w/HCl, geo. inter.	structure,	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS	
Sa Sa Bill B	<b>CC</b>	Surface Elevation: 15.56' MSL (NA	AVD 88)		
		ASPHALTIC CONCRETE		1444	ocking steel monument
1-		AGGREGATE BASE			Concrete  Neat cement grout  2" diameter Schedule 40
3-	6.5	POORLY GRADED SAND (SP): very dark grayi brown (2.5Y 3/2), moist, 95% fine sand, 5% fine			PVC casing Bentonite chip seal #2/12 filter pack sand
4-	0.5				2" diameter, 0.020" slot,
5- - - - - - - - - - - - - - - - - - -		SANDY SILT (ML): black (2.5Y 3/2), moist, 70% 20% fine sand, 10% fine gravel, trace organics, l plasticity [FILL]			Schedule 40 PVC screen 8" diameter borehole
9-	0.6	WOOD DEBRIS: black (10YR 2/1), moist, 95% verified by debris, 5% fine sand SILT (ML): black (10YR 2/1), moist, 70% fines, plant material, 10% fine sand, low plasticity  Bottom of boring at 10.0 feet	/		Schedule 40 PVC endcap Native material
11- 12- 13- 14-		Bottom of borning at 10.0 feet		_	OVM = Thermo Environmental Instruments 580B PID calibrated with 100 ppm isobutylene standard.
15		Geomatrix Consultants		Project No. 9329.00	OAKWELLV_TOC(REV. 9/0

Arcata, Califo	IFIC INDUSTRIES rnia	Log of We	Log of Well No. P-25			
	10.8632884; Long: 124.1556166	TOP OF CASING ELEVATION 15.75' MSL (NAVD 88)	N AND DATUM:			
RILLING CONTRACTOR:	Fisch Environmental Exploration Services	DATE STARTED: 8/1/05	DATE STARTED: DATE FINISHED:			
RILLING METHOD: Direc	t push/Hollow-stem auger	TOTAL DEPTH (ft.): SCREEN INTERVAL (ft.) 3.5-9.0				
RILLING EQUIPMENT: M	obile B-5500	DEPTH TO FIRST COMF WATER (ft.): 5.5 NA	PL. CASING: 2" Sch. 40 PVC			
AMPLING METHOD: Geo	probe macro-core sampler [4' x 1.5"]	LOGGED BY: R. Steenson/M. Hillyard				
AMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSION R. Steenson	DNAL: REG. NO. PG 6592			
Sample Sample Sample Soot CovM	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, cementation, react. w/HCl, geo. inter.	structure,	WELL CONSTRUCTION DETAILS AND/OR			
Sar	Surface Elevation: 16.04' MSL (No	AVD 88)	DRILLING REMARKS			
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	POORLY GRADED SAND with GRAVEL (SP):  (5Y 2.5/1), moist, 65% fine to coarse sand, 30% gravel, 5% fines, trace crushed asphalt [FILL]  POORLY GRADED SAND (SP): very dark graying brown (10YR 3/2), moist, 95% fine sand, 5% fine SILT (ML): black (10YR 2/1), moist, 70% fines, sand, 10% fine gravel, trace wood debris, low plate [FILL]	fine sh es [FILL] 20% fine	- Locking steel monument  - Concrete - Neat cement grout  - 2" diameter Schedule 40 PVC casing - Bentonite chip seal - #2/12 filter pack sand  - 2" diameter, 0.020" slot, Schedule 40 PVC screen  - 8" diameter borehole			
9-	WOOD DEBRIS: black (10YR 2/1), moist, 95% of debris, 5% fines  SILT (ML): black (10YR 2/1), moist, 70% fines,		<ul><li>Schedule 40 PVC</li><li>endcap</li><li>Native material</li></ul>			
	plant material, 10% fine sand, low plasticity Bottom of boring at 10.0 feet					
11-			OVM = Thermo			
-			Environmental Instruments 580B PID			
12-			calibrated with 100 ppm			
-			isobutylene standard.			
13-		-				
14-						
		-				



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# WELL SAMPLING AND/OR DEVELOPMENT RECORD

Wall ID:	MW-2	2				Initial Depth to Water: 5-86				
Well ID:						Depth to Water after Sampling:				
Sample Donth:						Total Depth to Well: 9.30				
Project and Task No.: 9379 Tors £14					14	11011 21011101011				
Project N	ame.	SPIA	reats	1		1 Casing/Borehole Volume:				
Date	Project Name:  Date:  Set Accords  Hillyand  Sampled By: M. Hillyand					(Circle one)  (Casing/Borehole Volumes:				
Sampled										
Method o	Method of Purging: Diaphroism pump									
Method o	of Sampling	a: /	VA			Volumes Remo	oved: 123			
Time	Intake Dep <mark>th</mark>	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (μS/cm)	Remarks (color, turbidity, and sediment)			
1340						7	merine TD+DTW			
1343	*	ene e co	31			4-	Start Surging well			
1348	M				1.00		Stop surging			
1400	9.39		0	220	6.37	1575	Dark Brown, midely			
1403	9.39		2	19.6	05-8	864	tt con to the			
1406	111		5	19.1	6.14	875	n n			
1410	70		97	20.2	6.18	881	" " " " " " " " " " " " " " " " " " "			
1416	7.9	1.D	13	19.2	6.3	880	6-3 10 %			
1427	9.39		17	18.8	6.35		1+ Brown clearing up Suge			
1437	9.39		25	70.3	6.00		Dark Brown			
1444	6-9	Ma a	29	20.1	644	882				
1404	9.39	F	41	20.7	6.30	870	10 0			
	pH	CALIBRAT	FION (cho	ose two)		Model or	Unit No.: trameter 6P			
Buffer S	Solution	pH 4	l.0 pH	7.0 pH 1	0.0	_ u	mant ter UI			
Temperature C										
	ent Readir	3170	7	10	1000					
SPECIFIC ELECTRICAL CONDUCTANCE - CALIBRATION Model or Unit No.:										
KCL Solution (µS/cm=µmhos/cm) 447 2070										
Temperature C										
Instrument Reading 447 7070										
Notes:	Notes: repeated pump/surge several times									



# WELL SAMPLING PG AND/OR DEVELOPMENT RECORD

Well ID: _	7-(0	-22	-		, <u>, , , , , , , , , , , , , , , , , , </u>	_ Initial Depth to Water:				
Sample II	D:	Du	plicate ID:			Depth to Water after Sampling:				
Sample D	epth:					Total Depth to Well:				
	nd Task No					Well Diameter:				
	lame:			9		(Circle one)				
Date:	81	30/09	7							
Sampled	Ву:/	1- H11-	fard			4 Casing/Bore (Circle one)	hole Volumes:			
Method o	of Purging:	Di	aphra	gin Pl	unp		123 casing values			
	of Sampling					Total Casing/Borehole Volumes Removed:				
Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (μS/cm)	Remarks (color, turbidity, and sediment)			
1730	939		65	19.9	6.42	840	greyishbrana cloudy			
1932	-6-8	- 200	68	19.1	627	852	greyistbrana cloudy			
1536	9.39		72	19.2	6.18	865	mostly dear			
1538	9.39		74	18.9	6.17	875	11 11			
6	14.						700			
C.		30					\$ 1 Ag			
100 m										
146										
		191.				Z.	· · ·			
		***								
	pH (	CALIBRAT	TION (choo	se two)	ν	Model or U	Jnit No.:			
Buffer So	olution	pH 4	.0 pH 7	'.0 pH 1	0.0					
Tempera	ture C					*				
Instrume	nt Readin	g								
SPECI	FIC ELECT	RICAL CO	ONDUCTA	NCE - CA	LIBRATION	Model or U	Jnit No.:			
KCL Sol	ution (μS/c	m=μmhos/c	m)				A Committee of the Comm			
Tempera	ture C					-				
Instrume	ent Readin	g				- 47				
Notes:			\	\$ :						
				de .						
							Control of the Contro			
							· · · · · · · · · · · · · · · · · · ·			
	-						- 1 L			
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# WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID:	Mh.	-23			i saf	Initial Depth to	Water: 5-38		
_		/A Dup	olicate ID:	N	4	•	r after Sampling:		
	Depth:					Total Depth to Well:			
Project a	nd Task No	5.: 932	29 7	ask	14	Well Diameter			
Project N	ame: 5	BI A.	reat	2	W.		hole Volume:		
Date:	8/30	and E	3/31	105		(Circle one)			
Sampled	Ву:/	4-1411	Lyeno	1		Casing/Bore (Circle one)	hole Volumes:		
Method o	of Purging:	Dia	phrad	mpu	P	Total Casing/E	Section 141		
		g:		-	<u> </u>	Volumes Rem			
Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (μS/cm)	Remarks (color, turbidity, and sediment)		
10:00	ATA						Marine TO+ DTW		
10:20	dian.								
11:35	· \	4 4					Start sugging well sunt		
1150	8.91	4	0	26.0	6.97	4185	Very middy, brown		
1155	819	4	§ 1	25,2	6.94	4300	u u u		
1200	8,9		2	225	7.27	4335	1 1 wells		
1519	8:9	0	3	21.7	7.30	4490	muddy brown		
1333	8:9	-	5	21.9	6.85	4610	11		
1600	8.9		7 6	9.3	7.10	4310	dk brownish grey		
1004	89		. 7	146.9	6.69		cloudy brownising idy		
1006	8.1		8.5	19.1	7.04	49901	e le le		
19.5	45 M	0 1							
	pH C	ALIBRATI		se two)		Model or U	Jnit No.:		
Buffer Sc		pH 4.0	) pH 7	.0 pH 1	0.0		altraneter GP		
Tempera				a					
	nt Reading	-	7	10					
		- P		-	IBRATION	Model or U	Jnit No.:		
- 2	5710700	n=μmhos/cm	1 44	7 201	70	_ \	Itrame to P		
Tempera			0.00						
	nt Reading	1	44	7 20	70	.,1	and the second second		
Notes:	of the Col	slow	rech	age	433	4			
	return	10	wel	1 on	8/3	1 pump	oday again		
			A	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- 100				
					,				
o 1 x7									



# WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID:	P-2	4				_ Initial Depth to Water: 4.92				
Sample II	D:	Duj	olicate ID:	NA		Depth to Water after Sampling:				
Sample D	epth:	$\sim$	A			Total Depth to	Well: 932			
Project a	nd Task No	o.: 93	29	Task	14	well blameter				
	lame:					1 Casing/Bore	hole Volume: 0.75			
	8/3					(Circle one)				
	Ву: _//.		and			4 Casing/Borehole Volumes: 7.5 gallons				
	of Purging:			lump		(Circle one)				
	of Sampling					Total Casing/Borehole Volumes Removed:				
Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (μS/cm)	Remarks (color, turbidity, and sediment)			
8,5							megsue +D+DTV			
818							Begin Surging Well .			
823					až		Finish Surging Well			
827	9.4		0	27.0	6.78	1643	Brown, Muddy			
831	9.4		2	77.2	6.77	1452	11 (1)			
849	9.4		L	71.7	6-62	1514	Clearer Chan Hint			
912	7.4		Ce	21.0	6.572	1511	mostly clear, 51594+ 4 claudy			
915	9.4		7	21.7	6.67	1518				
918	9.4		7,5	21.7	6.72	.1520	It brown clear			
					<u>.</u>		- A 1			
					(UL)					
	рН (	CALIBRAT	ION (choo	se two)	,	Model or l				
Buffer Se	olution	pH 4.	.0 pH 7	.0 pH 1	0.0	W-100	n L Ultrameter GP			
Tempera	ture C					ie.				
Instrume	nt Reading	g. 4		7 10						
SPECI	FIG ELECT	RICAL CO	NDUCTA	NCE - CAL	IBRATION	Model or I	Unit No.:			
KCL Sol	ution (μS/cr	m=μmhos/c	m) 44-	7 207	0	ulti	ometer			
Tempera	ture C				1	1.4				
Instrume	ent Reading	g	447	20%	70					
Notes:	5100	rec	horge	***	Žą.	1. W				
		,			7.30					
	- 10									
				11-1						
		*					· · · · · · · · · · · · · · · · · · ·			

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# WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: _	b-5	5				Initial Depth to	Water: 6.37		
Sample II	D:	A Dupli	cate ID:	NA		Depth to Water after Sampling:			
Sample D	epth:	NA				Total Depth to Well:			
Project a	nd Task No	0.: 932	2	tas/el	4				
Project N	lame:	SPI A	reate	1		1 Casing/Bore	hole Volume:		
Date:	8/ >0	and	8/31	105		(Circle one)	~		
Sampled	Ву:	M-14:	1 yard	ツ 		(Circle one)	hole Volumes:		
Method o	of Purging:	Dia	phrazi	$\sim$		60	Borehole a		
Method o	of Samplin	g:	NA			Volumes Rem	oved:		
Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)		
1615	951						measure TO+DTW		
1617	C								
16 23	9.10		0	20.4	7.40	1710	the Muddy Brown.		
1627	1		2	19.9	7.01	1177	(1 (1		
1635			3	19.4	6.84	667	1/ 11		
942	1		93	17.9	6.72	525	cloudy grey/brown wester		
946	V		4.5	17.7	6.70	520	4 11 10		
							, , , , , , , , , , , , , , , , , , ,		
	7		,						
			¥,	, in			V.		
-						16	^		
			*						
	pH	CALIBRATION	ON (cho	ose two)		Model or	Unit No.:		
Buffer S	olution	pH 4.0	pH 7	7.0 pH 1	0.0	100			
Tempera	ature C	2	-		1	1 4	Itrameter 6P		
Instrum	ent Readin	g 4	1	1 10	· //		· Colone		
SPECI	IFIC ELEC	TRICAL CO	IDUCTA	NCE - CA	LIBRATIO	N Model or	Unit No.:		
KCL Sol	lution (μS/c	:m=μmhos/cn	) 44	17 20	70		, , , , ,		
Tempera		,	,			ul	tronneter GP		
	ent Readir	ng	40	17 20	70				
Notes:	Very	500	rec	charge			At a second of the second of t		
67	eturn t	o well	1 On	8431		sume pu	imping infort surging		
					100				
				26.	帮				
				1.47			The same of the sa		
				-1					

8/31

# WATER LEVEL MONITORING RECORD



Project Name: SPI Ard	cata	Project and Task Number:	9329.000.0 14							
Date: _ 9/8/05	Measured by: MAH	Instrument Used:	ES #1							
Note: For you conveni	Note: For you convenience, the following abbreviations may be used.									
P = Pumping	I = Inaccessible D	= Dedicated Pump								
ST = Steel Tape	ES = Electric Sounder MP	= Measuring Point WL =	Water Level							

Well No.	Time	MP Elevation (feet)	Below MP (feet)	Water Level Elevation (feet)	Previous Water Level Below MP	Remarks
MW-22	947	15.12	5.76			TD=9.31
MW-23	946	15.11	5,44			TD=8.88
P-24	944	15.33	4.84			TD=9.32
P-25	950	15.75	\$.5.47			TD=9.10
						,
			27			* *
						4 1
				,		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
4		a B				
						* -
						4.5
		,				



# WELL SAMPLING AND/OR DEVELOPMENT RECORD

147 11 15	BBM 00					India D. C. C.	W-4 576			
Well ID: _	MW-22	200522 5		D. RD-m	1-2000e	Initial Depth to Water: 5.76  Depth to Water after Sampling:				
1						Depth to Wate	r aπer sampling:			
	epth:						Well: 9-31			
	nd Task N					Well Diameter: _2"				
	ame: <u>SP</u>					1 Casing/Bore (Circle one)	hole Volume: 0.6 39			
Date: _09						3 Casing/Roro	hole Volumes: (8 99)			
	By: MAH			•		Total Casing/Borehole Volumes Removed:				
	f Purging:				-					
Method o	of Samplin	g: <u>Dispos</u>	able Teflo	n Bailer						
Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (μS/cm)	Remarks (color, turbidity, and sediment)			
1252			0	18.7	6.55	745	very clear			
1257		,	1-0	18-4	6.31	8001	It yellow dear			
1258			1.7	18.5	608	831	It yellow dear			
1300			2.0	18.3	6.00	860	(1. (6 ))			
1301			2,5	18.5	5,98	850				
							Sample TOS = 580ppm			
		-			,	40				
							D *			
	рН (	CALIBRAT	ION (choo	se two)		Model or U	Jnit No.: Ultrameter 6P			
Buffer So	olution	pH 4	.0 pH 7	.0 pH 1	0.0	Calibra	ted or 4/7/05			
Tempera	ture C						4,7,10			
Instrume	nt Reading	g								
SPECII	FIC ELECT	RICAL CO	NDUCTA	NCE - CAI	LIBRATION	Model or U	Jnit No.: Ultrameter 6P			
KCL Solu	ution (μS/cı	m=μmhos/c	m)			(41:6,	aled 0- 0/7/07			
Tempera	ture C					EC	447, 2070 MS			
Instrument Reading						+DS 300, 1500 Ppm				
Notes:						-				
							-			



# WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID:	MW-23					_ Initial Depth to Water: 5-44					
Sample I	D: <u>MW-23</u> -	200509	Duplicate II	D:							
Sample [	Depth:					Total Depth to Well: 8.88					
Project a	nd Task N	o.: <u>9329.0</u>	00.0 14			Well Diameter: 2"					
Project N	lame: <u>SP</u>	I ARCATA	<b>\</b>								
Date: _09	9/0805					(Circle one)	hole Volumes: 1.8 gal				
Sampled	By: MAH	<u> </u>			Gircle one)						
Method o	of Purging:	_Disposa	ble Teflon	Bailer		Total Casing/Borehole					
Method o	of Samplin	g: <u>Dispos</u>	able Teflo	n Bailer		Volumes Removed:					
Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)				
1108			0	18.2	6.95	3830	seryclen, yellow tint				
1109			0.5	18.8	6.66	4080	cloudy browlovery				
1112			1-0	18.4	660	44.50	anddybran drying of				
1125			1.5	18.0	6.72	4440	(( )( .				
1137			2-0	17,9	6.70	4440	11 11 TDS=3420pp-				
							Sample				
	*										
	рН (	CALIBRAT	ION (choo	se two)		Model or l	Jnit No.: Ultrameter 6P				
Buffer Sc	olution	pH 4	.0 pH 7	.0 pH 10	0.0						
Tempera	ture C										
Instrume	nt Reading	g									
SPECII	FIC ELECT	RICAL CO	NDUCTAN	ICE – CAL	IBRATION	Model or U	Jnit No.: Ultrameter 6P				
KCL Solu	ution (μS/cr	n=μmhos/c	m)								
Tempera	ture C										
Instrume	nt Reading	g									
Notes:											
	·										
							· · · · · · · · · · · · · · · · · · ·				
,							· ·				
\\sf3\ppingree	e\$\FORMATS\	WELL SAMPL	JNG Record.do	c							



# WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID:	P-24					Initial Depth to	o Water: 4.84			
Sample I	D: <u>P-24-20</u>	0509 D	uplicate ID	:						
Sample [	Depth:					Total Depth to Well: 9.32				
Project a	nd Task N	o.: <u>9329.0</u>	00.0 14			Well Diameter	. 2"			
Project N	lame: SP	I ARCATA	1			1 Casing/Borehole Volume: (Circle one)  3 Casing/Borehole Volumes: (Circle one)				
Date: _09	9/0805									
Sampled	By: MAH	1								
Method o	of Purging	: Disposa	ble Teflon	Bailer			Boroholo			
Method o	of Samplin	g: <u>Dispos</u>	able Teflo	n Bailer		Total Casing/Borehole Volumes Removed:				
Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (µS/cm)	Remarks (color, turbidity, and sediment)			
1010			0	21.4	6.08	1500	very clear it yellow that			
1013			0.5	22.0	6.04	1550	Cloudy brown grey muddy brount of to			
1.016			1.0	21.8	6.04	1570	Cloudy brown, grey, middy brown to the cloudy brown, drying up			
1019			1.5	21,4	6.13	1595	(1)			
1027			20	21.2	6.70	1500	11 ' 11			
(031			2.5	21.3	6.17	1510	11 11 TOS =1050ppm			
			*				sample			
					. 4					
							all and a second a			
	pH (	CALIBRAT	ION (choo	se two)		Model or	Unit No.: Ultrameter 6P			
Buffer So	olution	pH 4	.0 pH 7	.0 pH 1	0.0					
Tempera	ture C									
Instrume	nt Readin	g								
SPECI	FIC ELECT	TRICAL CO	NDUCTA	NCE – CAL	IBRATION	Model or	Unit No.: Ultrameter 6P			
KCL Sol	ution (μS/c	m=μmhos/c	m)							
Tempera	ture C									
Instrume	ent Readin	g								
Notes:										
					,					
							·			



# WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID:	P-25					Initial Depth to Water: 5.47				
Sample I	D: <u>P-25-20</u>	0509 Di	uplicate ID	:		Depth to Water after Sampling:				
Sample [	Depth:					Total Depth to	Well: 9,10			
Project a	nd Task N	o.: <u>9329.0</u> 0	00.0 14			Well Diameter: 24'				
Project N	lame: _SP	I ARCATA								
Date: _09	0/0805		4			(Circle one)				
Sampled	By: MAH					3 Casing/Borehole Volumes: 8 99				
Method o	of Purging:	Disposa	ble Teflon	Bailer						
Method o	of Samplin	g: <u>Dispos</u>	able Teflo	n Bailer		Total Casing/Borehole Volumes Removed:				
Time	Intake Depth	Rate (gpm)	Cum. Vol. (gal.)	Temp. (°C)	pH (units)	Specific Electrical Conductance (μS/cm)	Remarks (color, turbidity, and sediment)			
1351			0	18,3	6.24	650	Ver-(clear			
1353			0.5	18.5	6-18.	.750	muddy Grown dyying up			
1355			1.0	18.0	6.21	645	(c) il			
1400			1,5	181	6.17	930	(1 (1			
1404			2	18.0	6.10	4.85	( '(			
1409			2,5	15.0	6.13	425	It brown TDS=275 pm			
1415			3.0	14-1	6:08	410	It brown TDS=275 pm It brown TOS=270ppm			
· · · · · · · · · · · · · · · · · · ·							Sample .			
				A			*			
		**								
	pH (	CALIBRAT	ION (choo	se two)		Model or U	Jnit No.: Ultrameter 6P			
Buffer Se	olution	pH 4	.0 pH 7	.0 pH 10	0.0	19				
Tempera	ture C									
Instrume	nt Readin	g								
			NDUCTA	NCE - CAL	IBRATION	Model or U	Jnit No.: Ultrameter 6P			
KCL Soli	ution (μS/c	m=μmhos/c	m)							
Tempera	ture C									
Instrume	nt Readin	g								
Notes:										
							· · · · · · · · · · · · · · · · · · ·			

# **APPENDIX C**

# Topographic Plat and Monitoring Well Survey Data

ATE OF CALIFORNIA

#### MONITOR WELL DATA

Monitor Well	Northing	Easting	Latitude	Longitude	(NGVD29) Elevation	(NAVD88) Elevation	(NAVD88) Ground
		5966526.44			6.34	9.69	10.12
		5966418.62		124.1525276	6.26	9.61	10.41
		5966269.08		124.1530739	7.87	11.22	11.67
		5966189.64	10.0	124.1533599	7.39	10.74	11.17
		5966101.76		124.1536734	7.39	10.74	11.26
		5966258.39	40.8660710	124.1531061	6.48		10.13
	2206073.73	5966254.26	40.8659980	124.1531187	6.39		10.09
	2205985.98	5966137.13	40.8657492	124.1535343			10.55
	2205984.84	5966223.56	40.8657520	124.1532218			10.36
	2205961.59	5966265.80	40.8656910	124.1530670			10.08
	2205921.10	5966177.74	40.8655740				10.51
A DESCRIPTION OF THE PROPERTY	2205955.66	5966084.14	40.8656625				11.01
	2206099.89	5966419.66	40.8660809				10.26
	2205982.72	5966462.45	40.8657622				9.60
	2206169.03	5966337.72	40.8662658				11.59
	2205912.61	5966273.09	40.8655571				10.13
	2205950.68	5966383.11	40.8656690				9.46
	2205981.85	5966239.22	40.8657448				10.12
	2206163.64	5966213.40	40.8662419				11.21
	2206017.72	5966214.82	40.8658416				10.92
	2206079.61	5966284.77	40.8660161				10.11
	2205758.19	5966974.30	40.8651806				14.90
MW-22	2205050.41	5965557.25	40.8631428				15.37
MW-23	2205096.45	5965605.60	40.8632724				15.34
P-24	2205173.49	5965509.55	40.8634773				
P-25	2205103.90	5965539.36	40.8632884	124.1556166	12.40	15.75	15.56 16.04
	MW-1 MW-2 MW-3 MW-4 MW-5 MW-6 MW-7 MW-8 MW-9 MW-10 MW-11 MW-12 MW-13D MW-14 MW-15D MW-16D MW-16D MW-17 MW-18 MW-19D MW-20 MW-21 BM-111 MW-22 MW-23 P-24	MW-1 2206125.91 MW-2 2206107.76 MW-3 2206172.11 MW-4 2206159.98 MW-5 2206112.66 MW-6 2206100.26 MW-7 2206073.73 MW-8 2205985.98 MW-9 2205984.84 MW-10 2205961.59 MW-11 2205955.66 MW-13D 2206099.89 MW-14 2205995.66 MW-15D 2206169.03 MW-16D 2205912.61 MW-17 2205950.68 MW-19D 2206163.64 MW-20 2206017.72 MW-21 2206079.61 BM-111 2205758.19 MW-22 2205050.41 MW-23 2205096.45 P-24 2205173.49	MW-1 2206125.91 5966526.44 MW-2 2206107.76 5966418.62 MW-3 2206172.11 5966269.08 MW-4 2206159.98 5966189.64 MW-5 2206112.66 5966101.76 MW-6 2206100.26 5966258.39 MW-7 2206073.73 5966254.26 MW-8 2205985.98 5966137.13 MW-9 2205984.84 5966223.56 MW-10 2205961.59 5966265.80 MW-11 2205921.10 5966177.74 MW-12 2205955.66 5966084.14 MW-13D 2206099.89 5966419.66 MW-14 2205982.72 5966462.45 MW-15D 2206169.03 5966337.72 MW-16D 2205912.61 5966273.09 MW-17 2205950.68 5966383.11 MW-18 2205981.85 5966239.22 MW-19D 2206163.64 5966213.40 MW-20 2206017.72 5966214.82 MW-21 2206079.61 5966274.30 MW-21 2206079.61 5966284.77 BM-111 2205758.19 5966974.30 MW-22 2205050.41 5965557.25 MW-23 2205096.45 5965509.55	MW-1         2206125.91         5966526.44         40.8661995           MW-2         2206107.76         5966418.62         40.8661024           MW-3         2206172.11         5966269.08         40.8661024           MW-4         2206159.98         5966189.64         40.866283           MW-5         2206110.26         5966198.64         40.8660945           MW-6         2206100.26         5966258.39         40.8669980           MW-7         2206073.73         5966258.39         40.8659980           MW-8         2205985.98         5966137.13         40.8657492           MW-9         2205984.84         5966223.56         40.8657520           MW-10         2205951.59         5966258.30         40.8655749           MW-11         2205951.66         5966084.14         40.8655740           MW-12         2205955.66         5966084.14         40.8655740           MW-13D         2206099.89         5966419.66         40.8650623           MW-15D         2206169.03         5966333.72         40.8652625           MW-15D         2205169.03         5966273.09         40.8655740           MW-17         2205950.68         5966383.11         40.8652658           MW-18	MW-1         2206125.91         5966526.44         40.8661995         124.1521395           MW-2         2206107.76         5966418.62         40.8661024         124.1525276           MW-3         2206172.11         5966269.08         40.8662689         124.15330739           MW-4         2206159.98         5966189.64         40.8662303         124.1533599           MW-5         220610.26         5966101.76         40.8660945         124.1536734           MW-6         2206100.26         5966258.39         40.86609710         124.1531061           MW-7         2206073.73         5966258.39         40.8659980         124.1531367           MW-8         2205985.98         5966137.13         40.8657492         124.1535343           MW-9         2205984.84         5966225.56         40.8657520         124.1533673           MW-10         2205951.59         5966265.80         40.8655740         124.1533817           MW-11         2205951.66         5966084.14         40.8655740         124.1533817           MW-12         2205958.72         5966482.45         40.8656625         124.1533817           MW-13D         2206099.89         5966191.66         40.8660809         124.1523580           MW-15D	MW-1 2206172.11 596626.44 40.8661094 124.1525276 6.26 MW-3 2206159.98 596618.64 40.866289 124.1530739 7.87 MW-4 2206159.98 596618.64 40.866289 124.1533599 7.39 MW-5 2206100.26 5966258.39 40.8660945 124.1531661 6.48 MW-7 2206073.73 5966254.26 40.865980 124.1531661 6.48 MW-7 2205938.598 5966137.13 40.8657492 124.1535343 6.98 MW-9 2205984.84 5966253.56 40.8657520 124.1533543 6.98 MW-10 2205961.59 5966258.80 40.8656910 124.1533187 6.93 MW-11 2205921.10 5966177.74 40.8656910 124.1533817 6.93 MW-12 2205985.98 5966184.14 40.8656625 124.1533817 6.93 MW-12 2205985.98 596644.14 40.8655740 124.1533817 6.93 MW-14 2205982.72 5966462.45 40.8657622 124.1523580 5.80 MW-15D 2206169.03 5966337.72 40.8656691 124.1523580 5.80 MW-16D 220591.61 5966273.09 40.8656690 124.1523580 5.80 MW-16D 220591.61 5966273.09 40.8656691 124.153063 6.48 MW-17 2205950.68 5966383.11 40.8656690 124.1523580 5.80 MW-18 2205981.85 5966239.22 40.8657448 124.153363 6.48 MW-18 2205981.85 5966239.22 40.8657448 124.1532744 7.71 MW-20 22060167.72 5966213.40 40.8658419 124.153268 8.52 MW-19D 2206163.64 5966213.40 40.8658419 124.1532574 7.71 MW-20 2206017.72 5966248.77 40.8651806 124.1530689 9.54 MW-11 2205758.19 5966974.30 40.8653724 124.1530089 9.54 MW-21 2205758.19 5966974.30 40.8653724 124.1530089 9.54 MW-22 2205050.41 596557.25 40.8631428 124.153765 11.76 MW-23 2205096.45 5965505.60 40.8632724 124.1553765 11.76 MW-23 2205096.45 5965505.55 40.8634773 124.1553765 11.76 MW-25 2205173.49 5965509.55 40.8634773 124.1557306 11.98 MW-25 2205173.49 5965509.55 40.8	MW-1

Coordinate values are NAD 83 based on control and aerial mapping survey and points established by carlton Engineering, Inc. Elevation datum is NAVD 88 based on bench mark J-735 RESET 1970 shown hereon.

INDICATES

bench Mark - 2" brass cap stamped "J-735 RESET 1970" in top of railroad bridge pillar a southwest corner of bridge. Elevation = 11.55" (NGVD29) = 14.90" (NAVD88) Previous control point, found concrete nail.

control point nail & shiner set this survey.

Monitor well, 2" PVC pipe inside monument well with lid unless otherwise noted hereon, with top of pipe elevation.

Monitor well 3/4" PVC pipe inside 4x4 stand post with 1id cap.

Bench mark as noted and basis for elevations.

#### SURVEYOR'S STATEMENT

This map was prepared by me or under my direction and is based upon a field survey performed on February 13, 2004 and additional work on August 11, 2005 at the request of Sierra Pacific Industries. This survey is for the purpose of locating opographic features as shown Mereon.

License expires 9-30-07 Date 10-03-05

CLIENT

Geomatrix Consultants, Inc. 2101 Webster Street, 12th Floor Oakland, CA 94612 (510) 663-4141

#### SURVEYOR / ENGINEER

Omsberg & Preston 304 'N' Street Eureka, CA 95501 (707) 443-8651

SIERRA PACIFIC INDUSTRIES - MILL SITE 2593 NEW NAVY BASE ROAD ARCATA, CA

APN 506-061-028, 506-181-006 & 028

bar is one inch on original drawing If not one inch on this sheet, adjust scales accordingly

OMSBERG & DRESTON (707) 443-8651 Fax: 443-0422 95501 SURVEYORS PLANNERS ENGINEERS

C.W.B.

TOPOGRAPHIC PLAT

872/05 GEOMATRIX CONSULTANTS, INC. 04-405-94 in the unincorporated area of Humboldt County NW V4 of Section 35, T.GN., R.IW., H.M.

MW-23



# **APPENDIX D**

# **Laboratory Data Quality Review**



#### APPENDIX D

#### LABORATORY DATA QUALITY REVIEW

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

#### **PRECISION**

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

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

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

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

Where,

S = Sample concentration

D = Duplicate sample concentration

RPDs for primary and duplicate field samples are calculated in Table F-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, is less than two times the reporting limit, the absolute difference between the primary and duplicate sample concentration is calculated. The RPDs between the primary (MW-22) and the duplicate (BD-01) field samples for acetone and toluene in groundwater were less than 30% and are considered appropriate (Table D-1). RPDs for MS/MSD and LCS/LCSD analyses are reported in laboratory analytical reports, included in Appendixes E and F.



#### **ACCURACY**

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

- **Hold times.** Samples were analyzed within the holding time for each analytical method.
- **Preservation.** Groundwater samples collected for volatile organic compounds (VOCs) and total petroleum hydrocarbons as gas (TPHg) analyses were collected in laboratory-supplied containers with preservatives. All samples were stored and transported to the analytical laboratory in chilled coolers.
- **Method blanks.** Methylene chloride was detected at 0.82 μg/g in the method blank for soil, therefore, the 0.89 μg/g result for methylene chloride in sample MW-22-6.0 is considered to not be detected above the reporting limit ("U" flag). No detections were observed in any other of the method blanks analyzed by the laboratory.
- Surrogate recoveries. Unacceptable VOC surrogate recovery for 4-bromofluorobenzene in soil samples MW-22-6.0 and P-24-5.0 and toluene-d8 in soil sample P-24-5.0 result in detected compounds qualified with a "J", however, the only detection is methylene chloride, which is already qualified with a "U" (because of method blank detection). Non-detected compounds quantitation (reporting) limit are qualified with a "UJ". One surrogate recovery for the phenol analysis in soil was below the acceptance criteria, but no action is required unless more than one surrogate is unacceptable. All other laboratory surrogates were recovered at concentrations within acceptable ranges.
- MS/MSD analysis. The matrix spike for TPHd in soil had only 27% recovery (out of acceptance criteria) and the matrix spike duplicate had 129% recovery (within acceptance criteria). Based upon a lack of precision, detected samples are flagged with a "J" to indicate that the results are approximate concentrations. In addition, the VOC matrix spike recovery in soil was below acceptance criteria for four analytes, but no further action was necessary. All other RPDs were acceptable.



• LCS/LCSD analysis. A note for the laboratory control sample indicated that the calibration result for bromoethane and chloroethane exceeded 15% deviation. However, the average deviation for all compounds was less than 15%, therefore the initial calibration is considered valid. All RPDs were acceptable.

#### **COMPLETENESS**

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



# TABLE D-1 RELATIVE PERCENT DIFFERENCES BETWEEN DUPLICATE SAMPLES

Sierra Pacific Industries Arcata Division Sawmill Arcata, California

Samples collected on September 8, 2005

Reporting Constituent Limit		Sample Concentration MW-22	Duplicate Sample Concentration BD-01	Relative Percent Difference 1						
Volatile Organic Compounds by	Volatile Organic Compounds by EPA 8260B (reported in micrograms per liter [µg/L]) <sup>2</sup>									
Acetone	10	28	36	25.0%						
Toluene	1	23	29	23.1%						

#### Notes

- 1. RPD calculated as  $([2(S-D)]/[S+D]) \times 100$  where S is the sample concentration and D is the blind duplicate sample concentration. For sample concentrations less than two times the reporting limit, the absolute difference between the sample concentration and the blind duplicate sample is calculated.
- 2. Analyzed by Friedman & Bruya, Inc. Environmental Chemists, of Seattle, Washington.



# **APPENDIX E**

# Laboratory Analytical Reports and Chain-of-Custody Records - Soil

#### **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

August 18, 2005

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

Dear Mr. Keim:

Included are the results from the testing of material submitted on August 2, 2005 from the 9329/14, F&BI 508019 project. There are 26 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Charlene Morrow

Charlene Morrow

Chemist

Enclosures GMC0818R.DOC

#### **ENVIRONMENTAL CHEMISTS**

#### CASE NARRATIVE

This case narrative encompasses samples received on August 2, 2005 by Friedman & Bruya, Inc. from the Geomatrix Consultants, Inc. 9329/14, F&BI 508019 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Geomatrix Consultants, Inc.
508019-01	MW-23-3.5
508019-02	MW-23-4.0
508019-03	MW-22-6.0
508019-04	MW-22-6.5
508019-05	P-24-5.0
508019-06	P-24-5.5
508019-07	P-25-4.5
508019-08	P-25-5.0

All quality control requirements were acceptable.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 08/18/05 Date Received: 08/02/05

Project: 9329/14, F&BI 508019

Date Extracted: 08/04/05 Date Analyzed: 08/04/05

### RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING EPA METHOD 8015M

Results Reported as µg/g (ppm)

Sample ID Laboratory ID	Gasoline Range	Surrogate ( <u>% Recovery</u> ) (Limit 66-150)
MW-23-3.5 508019-01	<2	105
MW-22-6.0 508019-03	2	121
P-24-5.0 508019-05	<2	105
P-25-4.5 508019-07	<2	102
Method Blank	<2	102

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 08/18/05 Date Received: 08/02/05

Project: 9329/14, F&BI 508019

Date Extracted: 08/04/05 Date Analyzed: 08/16/05

### RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL USING EPA METHOD 8015M

### Sample Extracts Passed Through a Silica Gel Column Prior to Analysis

Results Reported as µg/g (ppm)

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	Surrogate (% Recovery) (Limit 50-126)
MW-23-4.0 508019-02	<50	64
MW-22-6.5 508019-04	130	68
P-24-5.5 508019-06	<50	69
P-25-5.0 508019-08	410	52
Method Blank	<50	64

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 08/18/05 Date Received: 08/02/05

Project: 9329/14, F&BI 508019

Date Extracted: 08/04/05 Date Analyzed: 08/16/05

### RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL USING EPA METHOD 8015M

### Sample Extracts Passed Through a Silica Gel Column Prior to Analysis

Results Reported as µg/g (ppm)

Sample ID Laboratory ID	$rac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36})}$	Surrogate (% Recovery) (Limit 50-150)
MW-23-4.0 508019-02	<50	65
MW-22-6.5 508019-04	470	64
P-24-5.5 508019-06	53	57
P-25-5.0 508019-08	98	60
Method Blank	<50	50
Method Diank	~50	90

# ENVIRONMENTAL CHEMISTS

# Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW-23-3.5	Client:	Geomatrix Consultants, Inc.
Date Received:	08/02/05	Project:	9329/14, F&BI 508019
Date Extracted:	08/03/05	Lab ID:	508019-01
Date Analyzed:	08/10/05	Data File:	080928.D
Matrix:	soil	Instrument:	GCMS5
Units:	ug/g (ppm)	Operator:	YA

		Lower	$\cup \mathrm{pper}$
Surrogates:	% Recovery:	Limit:	Limit:
Dibromofluoromethane	86	36	146
1,2-Dichloroethane-d4	94	40	139
Toluene-d8	98	36	152
4-Bromofluorobenzene	100	67	124

	Concentration		Concentration
Compounds:	ug/g (ppm)	Compounds:	ug/g (ppm)
Dichlorodifluoromethane	< 0.05	Tetrachloroethene	< 0.05
Chloromethane	< 0.05	Dibromochloromethane	< 0.05
Vinyl chloride	< 0.05	1,2-Dibromoethane (EDB)	< 0.05
Bromomethane	< 0.05	Chlorobenzene	< 0.05
Chloroethane	< 0.05	Ethylbenzene	< 0.05
Trichlorofluoromethane	< 0.05	1,1,1,2-Tetrachloroethane	< 0.05
Acetone	< 0.5	m,p-Xylene	< 0.1
1,1-Dichloroethene	< 0.05	o-Xylene	< 0.05
Methylene chloride	< 0.5	Styrene	< 0.05
trans-1,2-Dichloroethene	< 0.05	Isopropylbenzene	< 0.05
1,1-Dichloroethane	< 0.05	Bromoform	< 0.05
2,2-Dichloropropane	< 0.05	n-Propylbenzene	< 0.05
cis-1,2-Dichloroethene	< 0.05	Bromobenzene	< 0.05
Chloroform	< 0.05	1,3,5-Trimethylbenzene	< 0.05
2-Butanone (MEK)	< 0.5	1,1,2,2-Tetrachloroethane	< 0.05
1,2-Dichloroethane (EDC)	< 0.05	1,2,3-Trichloropropane	< 0.05
1,1,1-Trichloroethane	< 0.05	2-Chlorotoluene	< 0.05
1,1-Dichloropropene	< 0.05	4-Chlorotoluene	< 0.05
Carbon Tetrachloride	< 0.05	tert-Butylbenzene	< 0.05
Benzene	< 0.03	1,2,4-Trimethylbenzene	< 0.05
Trichloroethene	< 0.03	sec-Butylbenzene	< 0.05
1,2-Dichloropropane	< 0.05	p-Isopropyltoluene	< 0.05
Bromodichloromethane	< 0.05	1,3-Dichlorobenzene	< 0.05
Dibromomethane	< 0.05	1,4-Dichlorobenzene	< 0.05
4-Methyl-2-pentanone	< 0.5	1,2-Dichlorobenzene	< 0.05
cis-1,3-Dichloropropene	< 0.05	1,2-Dibromo-3-chloropropane	< 0.05
Toluene	< 0.05	1,2,4-Trichlorobenzene	< 0.05
trans-1,3-Dichloropropene	< 0.05	Hexachlorobutadiene	< 0.05
1,1,2-Trichloroethane	< 0.05	Naphthalene	< 0.05
2-Hexanone	< 0.5	1,2,3-Trichlorobenzene	< 0.05
1,3-Dichloropropane	< 0.05		

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For Volatile Compounds By EPA Method 8260B

MW-22-6.0 Geomatrix Consultants, Inc. Client Sample ID: Client: Project: 9329/14, F&BI 508019 Date Received: 08/02/05 Lab ID: Date Extracted: 08/03/05 508019-03 Data File: 080317.D Date Analyzed: 08/03/05 GCMS5 Matrix: soil Instrument: ug/g (ppm) YAUnits: Operator:

		Lower	$\operatorname{Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
Dibromofluoromethane	52	36	146
1,2-Dichloroethane-d $4$	58	40	139
Toluene-d8	40	36	152
4-Bromofluorobenzene	<b>29</b> ip	67	124

	Concentration		Concentration
Compounds:	ug/g (ppm)	Compounds:	ug/g (ppm)
Dichlorodifluoromethane	< 0.05	Tetrachloroethene	< 0.05
Chloromethane	< 0.05	Dibromochloromethane	< 0.05
Vinyl chloride	< 0.05	1,2-Dibromoethane (EDB)	< 0.05
Bromomethane	< 0.05	Chlorobenzene	< 0.05
Chloroethane	< 0.05	Ethylbenzene	< 0.05
Trichlorofluoromethane	< 0.05	1,1,1,2-Tetrachloroethane	< 0.05
Acetone	< 0.5	m,p-Xylene	< 0.1
1,1-Dichloroethene	< 0.05	o-Xylene	< 0.05
Methylene chloride	0.89 fb	Styrene	< 0.05
trans-1,2-Dichloroethene	< 0.05	Isopropylbenzene	< 0.05
1,1-Dichloroethane	< 0.05	Bromoform	< 0.05
2,2-Dichloropropane	< 0.05	n-Propylbenzene	< 0.05
cis-1,2-Dichloroethene	< 0.05	Bromobenzene	< 0.05
Chloroform	< 0.05	1,3,5-Trimethylbenzene	< 0.05
2-Butanone (MEK)	< 0.5	1,1,2,2-Tetrachloroethane	< 0.05
1,2-Dichloroethane (EDC)	< 0.05	1,2,3-Trichloropropane	< 0.05
1,1,1-Trichloroethane	< 0.05	2-Chlorotoluene	< 0.05
1,1-Dichloropropene	< 0.05	4-Chlorotoluene	< 0.05
Carbon Tetrachloride	< 0.05	tert-Butylbenzene	< 0.05
Benzene	< 0.03	1,2,4-Trimethylbenzene	< 0.05
Trichloroethene	< 0.03	sec-Butylbenzene	< 0.05
1,2-Dichloropropane	< 0.05	p-Isopropyltoluene	< 0.05
Bromodichloromethane	< 0.05	1,3-Dichlorobenzene	< 0.05
Dibromomethane	< 0.05	1,4-Dichlorobenzene	< 0.05
4-Methyl-2-pentanone	< 0.5	1,2-Dichlorobenzene	< 0.05
cis-1,3-Dichloropropene	< 0.05	1,2-Dibromo-3-chloropropane	< 0.05
Toluene	< 0.05	1,2,4-Trichlorobenzene	< 0.05
trans-1,3-Dichloropropene	< 0.05	Hexachlorobutadiene	< 0.05
1,1,2-Trichloroethane	< 0.05	Naphthalene	< 0.05
2-Hexanone	< 0.5	1,2,3-Trichlorobenzene	< 0.05
1,3-Dichloropropane	< 0.05		

fb - The analyte indicated was found in the blank. Its presence may be due to laboratory contamination. ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID: P-24-5.0 Client: Geomatrix Consultants, Inc. Date Received: 08/02/05 Project: 9329/14, F&BI 508019 Lab ID: Date Extracted: 08/03/05 508019-05 Date Analyzed: Data File: 080929.D08/10/05 Matrix: soil Instrument: GCMS5

Units: ug/g (ppm) Operator: YA

		$\operatorname{Lower}$	$\sf Upper$
Surrogates:	% Recovery:	Limit:	Limit:
Dibromofluoromethane	48	36	146
1,2-Dichloroethane-d4	50	40	139
Toluene-d8	35 ip	36	152
4-Bromofluorobenzene	17 ip	67	124

	Concentration		Concentration
Compounds:	ug/g (ppm)	Compounds:	ug/g (ppm)
Dichlorodifluoromethane	< 0.05	Tetrachloroethene	< 0.05
Chloromethane	< 0.05	Dibromochloromethane	< 0.05
Vinyl chloride	< 0.05	1,2-Dibromoethane (EDB)	< 0.05
Bromomethane	< 0.05	Chlorobenzene	< 0.05
Chloroethane	< 0.05	Ethylbenzene	< 0.05
Trichlorofluoromethane	< 0.05	1,1,1,2-Tetrachloroethane	< 0.05
Acetone	< 0.5	m,p-Xylene	< 0.1
1,1-Dichloroethene	< 0.05	o-Xylene	< 0.05
Methylene chloride	< 0.5	Styrene	< 0.05
trans-1,2-Dichloroethene	< 0.05	Isopropylbenzene	< 0.05
1,1-Dichloroethane	< 0.05	Bromoform	< 0.05
2,2-Dichloropropane	< 0.05	n-Propylbenzene	< 0.05
cis-1,2-Dichloroethene	< 0.05	Bromobenzene	< 0.05
Chloroform	< 0.05	1,3,5-Trimethylbenzene	< 0.05
2-Butanone (MEK)	< 0.5	1,1,2,2-Tetrachloroethane	< 0.05
1,2-Dichloroethane (EDC)	< 0.05	1,2,3-Trichloropropane	< 0.05
1,1,1-Trichloroethane	< 0.05	2-Chlorotoluene	< 0.05
1,1-Dichloropropene	< 0.05	4-Chlorotoluene	< 0.05
Carbon Tetrachloride	< 0.05	tert-Butylbenzene	< 0.05
Benzene	< 0.03	1,2,4-Trimethylbenzene	< 0.05
Trichloroethene	< 0.03	sec-Butylbenzene	< 0.05
1,2-Dichloropropane	< 0.05	p-Isopropyltoluene	< 0.05
Bromodichloromethane	< 0.05	1,3-Dichlorobenzene	< 0.05
Dibromomethane	< 0.05	1,4-Dichlorobenzene	< 0.05
4-Methyl-2-pentanone	< 0.5	1,2-Dichlorobenzene	< 0.05
cis-1,3-Dichloropropene	< 0.05	1,2-Dibromo-3-chloropropane	< 0.05
Toluene	< 0.05	1,2,4-Trichlorobenzene	< 0.05
trans-1,3-Dichloropropene	< 0.05	Hexachlorobutadiene	< 0.05
1,1,2-Trichloroethane	< 0.05	Naphthalene	< 0.05
2-Hexanone	< 0.5	1,2,3-Trichlorobenzene	< 0.05
1,3-Dichloropropane	< 0.05		

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

# ENVIRONMENTAL CHEMISTS

# Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID: Date Received:	08/02/05	Client: Project:	Geomatrix Consultants, Inc. 9329/14, F&BI 508019
Date Extracted:	08/03/05	Lab ID:	508019-07
Date Analyzed:	08/10/05	Data File:	080930.D
Matrix:	soil	Instrument:	GCMS5
Units:	ug/g (ppm)	Operator:	YA

		$\operatorname{Lower}$	Upper
Surrogates:	% Recovery:	Limit:	Limit:
Dibromofluoromethane	75	36	146
1,2-Dichloroethane-d4	83	40	139
Toluene-d8	82	36	152
4-Bromofluorobenzene	79	67	124

	Concentration		Concentration
Compounds:	ug/g (ppm)	Compounds:	ug/g (ppm)
Dichlorodifluoromethane	< 0.05	Tetrachloroethene	< 0.05
Chloromethane	< 0.05	Dibromochloromethane	< 0.05
Vinyl chloride	< 0.05	1,2-Dibromoethane (EDB)	< 0.05
Bromomethane	< 0.05	Chlorobenzene	< 0.05
Chloroethane	< 0.05	Ethylbenzene	< 0.05
Trichlorofluoromethane	< 0.05	1,1,1,2-Tetrachloroethane	< 0.05
Acetone	< 0.5	m,p-Xylene	< 0.1
1,1-Dichloroethene	< 0.05	o-Xylene	< 0.05
Methylene chloride	< 0.5	Styrene	< 0.05
trans-1,2-Dichloroethene	< 0.05	Isopropylbenzene	< 0.05
1,1-Dichloroethane	< 0.05	Bromoform	< 0.05
2,2-Dichloropropane	< 0.05	n-Propylbenzene	< 0.05
cis-1,2-Dichloroethene	< 0.05	Bromobenzene	< 0.05
Chloroform	< 0.05	1,3,5-Trimethylbenzene	< 0.05
2-Butanone (MEK)	< 0.5	1,1,2,2-Tetrachloroethane	< 0.05
1,2-Dichloroethane (EDC)	< 0.05	1,2,3-Trichloropropane	< 0.05
1,1,1-Trichloroethane	< 0.05	2-Chlorotoluene	< 0.05
1,1-Dichloropropene	< 0.05	4-Chlorotoluene	< 0.05
Carbon Tetrachloride	< 0.05	tert-Butylbenzene	< 0.05
Benzene	< 0.03	1,2,4-Trimethylbenzene	< 0.05
Trichloroethene	< 0.03	sec-Butylbenzene	< 0.05
1,2-Dichloropropane	< 0.05	p-Isopropyltoluene	< 0.05
Bromodichloromethane	< 0.05	1,3-Dichlorobenzene	< 0.05
Dibromomethane	< 0.05	1,4-Dichlorobenzene	< 0.05
4-Methyl-2-pentanone	< 0.5	1,2-Dichlorobenzene	< 0.05
cis-1,3-Dichloropropene	< 0.05	1,2-Dibromo-3-chloropropane	< 0.05
Toluene	< 0.05	1,2,4-Trichlorobenzene	< 0.05
trans-1,3-Dichloropropene	< 0.05	Hexachlorobutadiene	< 0.05
1,1,2-Trichloroethane	< 0.05	Naphthalene	< 0.05
2-Hexanone	< 0.5	1,2,3-Trichlorobenzene	< 0.05
1,3-Dichloropropane	< 0.05		

# ENVIRONMENTAL CHEMISTS

# Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	Method Blank	Client:	Geomatrix Consultants, Inc.
Date Received:	Not Applicable	Project:	9329/14, F&BI 508019
Date Extracted:	08/03/05	Lab ID:	05-1031b2
Date Analyzed:	08/03/05	Data File:	080313.D
Matrix:	soil	Instrument:	GCMS5
Units:	ug/g (ppm)	Operator:	YA

		Lower	Upper
Surrogates:	% Recovery:	Limit:	Limit:
Dibromofluoromethane	74	36	146
1,2-Dichloroethane-d4	76	40	139
Toluene-d8	79	36	152
4-Bromofluorobenzene	75	67	124

	tration
Compounds: ug/g (ppm) Compounds: ug/g (ppm)	opm)
Dichlorodifluoromethane <0.05 Tetrachloroethene <0.0	05
Chloromethane <0.05 Dibromochloromethane <0.	05
Vinyl chloride <0.05 1,2-Dibromoethane (EDB) <0.05	05
Bromomethane <0.05 Chlorobenzene <0.0	05
Chloroethane <0.05 Ethylbenzene <0.0	05
Trichlorofluoromethane <0.05 1,1,1,2-Tetrachloroethane <0.	05
Acetone $<0.5$ m,p-Xylene $<0.$	1
1,1-Dichloroethene <0.05 o-Xylene <0.	05
Methylene chloride 0.82 Styrene <0.	05
trans-1,2-Dichloroethene <0.05 Isopropylbenzene <0.	05
1,1-Dichloroethane <0.05 Bromoform <0.	05
2,2-Dichloropropane <0.05 n-Propylbenzene <0.	05
cis-1,2-Dichloroethene <0.05 Bromobenzene <0.	05
Chloroform <0.05 1,3,5-Trimethylbenzene <0.	05
2-Butanone (MEK) <0.5 1,1,2,2-Tetrachloroethane <0.	05
1,2-Dichloroethane (EDC) <0.05 1,2,3-Trichloropropane <0.	05
1,1,1-Trichloroethane <0.05 2-Chlorotoluene <0.	05
1,1-Dichloropropene <0.05 4-Chlorotoluene <0.	05
Carbon Tetrachloride <0.05 tert-Butylbenzene <0.0	05
Benzene <0.03 1,2,4-Trimethylbenzene <0.0	05
Trichloroethene <0.03 sec-Butylbenzene <0.	05
1,2-Dichloropropane <0.05 p-Isopropyltoluene <0.	05
Bromodichloromethane <0.05 1,3-Dichlorobenzene <0.0	05
Dibromomethane <0.05 1,4-Dichlorobenzene <0.0	05
4-Methyl-2-pentanone <0.5 1,2-Dichlorobenzene <0.	05
cis-1,3-Dichloropropene <0.05 1,2-Dibromo-3-chloropropane <0.	05
Toluene <0.05 1,2,4-Trichlorobenzene <0.	05
trans-1,3-Dichloropropene <0.05 Hexachlorobutadiene <0.	05
1,1,2-Trichloroethane <0.05 Naphthalene <0.	05
2-Hexanone <0.5 1,2,3-Trichlorobenzene <0.	05
1,3-Dichloropropane <0.05	

# **ENVIRONMENTAL CHEMISTS**

#### Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID: MW-23-4.0
Date Received: 08/02/05
Date Extracted: 08/04/05
Date Analyzed: 08/05/05
Matrix: soil
Units: ug/g (ppm)

Client: Geomatrix Consultants, Inc.
Project: 9329/14, F&BI 508019

Lab ID: 508019-02

Data File: 080509.D

Instrument: GCMS3

Operator: YA

		Lower	
Surrogates:	% Recovery:	Limit:	
2-Fluorophenol	88	40	
Phenol-d6	70	42	
Nitrobenzene-d5	77	51	
2-Fluorobiphenyl	73	49	
2,4,6-Tribromophenol	72	52	
Terphenyl-d14	74	53	

Concentration ug/g (ppm)

Phenol <0.3

Compounds:

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID: MW-22-6.5
Date Received: 08/02/05
Date Extracted: 08/04/05
Date Analyzed: 08/05/05
Matrix: soil
Units: ug/g (ppm)

Client: Geomatrix Consultants, Inc.
Project: 9329/14, F&BI 508019

Lab ID: 508019-04

Data File: 080511.D

Instrument: GCMS3

Operator: YA

		$\operatorname{Lower}$	$_{ m Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
2-Fluorophenol	93	40	122
Phenol-d6	74	42	118
Nitrobenzene-d5	79	51	123
2-Fluorobiphenyl	79	49	120
2,4,6-Tribromophenol	83	52	104
Terphenyl-d14	110	53	122

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID: P-24-5.5 Date Received: 08/02/05 Date Extracted: 08/04/05 Date Analyzed: 08/05/05 Matrix: soil

Units: ug/g (ppm)

Client: Project: Geomatrix Consultants, Inc.

9329/14, F&BI 508019

Lab ID: 508019-06 Data File: 080512.DGCMS3 Instrument: Operator: YA

		$\operatorname{Lower}$	$_{ m Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
2-Fluorophenol	89	40	122
Phenol-d6	71	42	118
Nitrobenzene-d5	78	51	123
2-Fluorobiphenyl	77	49	120
2,4,6-Tribromophenol	81	52	104
Terphenyl-d14	99	53	122

Concentration

Compounds: ug/g (ppm)

Phenol < 0.3

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID: P-25-5.0
Date Received: 08/02/05
Date Extracted: 08/04/05
Date Analyzed: 08/05/05
Matrix: soil
Units: ug/g (ppm)

l Ins

Client: Geomatrix Consultants, Inc. Project: 9329/14, F&BI 508019

 Project:
 9329/14, Fe

 Lab ID:
 508019-08

 Data File:
 080513.D

 Instrument:
 GCMS3

 Operator:
 YA

		$\operatorname{Lower}$	$\operatorname{Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
2-Fluorophenol	94	40	122
Phenol-d6	76	42	118
Nitrobenzene-d5	82	51	123
2-Fluorobiphenyl	80	49	120
2,4,6-Tribromophenol	83	52	104
Terphenyl-d14	9	53	122

Concentration ug/g (ppm)

Phenol <0.3

Compounds:

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID:	Method Blank
Date Received:	Not Applicable
Date Extracted:	08/04/05
Date Analyzed:	08/05/05
Matrix:	soil
Units:	ug/g (ppm)

Client:	Geomatrix Consultants, Inc.
Project:	9329/14, F&BI 508019
Lab ID:	05-1050 mb
Data File:	080506.D
Instrument:	GCMS3
Operator:	YA

		Lower	$_{ m Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
2-Fluorophenol	95	40	122
Phenol-d6	76	42	118
Nitrobenzene-d5	84	51	123
2-Fluorobiphenyl	81	49	120
2,4,6-Tribromophenol	71	52	104
Terphenyl-d14	78	53	122

# **ENVIRONMENTAL CHEMISTS**

# Analysis For PNA Compounds By EPA Method 8270C SIM

		$\operatorname{Lower}$	$\operatorname{Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
Anthracene-d10	103	38	158
Benzo(a)anthracene-d12	101	35	146

	Concentration
Compounds:	ug/kg (ppb)
Naphthalene	<5
Acenaphthylene	<5
Acenaphthene	<5
Fluorene	<5
Phenanthrene	7.2
Anthracene	<5
Fluoranthene	<5
Pyrene	<5
Benz(a)anthracene	<5
Chrysene	<5
Benzo(b)fluoranthene	<5
Benzo(k)fluoranthene	<5
Benzo(a)pyrene	<5
Indeno(1,2,3-cd)pyrene	<5
Dibenzo(a,h)anthracene	<5
Benzo(g,h,i)perylene	<5

#### **ENVIRONMENTAL CHEMISTS**

# Analysis For PNA Compounds By EPA Method 8270C SIM

Client Sample ID: MW-22-6.5
Date Received: 08/02/05
Date Extracted: 08/04/05
Date Analyzed: 08/08/05
Matrix: soil
Units: ug/kg (ppb)

Project:
Lab ID:
Data File:
Instrument:
Operator:

Client:

Geomatrix Consultants, Inc. 9329/14, F&BI 508019

508019-04 1/10 080812.D GCMS3 YA

	$\operatorname{Lower}$	$\cup \mathrm{pper}$
% Recovery:	Limit:	Limit:
139	38	158
116	35	146
	139	% Recovery: Limit: 139 38

Compounds:	Concentration ug/kg (ppb)
Naphthalene	< 50
Acenaphthylene	< 50
Acenaphthene	< 50
Fluorene	< 50
Phenanthrene	< 50
Anthracene	< 50
Fluoranthene	< 50
Pyrene	< 50
Benz(a)anthracene	< 50
Chrysene	< 50
Benzo(b)fluoranthene	< 50
Benzo(k)fluoranthene	< 50
Benzo(a)pyrene	< 50
Indeno(1,2,3-cd)pyrene	< 50
Dibenzo(a,h)anthracene	< 50
Benzo(g,h,i)perylene	< 50

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

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For PNA Compounds By EPA Method 8270C SIM

Geomatrix Consultants, Inc. Client Sample ID: P-24-5.5 Client: Date Received: 08/02/05 Project: 9329/14, F&BI 508019 Lab ID: 508019-06 1/10 Date Extracted: 08/04/05 Data File: 080813.D08/08/05 Date Analyzed: GCMS3 Instrument: Matrix: soil ug/kg (ppb) Operator: YAUnits:

		Lower	$\operatorname{Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
Anthracene-d10	142	38	158
Benzo(a)anthracene-d12	108	35	146

Delizo(a)anumacene-u12	100
Compounds:	Concentration ug/kg (ppb)
Naphthalene	< 50
Acenaphthylene	< 50
Acenaphthene	< 50
Fluorene	< 50
Phenanthrene	< 50
Anthracene	< 50
Fluoranthene	< 50
Pyrene	< 50
Benz(a)anthracene	< 50
Chrysene	< 50
Benzo(b)fluoranthene	68
Benzo(k)fluoranthene	< 50
Benzo(a)pyrene	< 50
Indeno(1,2,3-cd)pyrene	< 50
Dibenzo(a,h)anthracene	< 50
Benzo(g,h,i)perylene	< 50
-	

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

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For PNA Compounds By EPA Method 8270C SIM

Client Sample ID: P-25-5.0 Client: Geomatrix Consultants, Inc. Project: 9329/14, F&BI 508019 Date Received: 08/02/05 Lab ID: 508019-08 1/10 08/04/05 Date Extracted: Data File: 08/08/05 080815.DDate Analyzed: Instrument: GCMS3 Matrix: soil ug/kg (ppb) Operator: YAUnits:

		$\operatorname{Lower}$	$_{ m Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
Anthracene-d10	138	38	158
Benzo(a)anthracene-d12	114	35	146

Compounds:	Concentration ug/kg (ppb)
Naphthalene	< 50
Acenaphthylene	< 50
Acenaphthene	< 50
Fluorene	< 50
Phenanthrene	< 50
Anthracene	< 50
Fluoranthene	< 50
Pyrene	< 50
Benz(a)anthracene	< 50
Chrysene	< 50
Benzo(b)fluoranthene	< 50
Benzo(k)fluoranthene	< 50
Benzo(a)pyrene	< 50
Indeno(1,2,3-cd)pyrene	< 50
Dibenzo(a,h)anthracene	< 50
Benzo(g,h,i)perylene	< 50

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

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For PNA Compounds By EPA Method 8270C SIM

Client Sample ID: Method Blank
Date Received: Not Applicable
Date Extracted: 08/04/05
Date Analyzed: 08/08/05
Matrix: soil
Units: ug/kg (ppb)

Client: Geomatrix Consultants, Inc.
Project: 9329/14, F&BI 508019

Lab ID: 05-1049mb

Data File: 080810.D

Instrument: GCMS3
Operator: YA

Upper Limit: 158 146

		Lower	
Surrogates:	% Recovery:	Limit:	
Anthracene-d10	105	38	
Benzo(a)anthracene-d12	93	35	

Compounds:	Concentration ug/kg (ppb)
Naphthalene	<5
Acenaphthylene	<5
Acenaphthene	<5
Fluorene	<5
Phenanthrene	<5
Anthracene	<5
Fluoranthene	<5
Pyrene	<5
Benz(a)anthracene	<5
Chrysene	<5
Benzo(b)fluoranthene	<5
Benzo(k)fluoranthene	<5
Benzo(a)pyrene	<5
Indeno(1,2,3-cd)pyrene	<5
Dibenzo(a,h)anthracene	<5
Benzo(g,h,i)perylene	<5

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 08/18/05 Date Received: 08/02/05

Project: 9329/14, F&BI 508019

# QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING EPA METHOD 8015M

Laboratory Code: 508034-01 (Duplicate)

				Relative Percent
	Reporting	Sample	Duplicate	Difference
Analyte	Units	Result	Result	(Limit 20)
Gasoline	μg/g (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

,			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Gasoline	μg/g (ppm)	20	97	58-134

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 08/18/05 Date Received: 08/02/05

Project: 9329/14, F&BI 508019

#### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL USING EPA METHOD 8015M

Laboratory Code: 508019-08 (Matrix Spike)

·		_		$\operatorname{Percent}$	Percent		
	Reporting	Spike	Sample	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
Diesel	ug/g (ppm)	500	500	27 h	129	61-136	131 h

Laboratory Code: Laboratory Control Sample

			$\operatorname{Percent}$	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel	μg/g (ppm)	500	81 .	61-140

h - RPD results are likely outside control limits due to sample inhomogeneity.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 08/18/05 Date Received: 08/02/05

Project: 9329/14, F&BI 508019

#### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL USING EPA METHOD 8015M

Laboratory Code: 508019-08 (Matrix Spike)

•	Reporting	Spike	Sample	Percent Recovery	Percent Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
Motor Oil	ug/g (nnm)	250	< 50	106	99	61-136	7

Laboratory Code: Laboratory Control Sample

			$\operatorname{Percent}$	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Motor Oil	μg/g (ppm)	250	73	70-130

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 08/18/05 Date Received: 08/02/05

Project: 9329/14, F&BI 508019

# QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: 507254-04 (Matrix Spike)

				Percent	Percent		
	Reporting	Spike	Sample	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
1,1-Dichloroethene	μg/g (ppm)	5	< 0.05	33	38	24-136	14
Methylene chloride	μg/g (ppm)	2.5	< 0.5	51	58	42-159	13
trans-1,2-Dichloroethene	μg/g (ppm)	2.5	< 0.05	51	59	50-150	15
1,1-Dichloroethane	μg/g (ppm)	2.5	< 0.05	53	60	50-150	13
2,2-Dichloropropane	μg/g (ppm)	2.5	< 0.05	45	50	51 - 132	10
cis-1,2-Dichloroethene	μg/g (ppm)	2.5	< 0.05	56	63	67-137	12
Chloroform	μg/g (ppm)	2.5	< 0.05	53	61	50-150	13
1,1,1-Trichloroethane	μg/g (ppm)	2.5	< 0.05	48 ip	55	50-150	13
Carbon Tetrachloride	μg/g (ppm)	2.5	< 0.03	49 ip	56	41-133	13
Benzene	μg/g (ppm)	2.5	< 0.03	56	65	28-170	14
Trichloroethene	μg/g (ppm)	2.5	< 0.05	58	66	43-136	13
Bromodichloromethane	μg/g (ppm)	2.5	< 0.05	49 ip	56	50-150	15
Dibromomethane	μg/g (ppm)	2.5	< 0.05	55	63	34 - 147	14
Toluene	μg/g (ppm)	2.5	< 0.05	61	68	45-142	11
Tetrachloroethene	μg/g (ppm)	2.5	< 0.05	51	57	34-147	11
Dibromochloromethane	μg/g (ppm)	2.5	< 0.05	56	63	39-140	10
Chlorobenzene	μg/g (ppm)	2.5	< 0.05	55	63	38-142	12
Bromoform	μg/g (ppm)	2.5	< 0.05	$45 \mathrm{ip}$	51	50-150	12

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 08/18/05 Date Received: 08/02/05

Project: 9329/14, F&BI 508019

# QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: Laboratory Control Sample

	Percent				
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
1,1-Dichloroethene	μg/g (ppm)	5	50	50-132	
Methylene chloride	μg/g (ppm)	2.5	76	69-143	
trans-1,2-Dichloroethene	μg/g (ppm)	2.5	88	70-130	
1,1-Dichloroethane	μg/g (ppm)	2.5	87	70-130	
2,2-Dichloropropane	μg/g (ppm)	2.5	80	73 - 131	
cis-1,2-Dichloroethene	μg/g (ppm)	2.5	94	67-137	
Chloroform	$\mu g/g (ppm)$	2.5	87	70-130	
1,1,1-Trichloroethane	μg/g (ppm)	2.5	81	70-130	
Carbon Tetrachloride	$\mu g/g (ppm)$	2.5	86	71 - 119	
Benzene	μg/g (ppm)	2.5	90	52 - 158	
Trichloroethene	μg/g (ppm)	2.5	96	73 - 116	
Bromodichloromethane	μg/g (ppm)	2.5	80	70-130	
Dibromomethane	μg/g (ppm)	2.5	88	72 - 135	
Toluene	μg/g (ppm)	2.5	98	73 - 130	
Tetrachloroethene	μg/g (ppm)	2.5	87	75-136	
Dibromochloromethane	μg/g (ppm)	2.5	94	75 - 127	
Chlorobenzene	μg/g (ppm)	2.5	87	75 - 127	
Bromoform	μg/g (ppm)	2.5	78	70-130	

Note: The calibration verification result from 08/03/05 for bromomethane, chloroethane exceeded 15% deviation. The average deviation for all compounds was less than 15%, therefore the initial calibration is considered valid.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 08/18/05 Date Received: 08/02/05

Phenol

Project: 9329/14, F&BI 508019

# QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270C

Laboratory Code: 508019-02 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)		
Phenol	μg/g (ppm)	< 0.3	<0.3	nm		
Laboratory Code: Laborator	y Control Sampl	e				
Analyte	Reporting	Spike	Percent Recovery LCS	Percent Recovery LCSD	Acceptance	RPD

63

65

57-95

3

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

2.5

μg/g (ppm)

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 08/18/05 Date Received: 08/02/05

Project: 9329/14, F&BI 508019

# QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270C SIM

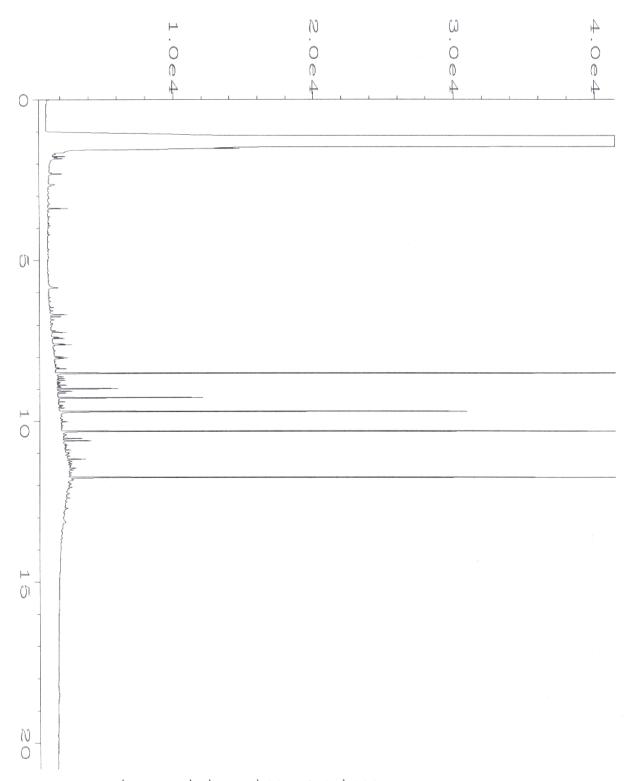
Laboratory Code: 508019-06 (Duplicate)

				Relative Percent
	Reporting	Sample	Duplicate	Difference
Analyte	Units	Result	Result	(Limit 20)
Naphthalene	μg/kg (ppb)	< 50	< 50	nm
Acenaphthylene	μg/kg (ppb)	< 50	< 50	nm
Acenaphthene	μg/kg (ppb)	< 50	< 50	nm
Fluorene	μg/kg (ppb)	< 50	< 50	nm
Phenanthrene	μg/kg (ppb)	< 50	< 50	nm
Anthracene	μg/kg (ppb)	< 50	< 50	nm
Fluoranthene	μg/kg (ppb)	< 50	< 50	nm
Pyrene	μg/kg (ppb)	< 50	< 50	nm
Benz(a)anthracene	μg/kg (ppb)	< 50	< 50	nm
Chrysene	μg/kg (ppb)	< 50	< 50	nm
Benzo(b)fluoranthene	μg/kg (ppb)	68	< 50	nm
Benzo(k)fluoranthene	μg/kg (ppb)	< 50	< 50	nm
Benzo(a)pyrene	μg/kg (ppb)	< 50	< 50	nm
Indeno(1,2,3-cd)pyrene	μg/kg (ppb)	< 50	< 50	nm
Dibenzo(a,h)anthracene	μg/kg (ppb)	< 50	< 50	nm
Benzo(g,h,i)perylene	$\mu g/kg \ (ppb)$	< 50	< 50	nm

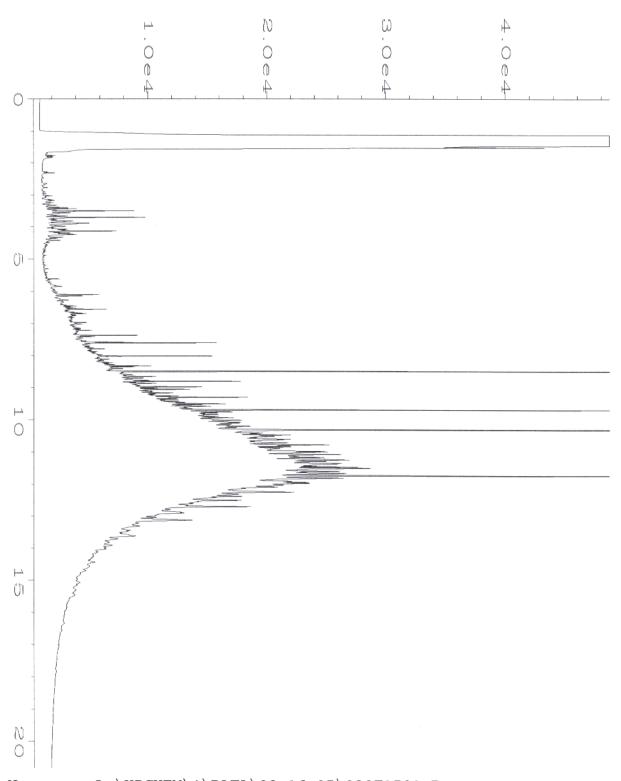
Laboratory Code: Laboratory Control Sample

			$\operatorname{Percent}$	$\operatorname{Percent}$		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	μg/kg (ppb)	170	77	88	69-105	13
Acenaphthylene	μg/kg (ppb)	170	76	87	62 - 117	14
Acenaphthene	μg/kg (ppb)	170	77	89	66-115	14
Fluorene	μg/kg (ppb)	170	76	89	62-116	15
Phenanthrene	μg/kg (ppb)	170	74	86	68-109	15
Anthracene	μg/kg (ppb)	170	72	83	56-102	13
Fluoranthene	μg/kg (ppb)	170	80	92	64 - 115	14
Pyrene	μg/kg (ppb)	170	78	89	67-118	13
Benz(a)anthracene	μg/kg (ppb)	170	74	86	53-121	15
Chrysene	μg/kg (ppb)	170	77	91	59-115	16
Benzo(b)fluoranthene	μg/kg (ppb)	170	88	99	58-132	12
Benzo(k)fluoranthene	μg/kg (ppb)	170	81	95	66-120	16
Benzo(a)pyrene	μg/kg (ppb)	170	81	92	49-116	13
Indeno(1,2,3-cd)pyrene	μg/kg (ppb)	170	87	99	61-121	13
Dibenzo(a,h)anthracene	μg/kg (ppb)	170	90	105	63-126	16
Benzo(g,h,i)perylene	μg/kg (ppb)	170	83	95	55-121	13

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.



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Operator
                  : so
Instrument
                   : GC#4
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Run Time Bar Code:
                                                    Sequence Line
                                                                    : 15
Acquired on
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Report Created on: 17 Aug 05 01:14 PM
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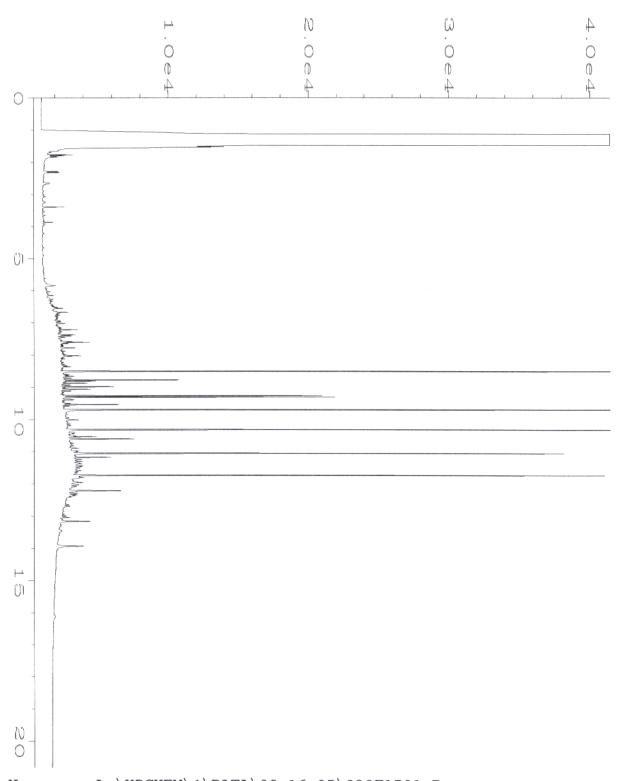
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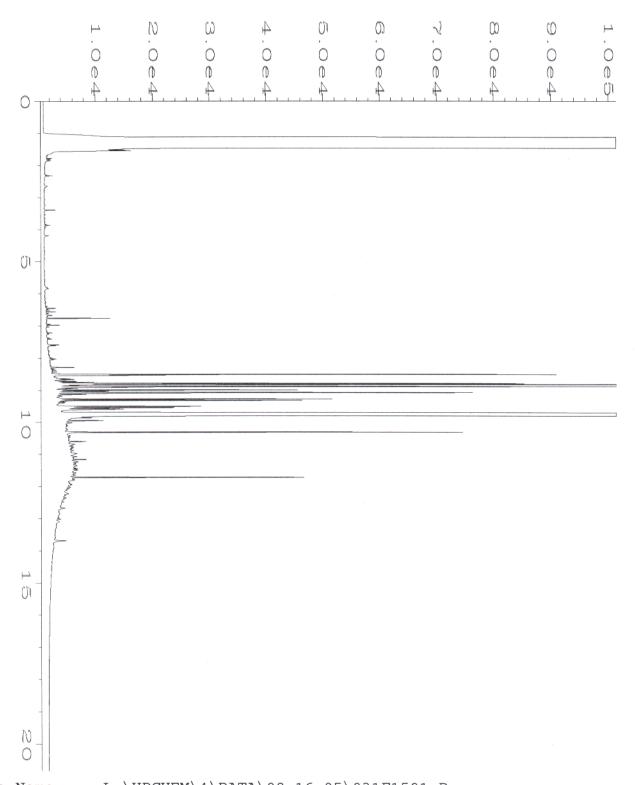
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Run Time Bar Code: Sequence Line : 15

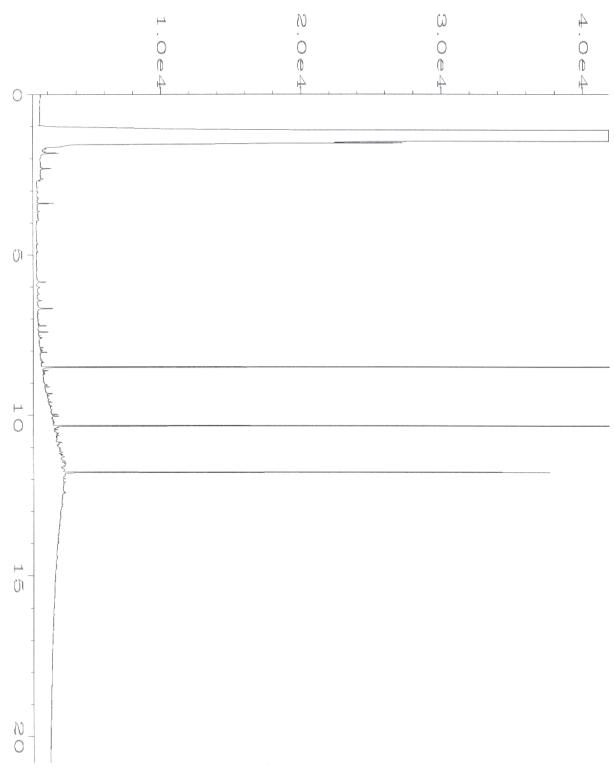
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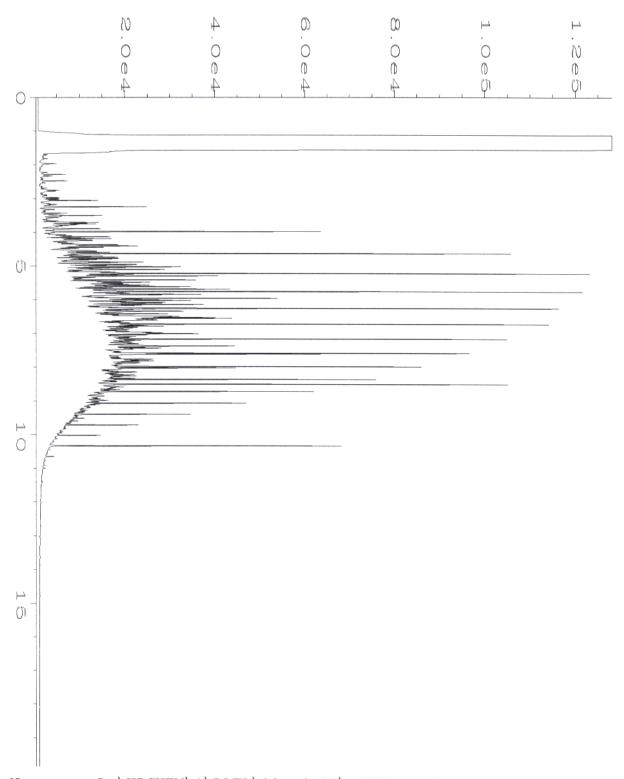




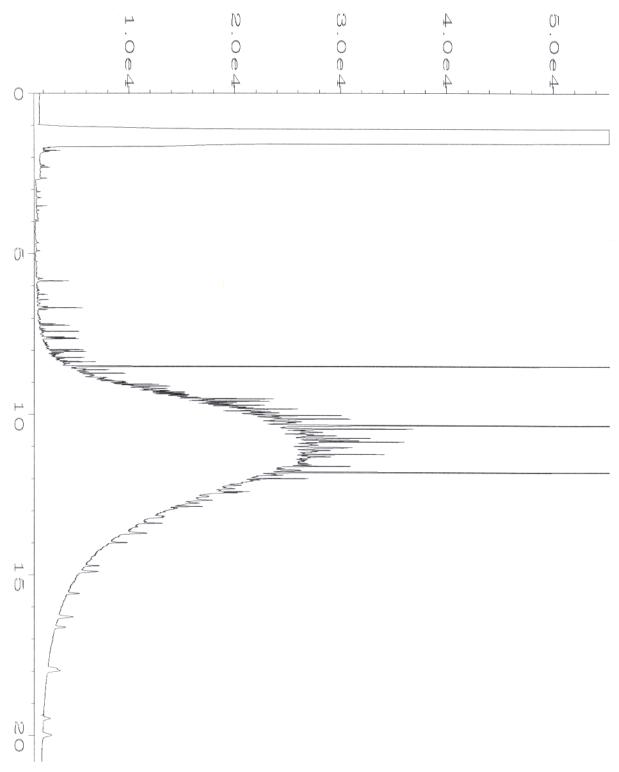
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Injection Number : 1
Instrument
                 : GC#4
                                                                   : 31
Sample Name
                 : 508019-08 sg
Run Time Bar Code:
                                                 Sequence Line
                                                                : 15
Acquired on
             : 16 Aug 05 11:17 PM
                                                 Instrument Method: TPHDAK.MTH
Report Created on: 17 Aug 05 01:15 PM
                                                 Analysis Method : DEFAULT.MTH
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                                 Method
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                                    Blank
Sample Name
                                                Injection Number: 1
                : 05-1051 mb sg
Run Time Bar Code:
                                                Sequence Line
                                                               : 15
Acquired on
                : 16 Aug 05
                                                Instrument Method: TPHDAK.MTH
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Report Created on: 17 Aug 05
                              01:14 PM
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Data File Name
Operator
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Instrument
                                                Vial Number
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Sample Name
                                                Injection Number: 1
                : 1000 wadf 21-117
                                                Sequence Line : 12
Instrument Method: TPHD.MTH
Run Time Bar Code:
Acquired on : 16 Aug 05 07:01 PM
Report Created on: 17 Aug 05 01:13 PM
                                                Analysis Method : DEFAULT.MTH
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Data File Name : L:\HPCHEM\4\DATA\08-16-05\005F0401.D

Operator : so Page Number : 1

Instrument : GC#4 Vial Number : 5

Sample Name : 1000 MO 21-1 Injection Number : 1

Run Time Bar Code: Sequence Line : 4

Acquired on : 16 Aug 05 09:00 AM Instrument Method: TPHDAK.MTH

Report Created on: 17 Aug 05 01:14 PM Analysis Method : DEFAULT.MTH
```

2101 Webster Street, 12th Floor • Oakland, CA 94612 Phone: 510-663-4100 Fax: 510-663-4141 Geometrix Consultants Laboratory Comments and Log No.: USH/CI Method of Shipment: Feu 792989576545 7929 8957 6567 Additional Comments 18834 Page REMARKS ۵ No. of Containers Ø Q e Cooled Date: Time: Time: Date: peviesel Date: 8/ CM 08/02/05 Total No. of Containers Soll (S), Water (W) Vapor (V), or Other (o) Relinquished by (Signature): Printed Name: Printed Name: Received by: Company: Company: 3LZ8 Results to: Silica Gel Cleanup Date: ANALYSES Date: Time: Time: Method 8015m (Motor Oil) Method 8015m (Diesel) × ኦ Method 8015m (Gasoline) Turnaround Time: 5+4 Date: Relinquished by (Signature) (Vino SHA9) MIS × ン × Full Scan) メ X EPA Method 8021 Printed Name: Printed Name: Chain-of Custody Record Received by EPA Method 8021 (Full Scan) EPA Method 8021 (Hal. VOCs only) Company OB; 45 Company Bate: 86 os Sac MW-22-6.5 Sample Number MU-23-4.0 Time: MW-22-6,0 Time: -25-5.0 P-25-4.5 P-24-5.0 -24-55 Laboratory: Friedman + Braya MW-23-3. Incoman & Brung Relinquished by (Signature): Than Samplers (Signature:) Project No.: 7327  $\sigma$ Printed Name // // // 0850 0880 4886 Geomat X 1015 1200 Time 508019 1339 200 Printed Name Received by: Company: Company: 17 Date 01 8/1/05 Z 40



# **APPENDIX F**

# Laboratory Analytical Reports and Chain-of-Custody Records - Groundwater

#### **ENVIRONMENTAL CHEMISTS**

James E. Bruya, Ph.D. Charlene Morrow, M.S. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 FAX: (206) 283-5044 e-mail: fbi@isomedia.com

September 21, 2005

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

Dear Mr. Keim:

Included are the results from the testing of material submitted on September 12, 2005 from the 9329/14, F&BI 509071 project. There are 33 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Charlene Morron

Charlene Morrow

Chemist

Enclosures GMC0921R.DOC

#### **ENVIRONMENTAL CHEMISTS**

#### CASE NARRATIVE

This case narrative encompasses samples received on September 12, 2005 by Friedman & Bruya, Inc. from the Geomatrix Consultants, Inc. 9329/14, F&BI 509071 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Geomatrix Consultants, Inc.
509071-01	MW-22-200509
509071-02	MW-23-200509
509071-03	P-24-200509
509071-04	P-25-200509
509071-05	BD-01-200509

All quality control requirements were acceptable.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

Date Extracted: 09/12/05 Date Analyzed: 09/12/05

# RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING EPA METHOD 8015M

Results Reported as  $\mu g/L$  (ppb)

Sample ID Laboratory ID	$\frac{\text{Gasoline Range}}{(\text{C}_6\text{-C}_{10})}$	Surrogate (% Recovery) (Limit 52-150)
MW-22-200509 509071-01	<100	100
MW-23-200509 509071-02	<100	100
P-24-200509 509071-03	<100	98
P-25-200509 509071-04	330	98
BD-01-200509 509071-05	<100	100
Method Blank	<100	97

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

Date Extracted: 09/12/05 Date Analyzed: 09/14/05

#### RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL USING EPA METHOD 8015M

#### Sample Extracts Passed Through a Silica Gel Column Prior to Analysis

Results Reported as µg/L (ppb)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	Surrogate (% Recovery) (Limit 68-143)
MW-22-200509 509071-01	<50	97
MW-23-200509 509071-02	<50	90
P-24-200509 509071-03	76	95
P-25-200509 509071-04	80	92
BD-01-200509 509071-05	<50	99
Method Blank	<50	75

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

Date Extracted: 09/12/05 Date Analyzed: 09/14/05

# RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL USING EPA METHOD 8015M

#### Sample Extracts Passed Through a Silica Gel Column Prior to Analysis

Results Reported as  $\mu g/L$  (ppb)

Sample ID Laboratory ID	$\frac{\text{Motor Oil Range}}{(C_{25}\text{-}C_{36})}$	Surrogate (% Recovery) (Limit 68-143)
MW-22-200509 509071-01	<250	110
MW-23-200509 509071-02	280	102
P-24-200509 509071-03	350	109
P-25-200509 509071-04	750	107
BD-01-200509 509071-05	<250	112
Method Blank	<250	85

## ENVIRONMENTAL CHEMISTS

		$\operatorname{Lower}$	$\cup \mathrm{pper}$
Surrogates:	% Recovery:	Limit:	Limit:
Dibromofluoromethane	99	83	129
1,2-Dichloroethane-d4	98	67	133
Toluene-d8	104	73	140
4-Bromofluorobenzene	105	84	136

	Concentration		Concentration
Compounds:	ug/L (ppb)	Compounds:	ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<1	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	28	m,p-Xylene	<2
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	23	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

#### **ENVIRONMENTAL CHEMISTS**

Client Sample ID:	MW-23-200509	Client:	Geomatrix Consultants, Inc.
Date Received:	09/12/05	Project:	9329/14, F&BI 509071
Date Extracted:	09/14/05	Lab ID:	509071-02
Date Analyzed:	09/14/05	Data File:	091418.D
Matrix:	water	Instrument:	GCMS5
Matrix:	water	Instrument:	YA
Units:	ug/L (ppb)	Operator:	

	$\operatorname{Lower}$	$\cup \mathrm{pper}$
% Recovery:	Limit:	Limit:
95	83	129
97	67	133
102	73	140
102	84	136
	95 97 102	% Recovery: Limit: 95 83 97 67 102 73

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<1	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<2
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	<1	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

#### **ENVIRONMENTAL CHEMISTS**

	Lower	$\cup \mathrm{pper}$
% Recovery:	Limit:	Limit:
97	83	129
97	67	133
104	73	140
104	84	136
	97 97 104	% Recovery: Limit: 97 83 97 67 104 73

	Concentration		Concentration
Compounds:	ug/L (ppb)	Compounds:	ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<1	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<2
1.1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	<1	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

#### ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix:	09/12/05 09/14/05 09/14/05 water	Client: Project: Lab ID: Data File: Instrument:	Geomatrix Consultants, Inc. 9329/14, F&BI 509071 509071-04 091420.D GCMS5
Units:	ug/L (ppb)	Operator:	YA

		Lower	$\cup \mathrm{pper}$
Surrogates:	% Recovery:	Limit:	Limit:
Dibromofluoromethane	98	83	129
1,2-Dichloroethane-d4	99	67	133
Toluene-d8	105	73	140
4-Bromofluorobenzene	106	84	136

	Concentration		Concentration
Compounds:	ug/L (ppb)	Compounds:	ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<1	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<2
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	130	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

#### **ENVIRONMENTAL CHEMISTS**

		$\operatorname{Lower}$	$\cup \mathrm{pper}$
Surrogates:	% Recovery:	Limit:	Limit:
Dibromofluoromethane	100	83	129
1,2-Dichloroethane-d4	96	67	133
Toluene-d8	106	73	140
4-Bromofluorobenzene	105	84	136

	Concentration		Concentration
Compounds:	ug/L (ppb)	Compounds:	ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<1	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	36	m,p-Xylene	<2
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	29	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

#### ENVIRONMENTAL CHEMISTS

Client Sample ID:	Method Blank	Client:	Geomatrix Consultants, Inc.
Date Received:	Not Applicable	Project:	9329/14, F&BI 509071
Date Extracted:	09/14/05	Lab ID:	051197 mb
Date Analyzed:	09/14/05	Data File:	091416.D
Matrix:	water	Instrument:	GCMS5
Units:	ug/L (ppb)	Operator:	YA

		$\operatorname{Lower}$	$\cup \mathrm{pper}$
Surrogates:	% Recovery:	Limit:	Limit:
Dibromofluoromethane	97	83	129
1,2-Dichloroethane-d4	98	67	133
Toluene-d8	105	73	140
4-Bromofluorobenzene	106	84	136

,	Concentration		Concentration
Compounds:	ug/L (ppb)	Compounds:	ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<1	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<2
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1.
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	<1	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

#### ENVIRONMENTAL CHEMISTS

Client Sample ID: Method Blank Date Received: Not Applicable Date Extracted: 09/15/05 Date Analyzed: 09/15/05 Matrix: water Units: ug/L (ppb)	Client: Project: Lab ID: Data File: Instrument: Operator:	Geomatrix Consultants, Inc. 9329/14, F&BI 509071 051227 mb 091505.D GCMS5 YA
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	Lower	$\cup \mathrm{pper}$
% Recovery:	Limit:	Limit:
99	83	129
97	67	133
105	73	140
106	84	136
	99 97 105	% Recovery: Limit: 99 83 97 67 105 73

	Concentration		Concentration
Compounds:	ug/L (ppb)	Compounds:	ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<1	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<2
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	<1	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

#### **ENVIRONMENTAL CHEMISTS**

# Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID: MW-22-200509
Date Received: 09/12/05
Date Extracted: 09/12/05
Date Analyzed: 09/15/05
Matrix: water
Units: ug/L (ppb)

Client: Geomatrix Consultants, Inc.
Project: 9329/14, F&BI 509071
Lab ID: 509071-01
Data File: 091509.D
Instrument: GCMS3
Operator: YA

Surrogates: 2-Fluorophenol Phenol-d6 Nitrobenzene-d5 2-Fluorobiphenyl	% Recovery: 46 31 77 69	Lower Limit: 13 12 39 38	Upper Limit: 89 85 132 129
2-Fluorobiphenyl	69	38	129
2,4,6-Tribromophenol	74	40	129
Terphenyl-d14	75	32	131

Concentration ug/L (ppb)

Phenol <10

#### **ENVIRONMENTAL CHEMISTS**

# Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID:	MW-23-200509	Client:	Geomatrix Consultants, Inc.
Date Received:	09/12/05	Project:	9329/14, F&BI 509071
Date Extracted:	09/12/05	Lab ID:	509071-02
Date Analyzed:	09/15/05	Data File:	091510.D
Matrix:	water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA
		Lower	Unner

	$\operatorname{Lower}$	Opper
% Recovery:	Limit:	Limit:
44	13	89
30	12	85
78	39	132
67	38	129
75	40	129
94	32	131
	44 30 78 67 75	% Recovery: Limit:  44 13 30 12 78 39 67 38 75 40

Compounds: Concentration ug/L (ppb)

Phenol <10

#### **ENVIRONMENTAL CHEMISTS**

# Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID: P-24-200509
Date Received: 09/12/05
Date Extracted: 09/12/05
Date Analyzed: 09/15/05
Matrix: water
Units: ug/L (ppb)

Client: Geomatrix Consultants, Inc.
Project: 9329/14, F&BI 509071
Lab ID: 509071-03
Data File: 091511.D
Instrument: GCMS3
Operator: YA

		Lower	$_{ m Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
2-Fluorophenol	44	13	89
Phenol-d6	31	12	85
Nitrobenzene-d5	79	39	132
2-Fluorobiphenyl	73	38	129
2,4,6-Tribromophenol	80	40	129
Terphenyl-d14	88	32	131

Concentration ug/L (ppb)

Phenol <10

#### **ENVIRONMENTAL CHEMISTS**

# Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID: P-25-200509
Date Received: 09/12/05
Date Extracted: 09/12/05
Date Analyzed: 09/15/05
Matrix: water
Units: ug/L (ppb)

Client: Geomatrix Consultants, Inc.
Project: 9329/14, F&BI 509071
Lab ID: 509071-04
Data File: 091512.D
Instrument: GCMS3
Operator: YA

		Lower	$\operatorname{Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
2-Fluorophenol	45	13	89
Phenol-d6	33	12	85
Nitrobenzene-d5	79	39	132
2-Fluorobiphenyl	75	38	129
2,4,6-Tribromophenol	58	40	129
Terphenyl-d14	88	32	131

Concentration ug/L (ppb)

Phenol <10

#### **ENVIRONMENTAL CHEMISTS**

# Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID:	BD-01-200509	Client:	Geomatrix Consultants, Inc.
Date Received:	09/12/05	Project:	9329/14, F&BI 509071
Date Extracted:	09/12/05	Lab ID:	509071-05
Date Analyzed:	09/15/05	Data File:	091513.D
Matrix:	water	Instrument:	GCMS3
Matrix:	water	Instrument:	GCMS3
Units:	ug/L (ppb)	Operator:	YA
Omts.	ug/L (ppb)	Operator.	171

		Lower	$\operatorname{Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
2-Fluorophenol	54	13	89
Phenol-d6	37	12	85
Nitrobenzene-d5	85	39	132
2-Fluorobiphenyl	77	38	129
2,4,6-Tribromophenol	77	40	129
Terphenyl-d14	84	32	131

Concentration ug/L (ppb)

Phenol <10

#### **ENVIRONMENTAL CHEMISTS**

## Analysis For Semivolatile Compounds By EPA Method 8270C

Client Sample ID: Method Blank
Date Received: Not Applicable
Date Extracted: 09/12/05
Date Analyzed: 09/15/05
Matrix: water
Units: ug/L (ppb)

Client: Geomatrix Consultants, Inc.
Project: 9329/14, F&BI 509071
Lab ID: 051219 mb
Data File: 091508.D
Instrument: GCMS3
Operator: YA

		$\operatorname{Lower}$	$\operatorname{Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
2-Fluorophenol	38	13	89
Phenol-d6	26	12	85
Nitrobenzene-d5	80	39	132
2-Fluorobiphenyl	75	38	129
2,4,6-Tribromophenol	46	40	129
Terphenyl-d14	84	32	131

Concentration

<10

Compounds: ug/L (ppb)

Phenol

#### ENVIRONMENTAL CHEMISTS

# Analysis For PNA Compounds By EPA Method 8270C SIM

C11.	G G . 1 T
Client:	Geomatrix Consultants, Inc
Project:	9329/14, F&BI 509071
Lab ID:	509071-01
Data File:	091607.D
Instrument:	GCMS3
Operator:	YA

		Lower	Upper
Surrogates:	% Recovery:	Limit:	Limit:
Anthracene-d10	85	28	139
Benzo(a)anthracene-d12	107	28	145
	Concentration		
Compounds:	ug/L (ppb)		
Naphthalene	< 0.1		
Acenanhthylene	< 0.1		

Compounds:	ug/L (ppb)
Naphthalene	< 0.1
Acenaphthylene	< 0.1
Acenaphthene	< 0.1
Fluorene	< 0.1
Phenanthrene	< 0.1
Anthracene	< 0.1
Fluoranthene	< 0.1
Pyrene	< 0.1
Benz(a)anthracene	< 0.1
Chrysene	< 0.1
Benzo(b)fluoranthene	< 0.1
Benzo(k)fluoranthene	< 0.1
Benzo(a)pyrene	< 0.1
Indeno(1,2,3-cd)pyrene	< 0.1
Dibenzo(a,h)anthracene	< 0.1
Benzo(g,h,i)perylene	< 0.1

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For PNA Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-23-200509	Client: Project: Lab ID: Data File: Instrument: Operator:	Geomatrix Consultants, Inc.
Date Received:	09/12/05		9329/14, F&BI 509071
Date Extracted:	09/12/05		509071-02
Date Analyzed:	09/16/05		091608.D
Matrix:	water		GCMS3
Units:	ug/L (ppb)		YA

		Lower	$_{ m Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
Anthracene-d10	93	28	139
Benzo(a)anthracene-d12	116	28	145

	Concentration
Compounds:	ug/L (ppb)
Naphthalene	< 0.1
Acenaphthylene	< 0.1
Acenaphthene	< 0.1
Fluorene	< 0.1
Phenanthrene	< 0.1
Anthracene	< 0.1
Fluoranthene	< 0.1
Pyrene	< 0.1
Benz(a)anthracene	< 0.1
Chrysene	< 0.1
Benzo(b)fluoranthene	< 0.1
Benzo(k)fluoranthene	< 0.1
Benzo(a)pyrene	< 0.1
Indeno(1,2,3-cd)pyrene	< 0.1
Dibenzo(a,h)anthracene	< 0.1
Benzo(g,h,i)perylene	< 0.1

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For PNA Compounds By EPA Method $8270\mathrm{C}$ SIM

Client Sample ID: P-24-200509
Date Received: 09/12/05
Date Extracted: 09/12/05
Date Analyzed: 09/16/05
Matrix: water
Units: ug/L (ppb)

Client: Geomatrix Consultants, Inc.
Project: 9329/14, F&BI 509071
Lab ID: 509071-03
Data File: 091609.D
Instrument: GCMS3
Operator: YA

Upper Limit:

139

145

		Lower	
Surrogates:	% Recovery:	Limit:	
Anthracene-d10	87	28	
Benzo(a)anthracene-d12	109	28	

Compounds:	Concentration ug/L (ppb)
Naphthalene	< 0.1
Acenaphthylene	< 0.1
Acenaphthene	< 0.1
Fluorene	< 0.1
Phenanthrene	< 0.1
Anthracene	< 0.1
Fluoranthene	< 0.1
Pyrene	< 0.1
Benz(a)anthracene	< 0.1
Chrysene	< 0.1
Benzo(b)fluoranthene	< 0.1
Benzo(k)fluoranthene	< 0.1
Benzo(a)pyrene	< 0.1
Indeno(1,2,3-cd)pyrene	< 0.1
Dibenzo(a,h)anthracene	< 0.1
Benzo(g,h,i)perylene	< 0.1

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For PNA Compounds By EPA Method $8270\mathrm{C}$ SIM

Client Sample ID: P-25-200509
Date Received: 09/12/05
Date Extracted: 09/12/05
Date Analyzed: 09/16/05
Matrix: water
Units: ug/L (ppb)

Client: Geomatrix Consultants, Inc.
Project: 9329/14, F&BI 509071
Lab ID: 509071-04
Data File: 091610.D
Instrument: GCMS3
Operator: YA

Surrogates:	% Recovery:
Anthracene-d10	94
Benzo(a)anthracene-d12	119

Lower	$_{ m Upper}$
Limit:	Limit:
28	139
28	145

Compounds:	Concentration ug/L (ppb)
Naphthalene	< 0.1
Acenaphthylene	< 0.1
Acenaphthene	< 0.1
Fluorene	< 0.1
Phenanthrene	< 0.1
Anthracene	< 0.1
Fluoranthene	< 0.1
Pyrene	< 0.1
Benz(a)anthracene	< 0.1
Chrysene	< 0.1
Benzo(b)fluoranthene	< 0.1
Benzo(k)fluoranthene	< 0.1
Benzo(a)pyrene	< 0.1
Indeno(1,2,3-cd)pyrene	< 0.1
Dibenzo(a,h)anthracene	< 0.1
Benzo(g,h,i)perylene	< 0.1

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For PNA Compounds By EPA Method $8270 \mathrm{C} \ \mathrm{SIM}$

Client Sample ID: BD-01-200509
Date Received: 09/12/05
Date Extracted: 09/12/05
Date Analyzed: 09/16/05
Matrix: water
Units: ug/L (ppb)

Client: Geomatrix Consultants, Inc.
Project: 9329/14, F&BI 509071
Lab ID: 509071-05
Data File: 091611.D
Instrument: GCMS3
Operator: YA

		Lower	$_{ m Upper}$
Surrogates:	% Recovery:	Limit:	Limit:
Anthracene-d10	92	28	139
Benzo(a)anthracene-d12	116	28	145

Compounds:	Concentration ug/L (ppb)
Naphthalene	< 0.1
Acenaphthylene	< 0.1
Acenaphthene	< 0.1
Fluorene	< 0.1
Phenanthrene	< 0.1
Anthracene	< 0.1
Fluoranthene	< 0.1
Pyrene	< 0.1
Benz(a)anthracene	< 0.1
Chrysene	< 0.1
Benzo(b)fluoranthene	< 0.1
Benzo(k)fluoranthene	< 0.1
Benzo(a)pyrene	< 0.1
Indeno(1,2,3-cd)pyrene	< 0.1
Dibenzo(a,h)anthracene	< 0.1
Benzo(g,h,i)perylene	< 0.1

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For PNA Compounds By EPA Method $8270\mathrm{C}$ SIM

% Recovery:

< 0.1

< 0.1 < 0.1

< 0.1

< 0.1

< 0.1

< 0.1

Date Extracted: 09/ Date Analyzed: 09/ Matrix: wa	t Applicable /12/05 /16/05 ter /L (ppb)
---	---

Surrogates:

Chrysene

Benzo(b)fluoranthene

Benzo(k)fluoranthene Benzo(a)pyrene

Indeno(1,2,3-cd)pyrene

Benzo(g,h,i)perylene

Dibenzo(a,h)anthracene

Client:	Geomatrix Consultants, Inc.
Project:	9329/14, F&BI 509071
Lab ID:	051218mb
Data File:	091606.D
Instrument:	GCMS3
Operator:	YA

Lower

Limit:

28

28

Upper

Limit:

139 145

Anthracene-d10	92
Benzo(a)anthracene-d12	116
	Concentration
Compounds:	ug/L (ppb)
Naphthalene	< 0.1
Acenaphthylene	< 0.1
Acenaphthene	< 0.1
Fluorene	< 0.1
Phenanthrene	< 0.1
Anthracene	< 0.1
Fluoranthene	< 0.1
Pyrene	< 0.1
Benz(a)anthracene	< 0.1

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING EPA METHOD 8015M

Laboratory Code: 509068-11 (Duplicate)

Laboratory Code: Laboratory Control Sample

Analyte	Reporting	Spike	Recovery	Acceptance
	Units	Level	LCS	Criteria
Gasoline	μg/L (ppb)	1,000	106	66-124

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

# QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL USING EPA METHOD 8015M

Laboratory Code	e: Laboratory Cont	rol Sampl	e Silica Gel			
			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Diesel	ug/L (ppb)	2,500	126	116	76-130	8

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

# QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL USING EPA METHOD 8015M

Laboratory Code:	Laboratory Cont	rol Sampl	e Silica Gel			
	•		Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Motor Oil	ug/L (ppb)	5,000	130	126	70-130	3

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: 509081-02 (Duplicate)

				Relative Percent
	Reporting	Sample	Duplicate	Difference
Analyte	Units	Result	Result	(Limit 20)
1,1-Dichloroethene	μg/L (ppb)	<1	<1	nm
Methylene chloride	μg/L (ppb)	<5	<5	nm
trans-1,2-Dichloroethene	μg/L (ppb)	<1	<1	nm
1,1-Dichloroethane	μg/L (ppb)	<1	<1	nm
2,2-Dichloropropane	μg/L (ppb)	<1	<1	nm
cis-1,2-Dichloroethene	μg/L (ppb)	<1	<1	nm
Chloroform	μg/L (ppb)	<1	<1	nm
1,1,1-Trichloroethane	μg/L (ppb)	<1	<1	nm
Carbon Tetrachloride	μg/L (ppb)	<1	<1	nm
Benzene	$\mu g/L (ppb)$	<1	<1	nm
Trichloroethene	$\mu g/L (ppb)$	<1	<1	nm
Bromodichloromethane	μg/L (ppb)	<1	<1	nm
Dibromomethane	$\mu g/L (ppb)$	<1	<1	nm
Toluene	$\mu g/L \ (ppb)$	<1	<1	nm
Tetrachloroethene	$\mu g/L \ (ppb)$	<1	<1	nm
Dibromochloromethane	$\mu g/L \ (ppb)$	<1	<1	nm
Chlorobenzene	μg/L (ppb)	<1	<1	nm
Bromoform	μg/L (ppb)	<1	<1	nm

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: 509081-01 (Matrix Spike)

				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
1,1-Dichloroethene	μg/L (ppb)	100	<1	117	50-135
Methylene chloride	μg/L (ppb)	50	<5	93	77-133
trans-1,2-Dichloroethene	μg/L (ppb)	50	<1	89	50 - 150
1,1-Dichloroethane	μg/L (ppb)	50	<1	108	50 - 150
2,2-Dichloropropane	μg/L (ppb)	50	<1	112	63-136
cis-1,2-Dichloroethene	μg/L (ppb)	50	<1	101	59 - 149
Chloroform	μg/L (ppb)	50	<1	109	50 - 150
1,1,1-Trichloroethane	μg/L (ppb)	50	<1	110	50 - 150
Carbon Tetrachloride	μg/L (ppb)	50	<1	109	55-125
Benzene	μg/L (ppb)	50	<1	108	51-133
Trichloroethene	μg/L (ppb)	50	<1	107	57 - 129
Bromodichloromethane	μg/L (ppb)	50	<1	98	50 - 150
Dibromomethane	μg/L (ppb)	50	<1	105	51-142
Toluene	μg/L (ppb)	50	<1	108	62 - 130
Tetrachloroethene	μg/L (ppb)	50	<1	91	47 - 152
Dibromochloromethane	μg/L (ppb)	50	<1	102	63-130
Chlorobenzene	μg/L (ppb)	50	<1	105	59-136
Bromoform	μg/L (ppb)	50	<1	102	50-150

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: Laboratory Control Sample

		Percent			
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
1,1-Dichloroethene	μg/L (ppb)	100	107	53-121	
Methylene chloride	μg/L (ppb)	50	93	69-149	
trans-1,2-Dichloroethene	μg/L (ppb)	50	89	70-130	
1,1-Dichloroethane	μg/L (ppb)	50	106	70-130	
2,2-Dichloropropane	μg/L (ppb)	50	108	75 - 124	
cis-1,2-Dichloroethene	μg/L (ppb)	50	103	83-123	
Chloroform	μg/L (ppb)	50	106	70-130	
1,1,1-Trichloroethane	μg/L (ppb)	50	104	70-130	
Carbon Tetrachloride	μg/L (ppb)	50	103	76 - 122	
Benzene	μg/L (ppb)	50	109	75-121	
Trichloroethene	μg/L (ppb)	50	107	79 - 122	
Bromodichloromethane	μg/L (ppb)	50	97	70-130	
Dibromomethane	μg/L (ppb)	50	108	79 - 134	
Toluene	μg/L (ppb)	50	109	78-128	
Tetrachloroethene	μg/L (ppb)	50	92	80-134	
Dibromochloromethane	μg/L (ppb)	50	103	77 - 125	
Chlorobenzene	μg/L (ppb)	50	107	80-124	
Bromoform	μg/L (ppb)	50	104	70-130	

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: 509102-01 (Duplicate)

				Relative Percent
	Reporting	Sample	Duplicate	Difference
Analyte	Units	Result	Result	(Limit 20)
1,1-Dichloroethene	μg/L (ppb)	<1	<1	nm
Methylene chloride	μg/L (ppb)	<5	<5	nm
trans-1,2-Dichloroethene	μg/L (ppb)	<1	<1	nm
1,1-Dichloroethane	μg/L (ppb)	<1	<1	nm
2,2-Dichloropropane	μg/L (ppb)	<1	<1	nm
cis-1,2-Dichloroethene	μg/L (ppb)	<1	<1	nm
Chloroform	μg/L (ppb)	<1	<1	nm
1,1,1-Trichloroethane	μg/L (ppb)	<1	<1	nm
Carbon Tetrachloride	μg/L (ppb)	<1	<1	nm
Benzene	μg/L (ppb)	<1	<1	nm
Trichloroethene	μg/L (ppb)	<1	<1	nm
Bromodichloromethane	μg/L (ppb)	<1	<1	nm
Dibromomethane	μg/L (ppb)	<1	<1	nm
Toluene	μg/L (ppb)	<1	<1	nm
Tetrachloroethene	μg/L (ppb)	<1	<1	nm
Dibromochloromethane	μg/L (ppb)	<1	<1	nm
Chlorobenzene	μg/L (ppb)	<1	<1	nm
Bromoform	μg/L (ppb)	<1	<1	nm

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: Laboratory Control Sample

	D	G ' II	Percent	Percent	At	RPD
	Reporting	Spike	Recovery	Recovery	Acceptance	
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
1,1-Dichloroethene	μg/L (ppb)	100	108	102	53-121	6
Methylene chloride	μg/L (ppb)	50	91	89	69-149	2
trans-1,2-Dichloroethene	μg/L (ppb)	50	85	78	70-130	8
1,1-Dichloroethane	μg/L (ppb)	50	102	98	70 - 130	4
2,2-Dichloropropane	μg/L (ppb)	50	108	97	75 - 124	10
cis-1,2-Dichloroethene	μg/L (ppb)	50	97	90	83-123	8
Chloroform	μg/L (ppb)	50	103	100	70-130	3
1,1,1-Trichloroethane	μg/L (ppb)	50	104	96	70-130	8
Carbon Tetrachloride	μg/L (ppb)	50	101	94	76 - 122	7
Benzene	μg/L (ppb)	50	102	96	75 - 121	6
Trichloroethene	μg/L (ppb)	50	101	94	79 - 122	8
Bromodichloromethane	μg/L (ppb)	50	94	90	70-130	4
Dibromomethane	μg/L (ppb)	50	101	98	79 - 134	3
Toluene	μg/L (ppb)	50	102	95	78-128	7
Tetrachloroethene	μg/L (ppb)	50	86	77	80-134	11
Dibromochloromethane	μg/L (ppb)	50	98	94	77 - 125	4
Chlorobenzene	μg/L (ppb)	50	100	93	80-124	7
Bromoform	μg/L (ppb)	50	100	94	70-130	6

Note: The calibration verification result for acetone, naphthalene associated with samples 509071-01 amd -05 exceeded 15% deviation. The average deviation for all compounds was less than 15%, therefore the initial calibration is considered valid.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

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

Laboratory Code: Laboratory	Control Sampl	е	Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Phenol	μg/L (ppb)	75	23	26	5-58	11

#### **ENVIRONMENTAL CHEMISTS**

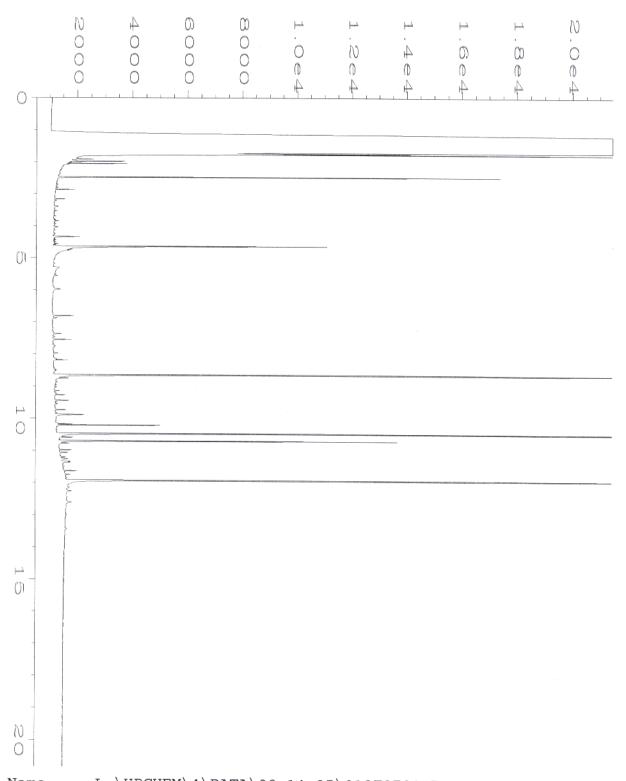
Date of Report: 09/21/05 Date Received: 09/12/05

Project: 9329/14, F&BI 509071

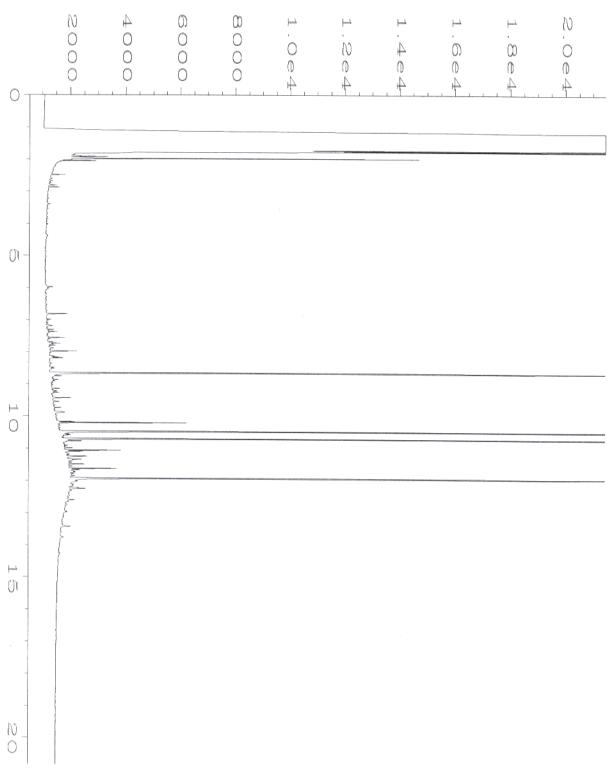
### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR PNA'S BY EPA METHOD 8270C SIM

Laboratory Code: Laboratory Control Sample

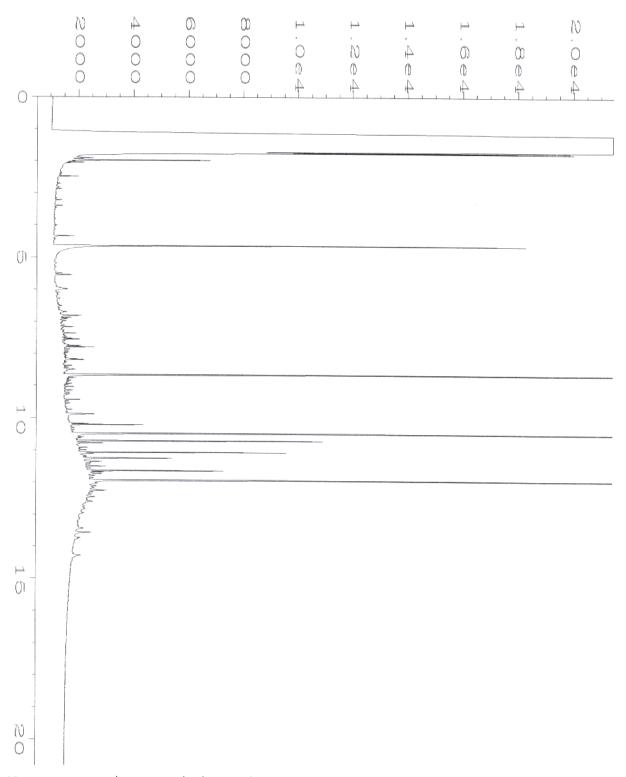
Laboratory Code: Laborat	ory Control Sa	impic	Percent	Percent		DDD
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	μg/L (ppb)	5	70	77	62-111	9
Acenaphthylene	μg/L (ppb)	5	78	84	65-121	7
Acenaphthene	μg/L (ppb)	5	74	80	66-120	7
Fluorene	μg/L (ppb)	5	78	83	63-120	7
Phenanthrene	μg/L (ppb)	5	72	76	61 - 121	5
Anthracene	μg/L (ppb)	5	73	77	56-120	6
Fluoranthene	μg/L (ppb)	5	77	81	63-121	6
Pyrene	μg/L (ppb)	5	74	79	66-124	7
Benz(a)anthracene	μg/L (ppb)	5	74	78	58-124	5
Chrysene	μg/L (ppb)	5	75	79	61-119	5
Benzo(b)fluoranthene	μg/L (ppb)	5	85	89	57 - 137	5
Benzo(k)fluoranthene	μg/L (ppb)	5	77	81	61-130	5
Benzo(a)pyrene	μg/L (ppb)	5	82	87	57-133	6
Indeno $(1,2,3\text{-cd})$ pyrene	μg/L (ppb)	5	89	91	60-127	2
Dibenzo(a,h)anthracene	μg/L (ppb)	5	88	89	63-127	1
Benzo(g,h,i)perylene	μg/L (ppb)	5	87	89	58-124	2



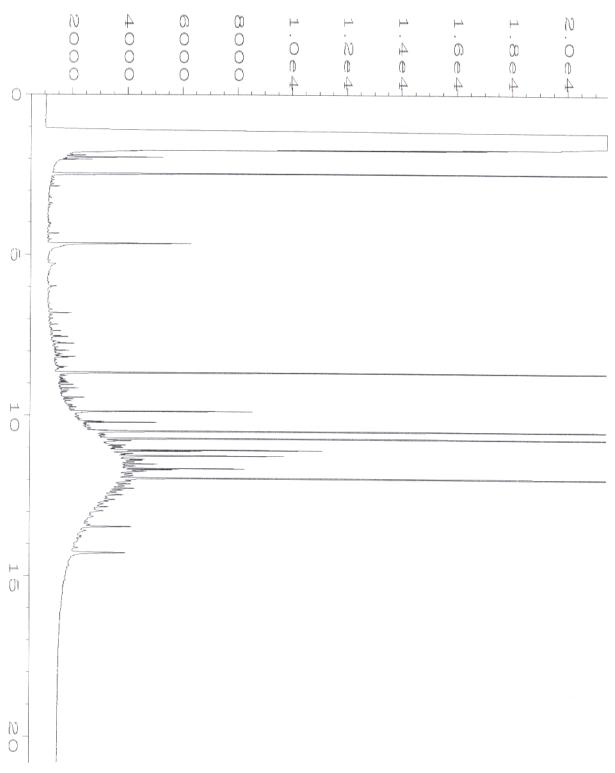
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Instrument
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                                                                : 12
                                 MW-22-200509
Sample Name
                : 509071-01 sq
                                               Injection Number: 1
Run Time Bar Code:
                                               Sequence Line
                                                                : 7
Acquired on
            : 14 Sep 05 01:18 PM
                                               Instrument Method: TPHDAK.MTH
Report Created on: 21 Sep 05 11:17 AM
                                               Analysis Method : DEFAULT.MTH
```



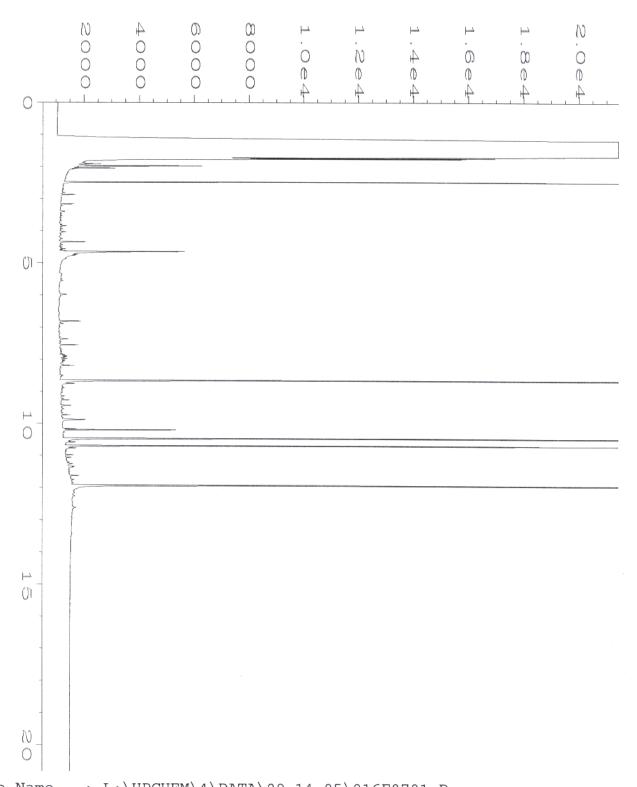
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Data File Name : L:\HPCHEM\4\DATA\09-14-05\013F0701.D
Operator
                : ME
                                              Page Number
                                                             : 1
Instrument
                : GC#4
                                              Vial Number
                                                              : 13
Sample Name
               : 509071-02 sg MW-23-200509
                                              Injection Number: 1
Run Time Bar Code:
                                              Sequence Line
                                                           : 7
Acquired on
            : 14 Sep 05 01:46 PM
                                              Instrument Method: TPHDAK.MTH
Report Created on: 21 Sep 05 11:17 AM
                                             Analysis Method : DEFAULT.MTH
```



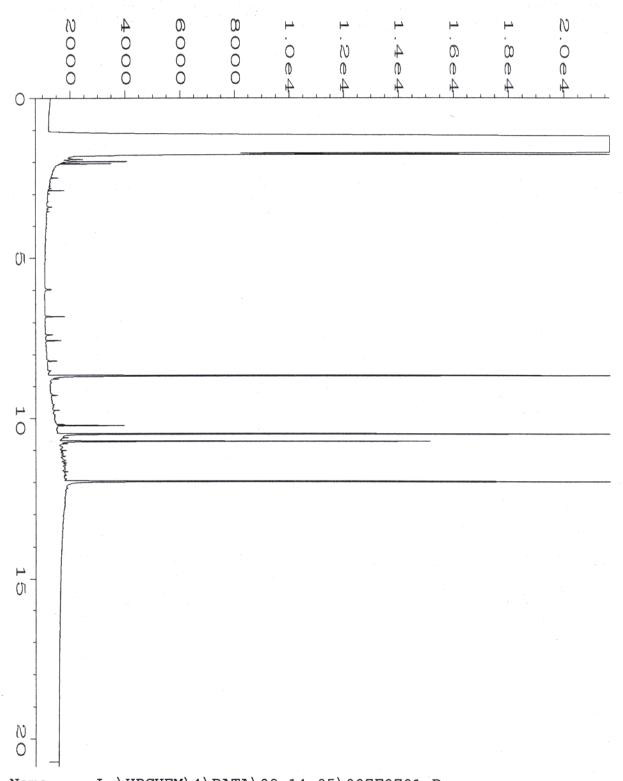
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Data File Name
                 : L:\HPCHEM\4\DATA\09-14-05\014F0701.D
Operator
                 : ME
                                               Page Number
                                                                : 1
Instrument
                 : GC#4
                                               Vial Number
                                                                 : 14
Sample Name
                : 509071-03 sg
                                  1-24-200509
                                               Injection Number: 1
Run Time Bar Code:
                                               Sequence Line
                                                               : 7
                                               Instrument Method: TPHDAK.MTH
Acquired on
                : 14 Sep 05 02:15 PM
Report Created on: 21 Sep 05 11:18 AM
                                               Analysis Method : DEFAULT.MTH
```



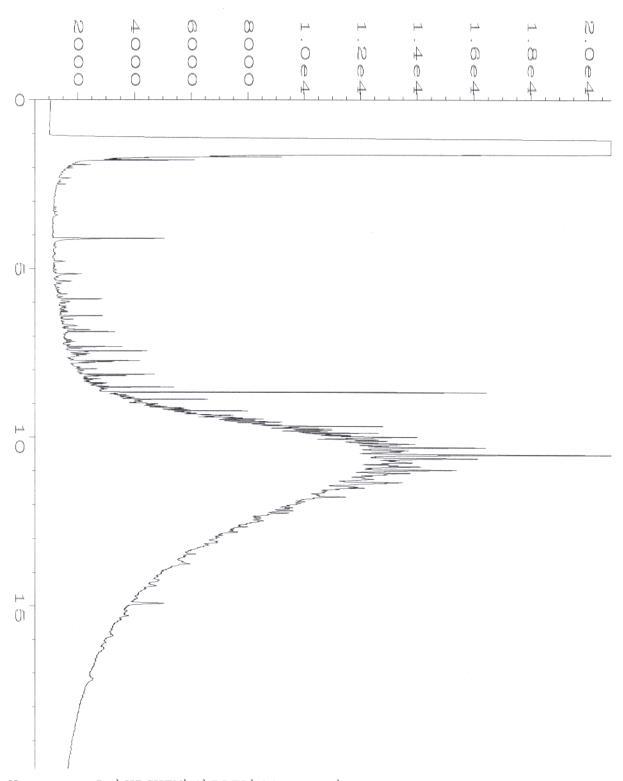
Data File Name :	L:\HPCHEM\4\DATA\09-14-05\01	5F0701.D	
-	ME	Page Number :	1
Instrument :	**	Vial Number :	
Sample Name :	509071-04 sg p-25-200509	Injection Number:	1
Run Time Bar Code:		Sequence Line :	
Acquired on :	14 Sep 05 02:43 PM	Instrument Method:	TPHDAK.MTH
Report Created on:	21 Sep 05 11:18 AM	Analysis Method :	DEFAULT.MTH



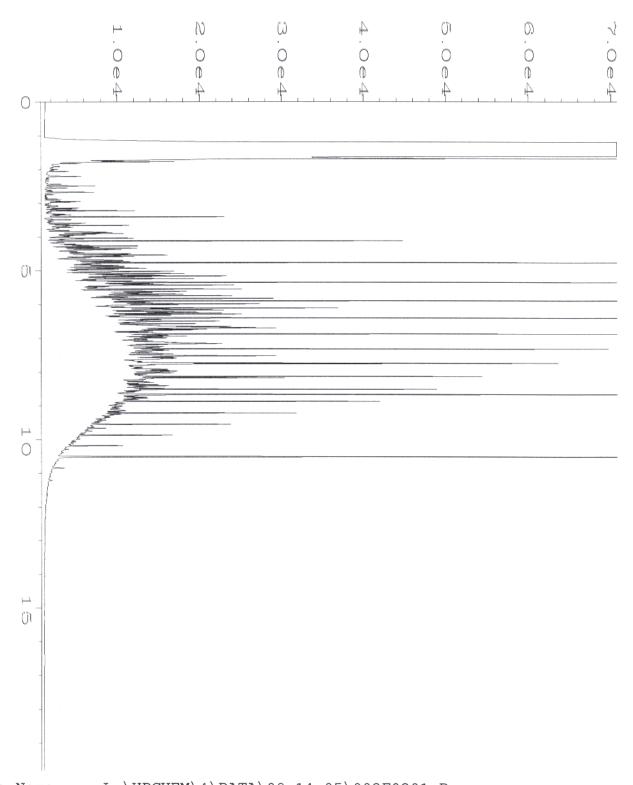
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Data File Name
                : L:\HPCHEM\4\DATA\09-14-05\016F0701.D
Operator
                : ME
                                             Page Number
                               BD-01-200509
Instrument
                : GC#4
                                              Vial Number
                                                              : 16
Sample Name
               : 509071-05 sq
                                             Injection Number: 1
Run Time Bar Code:
                                             Sequence Line
                                                           : 7
Acquired on : 14 Sep 05 03:12 PM
                                             Instrument Method: TPHDAK.MTH
Report Created on: 21 Sep 05 11:18 AM
                                             Analysis Method : DEFAULT.MTH
```



Data File Name :	L:\HPCHEM\4\DATA\09-14-05\00'	7F0701.D	
_	ME	Page Number :	1
Instrument :		Vial Number :	7
Sample Name :	05-1216 mb sg BLANK	Injection Number :	1
Run Time Bar Code:	DLANK	Sequence Line :	7
Acquired on :	14 Sep 05 11:00 AM	Instrument Method:	TPHDAK.MTH
Report Created on:	21 Sep 05 11:17 AM	Analysis Method :	DEFAULT.MTH



```
Data File Name
                 : L:\HPCHEM\4\DATA\09-14-05\004F0601.D
Operator
                   : ME
                                                      Page Number
Instrument
                   : GC#4
                                                       Vial Number
                                       MOTOR DIL
                                                      Injection Number: 1
Sequence Line: 6
Sample Name
                   : 500 MO 21-1
                                       STANDARD
Run Time Bar Code:
Acquired on : 14 Sep 05
Report Created on: 21 Sep 05
                                                      Instrument Method: TPHD.MTH
                                  10:30 AM
                                  11:17 AM
                                                      Analysis Method : DEFAULT.MTH
```



```
: L:\HPCHEM\4\DATA\09-14-05\002F0201.D
Data File Name
                                                          Page Number
Vial Number
Operator
                    : ME
Instrument
                                          DIESEL
                    : GC#4
                                                          Injection Number: 1
Sequence Line: 2
                   : 500 wadf 21-117
Sample Name
                                            STANDARD
Run Time Bar Code:
Acquired on : 14 Sep 05 08:38 AM Report Created on: 21 Sep 05 11:17 AM
                                                          Instrument Method: TPHD.MTH
                                                          Analysis Method : DEFAULT.MTH
```

2101 Webster Street, 12th Floor • Oakland, CA 94612 Phone: 510-663-4100 Fax: 510-663-4141 Geometrix Consultants Laboratory Comments and Log No.: Drop paterial for bestracter 18846 AD5/V3 82910520301 7906 39839738 7906 3983 9750 Method of Shipment: Fale Additional Comments lacation ID Global ID REMARKS Veed to. of Containers Date: 4/9/05 X 091000 Date: Time: Date: Time: Devieser Total No. of Containers CM 09-12-05 Mered Soil (S), Water (W) Vapor (V), or Other (o) Relinquished by (Signature): Printed Name: Printed Name Received by: Company Company Mike Keim Results to: Gel Cleanup ANALYSES Date: Date: Time: Time: fethod 8015m (Motor Oil) ethod 8015m (Gasoline) Relinquished by (Signature) Turnaround Time: EPA Method 8021 (Hai. VOCs only) (BETX only) Printed Name: Printed Name: Chain-of Custody Record Received by: 08:30 Company: Company EPA Method 8021 (Full Scan) AW-23-200909 BD-01-200509 9-25-200509 MW-22-200509 6-54-10050A Date: 9|12|0 1500 Sample Number Time: Time: Friedmant Bruxan Relipquished by (Signature) Project No.: 9327/14 35 Printed Name Samplers (Signature:) Company: Control Time 1361 1831 年にの 509071 In I Printed Name Laboratory; Received by: JARM Gompany: S Date Z H-H