Denise Y. Dixon
Project Manager

Chevron Environmental Management Company
Marketing Business Unit
2300 Windy Ridge Parkway
Suite 575 South
Atlanta, GA 30339
Tel 770-984-3165
Fax 770-984-3102
dyaa@chevron.com

January 30, 2009

Mr. Andrew Fan
Project Manager
Technical Support Branch (3LC20)
Land and Chemicals Division
United States Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103-2029

RE: Transmittal of Fourth Quarter 2008 Progress Report
Former Chevron Facility 122208
5801 Riggs Road
Chillum, Maryland

Dear Mr. Fan:

Pursuant to Section VI, Paragraph E of the Administrative Order (U.S. Environmental Protection Agency [EPA] Docket Number RCRA-03-2003-0006th), Chevron is submitting one copy of the referenced document for your review.

Trend analysis figures, Mann Kendall statistical analyses, and groundwater concentration contour maps based on the fall semi-annual sampling event are provided.

As you are aware, the consent order for the site became effective on January 19, 2009. Therefore, according to the order, semi-annual progress reports will be submitted beginning on the first day of the sixth full month following the effective date. Delivery dates for the next two progress report submittals are July 20, 2009 and January 20, 2010.

If you have any questions, please call me at 770-984-3165.

Sincerely,

Denise Dixon
Project Manager

cc: Ms. V. North, DDOE
Mr. Herb Meade, MDE
R. Scrafford, GF

QUARTERLY PROGRESS REPORT

FORMER CHEVRON FACILITY NO. 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND
OCTOBER 2008 THROUGH DECEMBER 2008

1.0 INTRODUCTION

Pursuant to the U.S. Environmental Protection Agency (EPA) Administrative Order, Docket Number RCRA-03-2003-006th (AO), Chevron U.S.A. Inc. (Chevron) is conducting work at and adjacent to the former Chevron Service Station (Facility No. 122208) located at 5801 Riggs Road, Chillum, Maryland (the site). In accordance with Section VI, paragraph E. of the AO, Chevron has prepared this Quarterly Progress Report (Report) to describe actions taken by Chevron pursuant to the AO. The reporting period for this report is October 2008 through December 2008.

The remainder of this Report is divided into the following seven sections and four appendices:

- Section 2.0 - Work Conducted During the Reporting Period
- Section 3.0 - Summary of Findings
- Section 4.0 - Permit Compliance
- Section 5.0 - Summary of Deviations from Approved Plans, Problems Encountered, and Corrective Actions Taken
- Section 6.0 - Summary of Meetings with Public and Government
- Section 7.0 - Changes in Key Personnel During the Reporting Period
- Section 8.0 - Projected Work for the Next Reporting Period
- Tables
  - Table 1: Summary of Groundwater and Soil Vapor Monitoring Program
- Figures
  - Figure 1: Cumulative Total Hydrocarbons Recovered and Groundwater Treated Since 1990
  - Figures 2-5: Groundwater Iso-concentration Maps
  - Figures 6-23: Benzene and MTBE Trend Analyses
- Appendix A - Dual-Phase Extraction System-Groundwater Extraction Data
  - Figure: Process and Instrumentation Diagram
  - Table A-1: Total Fluids Extraction System Data
  - Table A-2: Total Fluids Extraction System Influent Analytical Results
  - Table A-3: Total Fluids Extraction System Effluent Analytical Results
- Appendix B - Dual-Phase Extraction System-Soil Vapor Extraction Data
  - Figure: Process and Instrumentation Diagram
  - Table B-1: Soil Vapor Extraction System Data
  - Table B-2: Soil Vapor Extraction System Influent Analytical Results
  - Table B-3: Soil Vapor Extraction System Effluent Analytical Results
- Appendix C - Groundwater Monitoring Data
  - Table C-1: Groundwater Monitoring Report
- Appendix D - Soil Vapor Sampling Data
  - Table D-1: Soil Vapor Monitoring Report
- Appendix E – Mann Kendall Statistical Analysis

2.0 WORK CONDUCTED DURING THE REPORTING PERIOD

This section provides a summary of work conducted at the site during the reporting period.

2.1 Site Monitoring Work Conducted

The EPA-approved Interim Monitoring Sampling Plan calls for monthly gauging of ten monitoring wells, semi-annual gauging of all monitoring wells, semi-annual sampling of 72 monitoring wells, and semi-annual sampling of the four soil vapor wells (Table 1). Monthly groundwater gauging was conducted on October 27, November 24, and December 15, 2008. The September/October 2008 semi-annual sampling event was conducted from September 22 to 25 and September 29 to October 1, 2008.

2.2 Interim Measures Conducted

Several interim measures activities were conducted during the reporting period. These activities are listed below followed by a general description:

- Continued operation and maintenance of the Interim Dual Phase Extraction System (IDPES).

- Installation of vapor mitigation systems at three residences (5818 Eastern Avenue, 5824 Eastern Avenue, and 746 Oglethorpe Street). One system, 5824 Eastern Avenue, was turned on and inspected and is currently operating. The other two systems have been installed but are not operating because the residences require upgraded electrical service. Gannett Fleming is working with a licensed electrician and PEPCO (local utility provider) to complete the service upgrades which requires work (upgrade outside service from pole to residence) be performed by PEPCO.

- The Mann-Kendall statistical analysis was performed to determine trends in dissolved-phase hydrocarbon concentrations.

Overview of the Interim Dual Phase Extraction System

The Interim Dual Phase Extraction System (IDPES) consists of total fluids extraction and treatment and soil vapor extraction and treatment. A process and instrumentation diagram (P&ID) for the system is provided in **Appendix A**. Please refer to the P&ID for specific information, such as equipment models and sizes, piping sizes, controls, and other technical information.

Total Fluids Recovery and Treatment

Pneumatic total fluids (i.e., groundwater and Liquid Phase Hydrocarbons (LPH), if present) pumps are installed in seven Dual Phase Extraction (DPE) wells (RW-1, RW-2, RW-3, MW-7, MW-17, PTW-A, and PTW-B). Total fluids are pumped from wells through buried piping to the total fluids manifold located in the treatment system compound, adjacent to the service station. The total fluids manifold leads to a coalescing-type

oil/water separator. Level sensors in the oil/water separator control a centrifugal pump that intermittently transfers the water to an air stripper. LPH accumulate in the separator and are periodically skimmed off mechanically (if present). Air from the air stripper is treated using three granular activated carbon (GAC) vessels in parallel and then discharges to the atmosphere in accordance with MDE Air Quality General Permit to Construct Identification No. 033-9-1160. Treated water from the air stripper is pumped through two bag filters and then through six GAC vessels arranged in three parallel banks of two. Each bank is composed of two GAC vessels in series. The polished effluent flows through buried pipe to a storm drain inlet located in Riggs Road near the intersection at Eastern Avenue, N.E. in accordance with Maryland General Discharge Permit No. 2008 OGR-8514.

Soil Vapor Recovery and Treatment

Soil vapor extraction (SVE) is conducted at eight wells (i.e., the seven DPE wells plus MP-7). An individual piping leg runs from each well to a common 3-inch manifold in the remediation system compound. The manifold leads to a moisture knockout tank and then to the blower. The blower is a rotary lobe, positive displacement blower controlled by a variable frequency drive. Soil vapor is blown from the blower to a catalytic oxidizer for treatment. Treated air is discharged to the atmosphere in accordance with MDE Air Quality General Permit to Construct Identification No. 033-9-1164.

Interim DPE System Monitoring

The IDPES was visited every week during the reporting period. The following activities were conducted during each site visit:

- Recorded groundwater and air flow rates;
- Measured air influent and effluent concentrations using a flame ionization detector;
- Recorded the manifold vacuum for the SVE system; and
- Conducted equipment maintenance tasks as needed including checking the oil level of the SVE blower and air compressor, changing out the bag filters, and skimming off LPH in the oil/water separator, if present.

The groundwater influent (SP-1) was sampled three times and the effluent (SP-3) was sampled twelve times for laboratory analysis (Tables A-2 and A-3, Appendix A). Effluent groundwater samples were analyzed by EPA Method 8260 for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), Methyl Tert-Butyl Ether (MTBE), tetrachloroethene, trichloroethene, and 1,2-cis-dichloroethene. The permit limits are 100 µg/L for total BTEX and 5 µg/L for benzene. The discharge permit requires reporting of MTBE, tetrachloroethene, trichloroethene, and 1,2-cis-dichloroethene concentrations without establishing limits.

The soil vapor extraction system influent (SP-100) and effluent (SP-200) were sampled three times for laboratory analysis during the reporting period to document compliance with the air discharge permit (Tables B-2 and B-3, Appendix B). Treated effluent (treated air) sampling port (SP-200) is located in the catalytic oxidizer effluent stack

before discharge to the atmosphere. Samples were analyzed by EPA Method TO-3 for BTEX and total recoverable petroleum hydrocarbons (TRPH) in the C_4 to C_{10} range. The air permit discharge limits are 20 pounds of volatile organic compounds per day and 0.02 pounds of benzene per hour.

2.3 Submittal of Deliverables

Chevron submitted the following deliverable to EPA during the reporting period.

Deliverable Title	Date of Submission to EPA
Third Quarter 2008 Progress Report	10/31/2008
Vapor mitigation system schematics	11/27/2008
Interim Measures Report for Indoor Air Sampling at Residences	12/16/2008

3.0 SUMMARY OF FINDINGS

This section provides a summary of findings and results for the interim measures activities described in Section 2.2.

Ongoing Operation of the DPE System

The hour meters for both the total fluids and SVE portions of the DPE system were logged throughout the quarter. For the period from October 1, 2008 through December 31, 2008, the total fluids extraction portion of the system was operating 89 percent of the time (1,941 hours on and 244 hours off) and the SVE portion was operating 70 percent of the time (1,528 hours on and 668 hours off).

Groundwater extraction system performance data are provided in **Appendix A** including date and time, on/off status, totalizer reading, cumulative gallons of hydrocarbons, operating extraction points, and maintenance information for the reporting period and the previous three quarters (January 1, 2008 through December 31, 2008) (Table A-1). Comments on the reason for system downtime and the type of maintenance performed are also provided in Table A-1. A detailed explanation of the tables is provided on the first page of **Appendix A**. A P&ID is also included in **Appendix A**.

The groundwater extraction portion of the DPE system recovered approximately 2,080,200 gallons of groundwater and 9.8 equivalent gallons of dissolved hydrocarbons during the reporting period. The average system flow rate over the period was 17 gallons per minute (gpm) when the system was pumping (not including system down time) and 15 gpm for the entire period (including down time). The total volume of groundwater pumped from this site since remediation began in 1989 is approximately 40,317,322 gallons.

The analytical results for groundwater samples collected at sample points SP-1 (system influent) (Appendix A, Table A-2) and SP-3 (treated groundwater that is discharged to the storm drain) (Appendix A, Table A-3) indicated concentrations of benzene and BTEX in the treated groundwater were below the permit limits (5 µg/L benzene and 100 µg/L BTEX) during the reporting period.

Soil vapor extraction system performance data for the reporting period are provided in **Appendix B** including date and time, manifold air flow reading, manifold vacuum reading, influent and effluent screening concentrations measured using a PID, cumulative gallons of hydrocarbons recovered, and other information. A detailed explanation of the tables is provided on the first page of **Appendix B**. A P&ID is included in **Appendix A**. The soil vapor extraction portion of the DPE system recovered 58.2 equivalent gallons of hydrocarbons in the vapor phase during the reporting period. The average air flow rate was 117.9 standard cubic feet per minute (scfm) when the system was on (excluding down time) and 82.0 scfm for the entire period (including down time).

The laboratory analytical results for monthly SVE system samples collected at sample points SP-100 (soil vapor influent) (Appendix B, Table B-2) and SP-200 (treated soil vapor that is discharged to the atmosphere) (Appendix B, Table B-3) indicates

concentrations of benzene and TRPH in the treated soil vapor were well below the permit limits. The permit limits are 0.02 pounds per hour of benzene and 20 pounds per day of volatile organic compounds measured as TRPH.

Hydrocarbon Recovery Summary for Period and Cumulative Total for System

Period	Liquid-Phase Hydrocarbons (gallons)	Dissolved-Phase Hydrocarbons (eq. gallons)	Vapor-Phase Hydrocarbons (eq. gallons)	Cumulative Total Hydrocarbons (eq. gallons)
10/01/08-12/31/08	0.00	9.8	58.2	68.0
Cumulative Total for System	856.5	723.8	3,736.4	5,316.7

Figure 1 shows the volume of groundwater treated and the corresponding volume of hydrocarbons collected for the entire time the system has been operating on a quarter by quarter basis. The volume of hydrocarbons collected is directly proportional to the volume of groundwater treated.

Groundwater Monitoring

The analytical data from the September/October 2008 semi-annual sampling event are provided in **Appendix C.** The groundwater elevation data for the current period and the previous year are provided in Table C-1 in **Appendix C**. A detailed explanation of the table is provided on the first page of **Appendix C**.

Groundwater concentration maps were created using data collected during the semi-annual sampling event on September 22 through 25 and September 29 through October 1, 2008 (Figures 2 through 5).

Soil Vapor Monitoring

The soil vapor analytical results for the current period and the previous year are provided in Table D-1 in **Appendix D**. Water was present in the tubing of soil vapor well VW-4 during the September 2008 sampling event; therefore, no sample was collected. Resampling was attempted on September 23, 2008; however the same conditions existed.

Mann-Kendall Statistical Analysis

The Mann-Kendall Statistical Analysis report is provided in **Appendix E**. The results of the analysis indicate that dissolved-phase hydrocarbons were either stable or decreasing.

4.0 PERMIT COMPLIANCE

Four permits are required for activities performed at the Chillum site. Two air discharge permits have been issued by MDE covering the effluent of the groundwater air stripping equipment and the effluent of the soil vapor extraction equipment. In addition, another permit was issued by MDE for discharge of treated groundwater. Permit requirements and compliance for the above MDE permits are discussed in Sections 2 and 3. An additional permit required for work in Washington, D.C. is issued by the D.C. Department of Transportation (DCDOT) for Above Ground Public Space occupancy to perform activities such as sampling and gauging of monitoring wells.

Permit numbers 033-9-1160 Air Quality General Permit for effluent of groundwater air stripping equipment and 033-9-1164 Air Quality General Permit for effluent of soil vapor extraction equipment were issued for the site. Neither of these permits has an expiration date. Sampling and monitoring requirements include periodic effluent monitoring as described in Sections 2 and 3.

Permit number 2008-OGR-8514 General Discharge Permit is effective for treated groundwater discharge for the site. This permit became effective on January 31, 2008 and expires on December 12, 2012. The permit requires weekly effluent sampling, system monitoring, and submission of a quarterly Discharge Monitoring Report.

Permit number PA 41221 for Above Ground Public Space Occupancy was issued to cover traffic control requirements for sampling and gauging. The permit expires on March 5, 2009 and is valid for six month periods.

Permits for the electrical upgrade work to be completed at 5818 Eastern Avenue and 746 Oglethorpe Street will be obtained as required by DCRA.

5.0 Summary of Deviations from Approved Plans, Problems Encountered, and Corrective Actions Taken

- The catalytic oxidizer unit was down from October 1 through October 12, 2008 due to two faulty temperature sensors. New sensors were obtained from the manufacturer and the SVE system was restarted on October 13. The groundwater extraction portion of the system remained on during the time that the SVE system was off.

- Electrical service upgrades for 5818 Eastern Avenue and 746 Oglethorpe Street were not anticipated when the work plan to install the vapor mitigation systems was approved. The need for upgrades was noted during the installation. The service upgrades will be completed as soon as PEPCO completed the necessary service upgrades so that the vapor mitigation systems can be powered up.

6.0 SUMMARY OF MEETINGS WITH PUBLIC AND GOVERNMENT

Monthly public meetings were conducted by the District of Columbia Department of Environment (DDOE) on October 2 and November 6, 2008.

7.0 CHANGES IN KEY PERSONNEL DURING THE REPORTING PERIOD

There were no changes in key Gannett Fleming or Chevron personnel.

8.0 PROJECTED WORK FOR THE NEXT REPORTING PERIOD

The following list identifies projected work to be conducted during the next reporting period, which is January through June 2009 (semi-annual reporting).

- Monthly monitoring of the IDPES including influent and effluent sampling;
- Weekly sampling of the IDPES effluent to comply with water discharge permits;
- Monthly gauging of select wells near the service station to check for the presence of LPH and to document drawdown caused by the total fluids extraction system;
- Routine operations and maintenance activities for the remediation system and the vapor mitigation systems;
- Conduct semi-annual groundwater and soil vapor sampling event at the end of March 2009;
- Upgrade and inspection of electrical systems at two residences (5818 Eastern Avenue and 746 Oglethorpe Street), and startup of installed vapor mitigation systems at these residences;
- Annual system monitoring sampling for the vapor mitigation systems;
- Submission of the vapor mitigation system construction completion report and operation and maintenance plan;
- Submission of the Corrective Measures Implementation Work Plan; and
- Renew DC public space occupancy permit.

TABLES

Gannett Fleming

Table 1
Summary of Groundwater and Soil Vapor Monitoring Program
Fourth Quarter 2008 Report
Former Chevron Facility No. 122208, Chillum, Maryland

Well Identifier	Well Location Category	Petroleum Hydrocarbon Sampling Frequency[2]	Groundwater Gauging Frequency	Comment
GP-27A	Dual-Phase Extraction System	Semi-annual[3]	Monthly	
GP-30A	Dual-Phase Extraction System	Semi-annual	Monthly	
GP-35A	Dual-Phase Extraction System	Semi-annual	Monthly	
GP-38A	Dual-Phase Extraction System	Semi-annual	Monthly	
MP-7	Dual-Phase Extraction System	None	Monthly	Gauge only
MP-20	Dual-Phase Extraction System	None	Semi-annual	Gauge only
MP-30	Dual-Phase Extraction System	None	Semi-annual	Gauge only
MP-40	Dual-Phase Extraction System	None	Semi-annual	Gauge only
MW-5	Dual-Phase Extraction System	Semi-annual	Semi-annual	
MW-7	Dual-Phase Extraction System	Semi-annual	Monthly	Recovery Well
MW-15	Dual-Phase Extraction System	Semi-annual	Semi-annual	
MW-16	Dual-Phase Extraction System	Semi-annual	Monthly	
MW-17	Dual-Phase Extraction System	Semi-annual	Semi-annual	Recovery Well
MW-18	Dual-Phase Extraction System	Semi-annual	Monthly	
MW-22	Dual-Phase Extraction System	Semi-annual	Monthly	
MW-23	Dual-Phase Extraction System	Semi-annual	Semi-annual	
PTW-A	Dual-Phase Extraction System	Semi-annual	Semi-annual	Recovery Well
PTW-B	Dual-Phase Extraction System	Semi-annual	Semi-annual	Recovery Well
RW-1	Dual-Phase Extraction System	Semi-annual	Semi-annual	Recovery Well
RW-2	Dual-Phase Extraction System	Semi-annual	Semi-annual	Recovery Well
RW-3	Dual-Phase Extraction System	Semi-annual	Semi-annual	Recovery Well
GP-2E (45-50)	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
GP-2E (55-60)	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
GP-2F (45-50)	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
GP-2F (50-55)	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
GP-7A (30-35)	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
GP-7A (35-40)	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
GP-24A	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
GP-39A	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
GP-41A	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
GP-44A	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-24A	Dissolved Hydrocarbons	Semi-annual	Monthly	
MW-24B	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-25A	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-25B	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-26A	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-26B	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-27A	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-27B	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-33A	Dissolved Hydrocarbons	Semi-annual	Semi-annual	Added at the request of EPA
MW-33B	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-33C	Dissolved Hydrocarbons	Semi-annual	Semi-annual	Added at the request of EPA
MW-33S	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-38	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-39R	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-40	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-43B	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-44A	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-44B	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-45	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-46	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-47	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-49	Dissolved Hydrocarbons	Semi-annual	Semi-annual	
MW-50	Dissolved Hydrocarbons	Semi-annual	Semi-annual	

Gannett Fleming

Table 1
Summary of Groundwater and Soil Vapor Monitoring Program
Fourth Quarter 2008 Report
Former Chevron Facility No. 122208, Chillum, Maryland

Well Identifier	Well Location Category	Petroleum Hydrocarbon Sampling Frequency[2]	Groundwater Gauging Frequency	Comment
GP-7A (20-25)	Sentinel	Semi-annual	Semi-annual	
GP-9A (20-25)	Sentinel	Semi-annual	Semi-annual	
GP-11A (20-25)	Sentinel	Semi-annual	Semi-annual	
MW-6	Sentinel	Semi-annual	Semi-annual	
MW-19	Sentinel	Semi-annual	Semi-annual	
MW-20	Sentinel	Semi-annual	Semi-annual	Upgradient
MW-21	Sentinel	Semi-annual	Semi-annual	
MW-28A	Sentinel	Semi-annual	Semi-annual	
MW-28B	Sentinel	Semi-annual	Semi-annual	
MW-29A	Sentinel	Semi-annual	Semi-annual	
MW-29B	Sentinel	Semi-annual	Semi-annual	
MW-30	Sentinel	Semi-annual	Semi-annual	Upgradient
MW-31B	Sentinel	Semi-annual	Semi-annual	
MW-41A	Sentinel	Semi-annual	Semi-annual	
MW-41B	Sentinel	Semi-annual	Semi-annual	
MW-42	Sentinel	Semi-annual	Semi-annual	Upgradient
MW-43A	Sentinel	Semi-annual	Semi-annual	
MW-48	Sentinel	Semi-annual	Semi-annual	
MW-51	Sentinel	Semi-annual	Semi-annual	
MW-53	Sentinel	Semi-annual	Semi-annual	
MW-54	Sentinel	Semi-annual	Semi-annual	
MW-55	Sentinel	Semi-annual	Semi-annual	
VW-1	Soil Vapor	Semi-annual	Semi-annual	
VW-2	Soil Vapor	Semi-annual	Semi-annual	
VW-3	Soil Vapor	Semi-annual	Semi-annual	
VW-4	Soil Vapor	Semi-annual	Semi-annual	

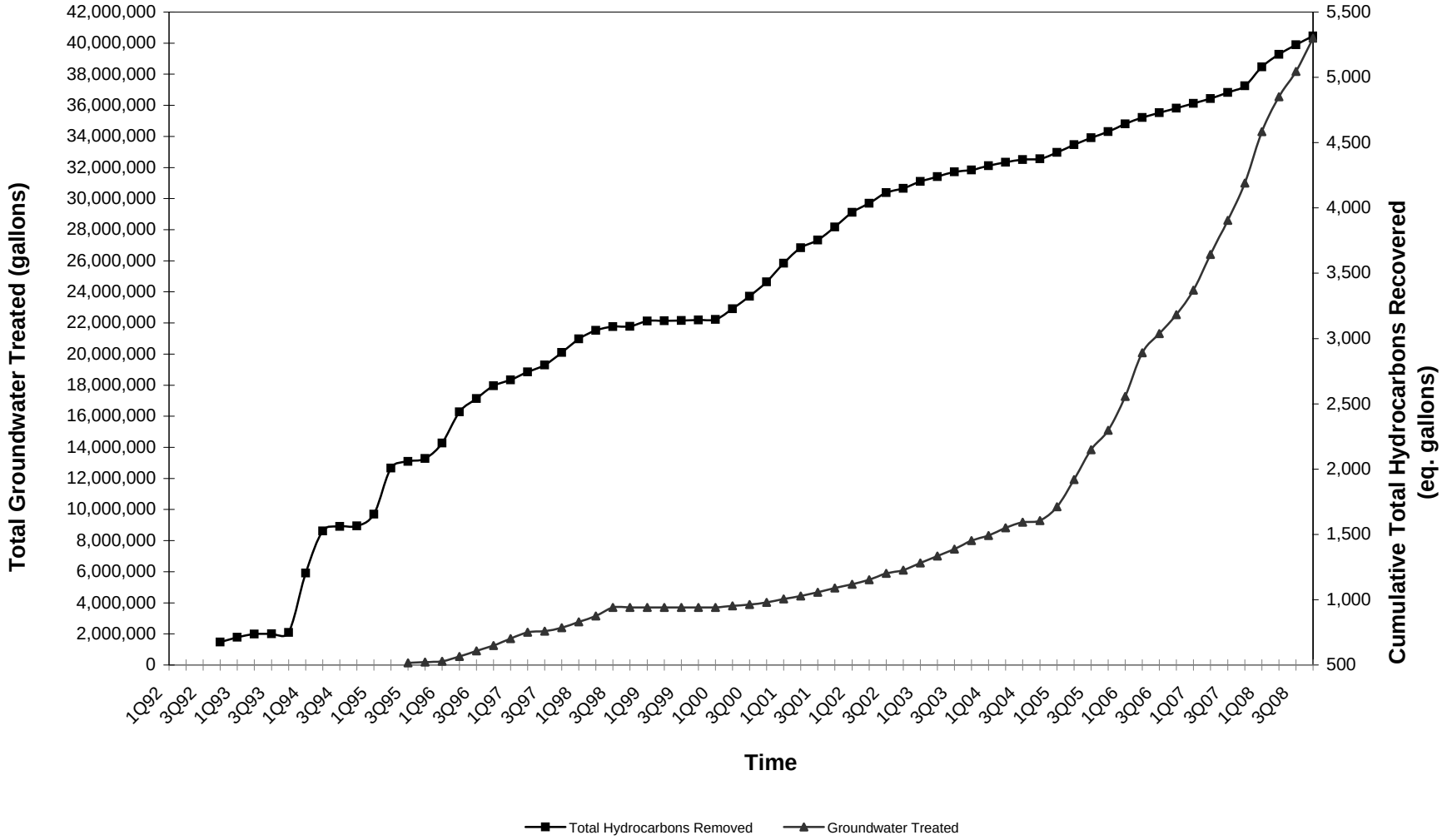
Notes:

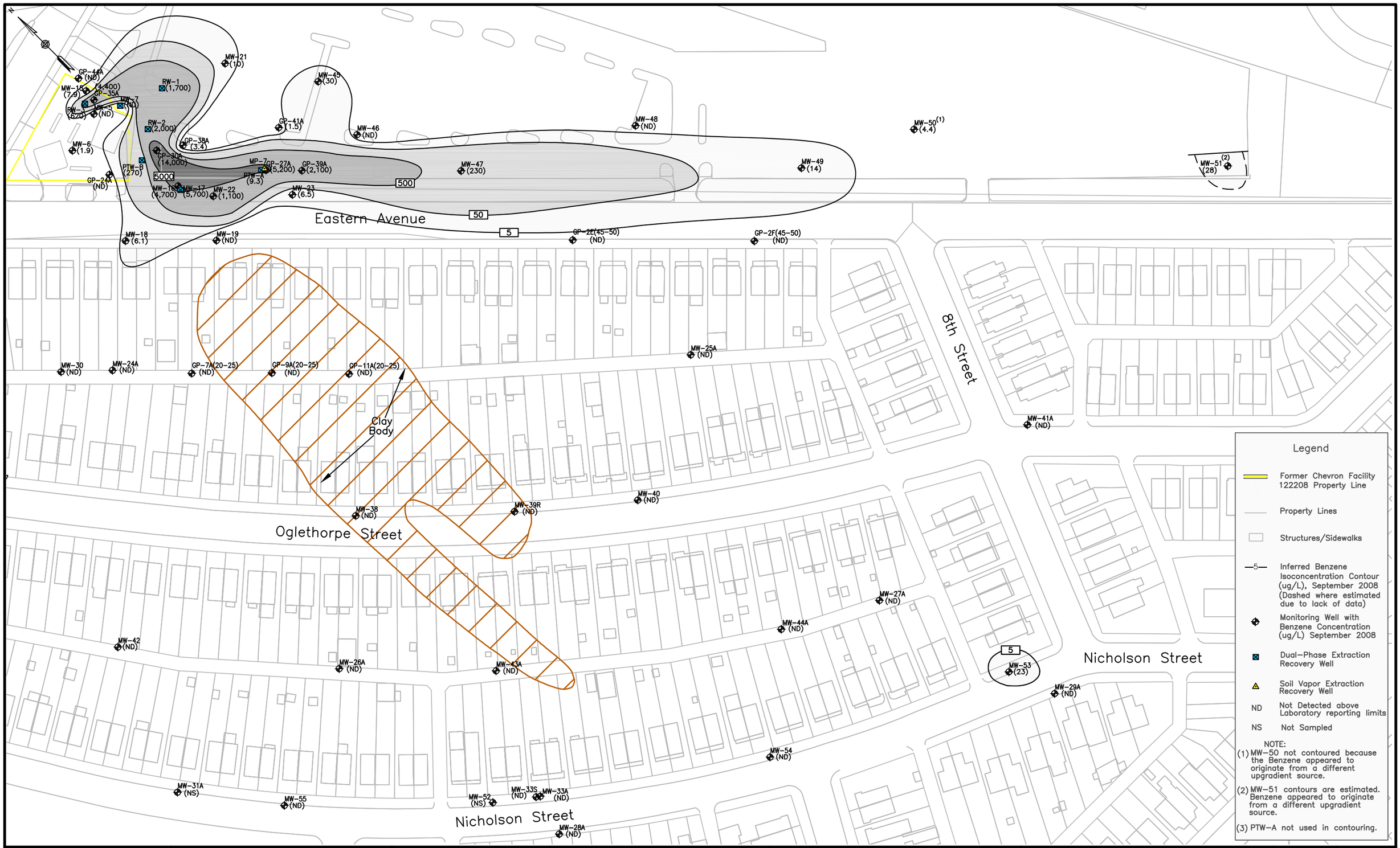
1. All groundwater wells will be gauged before they are sampled.
2. Sampling will be conducted in the spring and fall (low and high groundwater conditions).
3. All wells at the site will be gauged in the spring and fall (low and high groundwater conditions).
4. This table is adapted from the Interim Measures Sampling Plan, dated April, 2006.

FIGURES

Gannett Fleming

Figure 1
Cumulative Total Hydrocarbons Recovered and Groundwater Treated Since 1990
Fourth Quarter 2008 Report
Former Chevron Facility 122208, Chillum, Maryland





0 50 100 Feet

NO.	DESCRIPTION	DATE	BY

REVISIONS

DESIGNED	CADD	SCALE
DKB	DKB	1:100
CHECKED	APPROVED	APPROVED
TEM	RWS	

Gannett Fleming

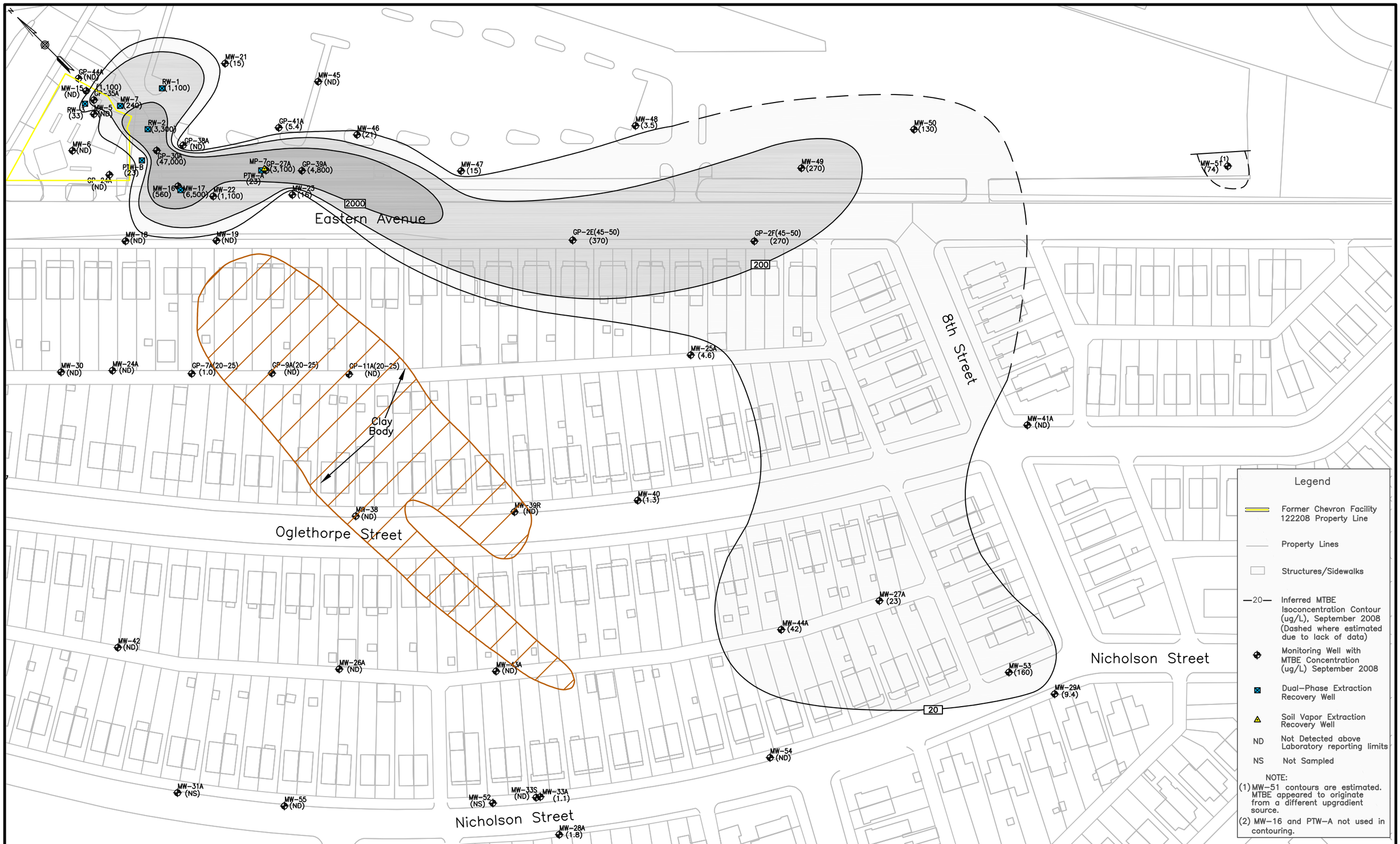
BALTIMORE, MARYLAND

CHEVRON PRODUCTS COMPANY
ATLANTA, GEORGIA

FORMER CHEVRON FACILITY NO. 122208
CHILLUM, MARYLAND

Benzene Concentrations in Shallow Monitoring Wells September 2008

JOB NO.	SHEET NO.
50641	2
DATE	
12/22/08	
CAD FILE	
Shallow Benzene	



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NO.	DESCRIPTION	DATE	BY
REVISIONS			

DESIGNED	CADD	SCALE
DKB	DKB	1:100
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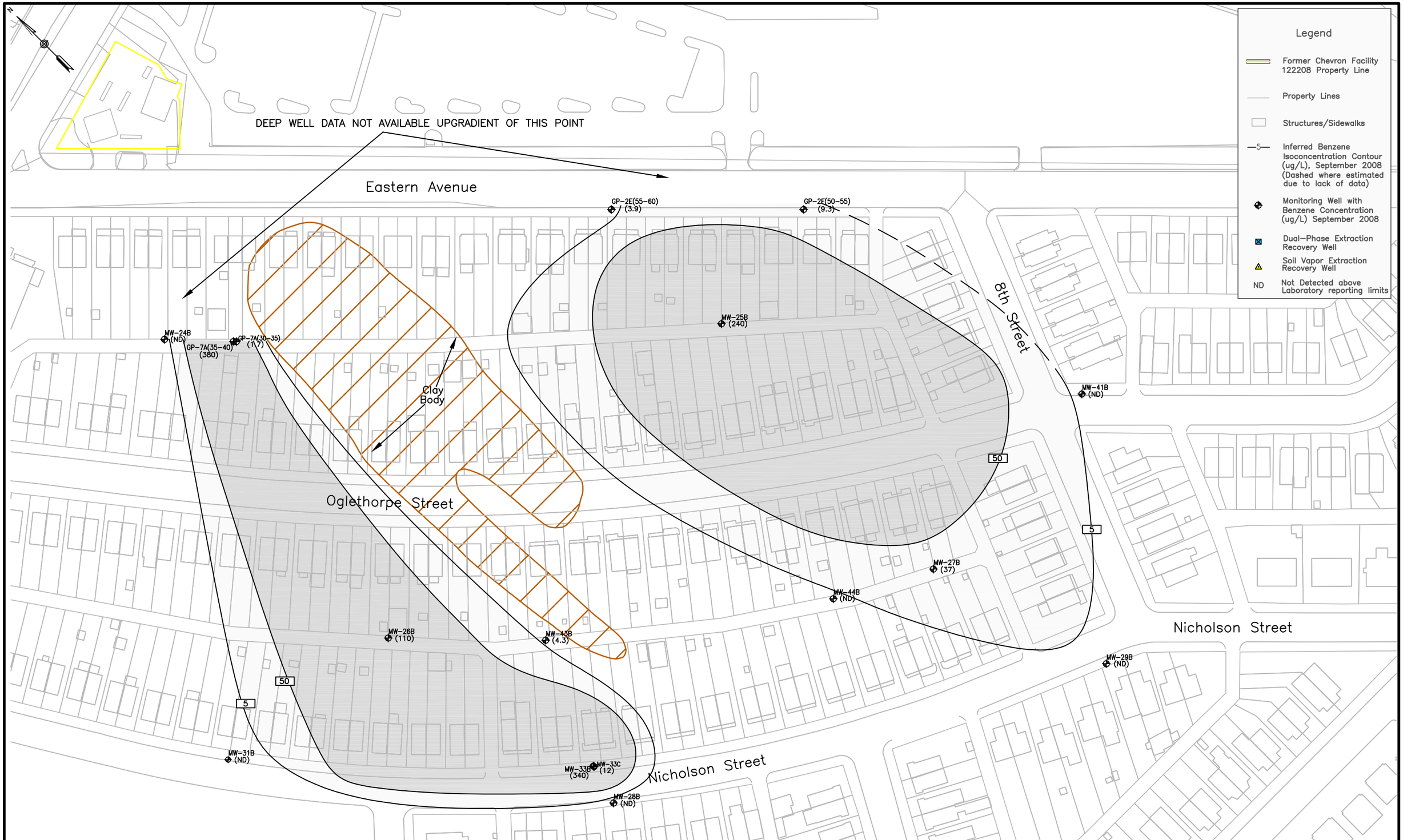
Gannett Fleming
BALTIMORE, MARYLAND

CHEVRON PRODUCTS COMPANY
ATLANTA, GEORGIA

FORMER CHEVRON FACILITY NO. 122208
CHILLUM, MARYLAND

MTBE Concentrations in Shallow Monitoring Wells September 2008

JOB NO.	SHEET NO.
50641	3
DATE	
12/22/08	
CAD FILE	
Shallow MTBE	



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NO.	DESCRIPTION	DATE	BY
	REVISIONS		

DESIGNED	CADD	SCALE
DKB	DKB	1:100
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Gannett Fleming
BALTIMORE, MARYLAND

CHEVRON PRODUCTS COMPANY
ATLANTA, GEORGIA

FORMER CHEVRON FACILITY NO. 122208
CHILLUM, MARYLAND

Benzene Concentrations in Deep Monitoring Wells September 2008

JOB NO. 50641
DATE 12/22/08
CAD FILE Deep Benzene

SHEET NO. 4

DEEP WELL DATA NOT AVAILABLE UPGRADIENT OF THIS POINT

Eastern Avenue

8th Street

Nicholson Street

Nicholson Street

Oglethorpe Street

Clay Body

GP-2E(55-60) (130)

GP-2F(50-55) (430)

MW-25B (350)

MW-24B (ND)

GP-7A(30-35) (1.8)

GP-7A(36-40) (310)

MW-41B (20)

MW-27B (240)

MW-44B (95)

MW-26B (200)

MW-43B (21)

MW-29B (74)

MW-31B (1.2)

MW-33B (230)

MW-33C (35)

MW-28B (ND)

200

200

20

Legend

- Former Chevron Facility 122208 Property Line
- Property Lines
- Structures/Sidewalks
- —20— Inferred MTBE Isoconcentration Contour (ug/L), September 2008 (Dashed where estimated due to lack of data)
- Monitoring Well with MTBE Concentration (ug/L) September 2008
- Dual-Phase Extraction Recovery Well
- Soil Vapor Extraction Recovery Well
- ND Not Detected above Laboratory reporting limits

0 50 100 Feet

NO.	DESCRIPTION	DATE	BY

REVISIONS

DESIGNED	CADD	SCALE
DKB	DKB	1:100
CHECKED	APPROVED	APPROVED
TEM	RWS	

Gannett Fleming

BALTIMORE, MARYLAND

CHEVRON PRODUCTS COMPANY
ATLANTA, GEORGIA

FORMER CHEVRON FACILITY NO. 122208
CHILLUM, MARYLAND

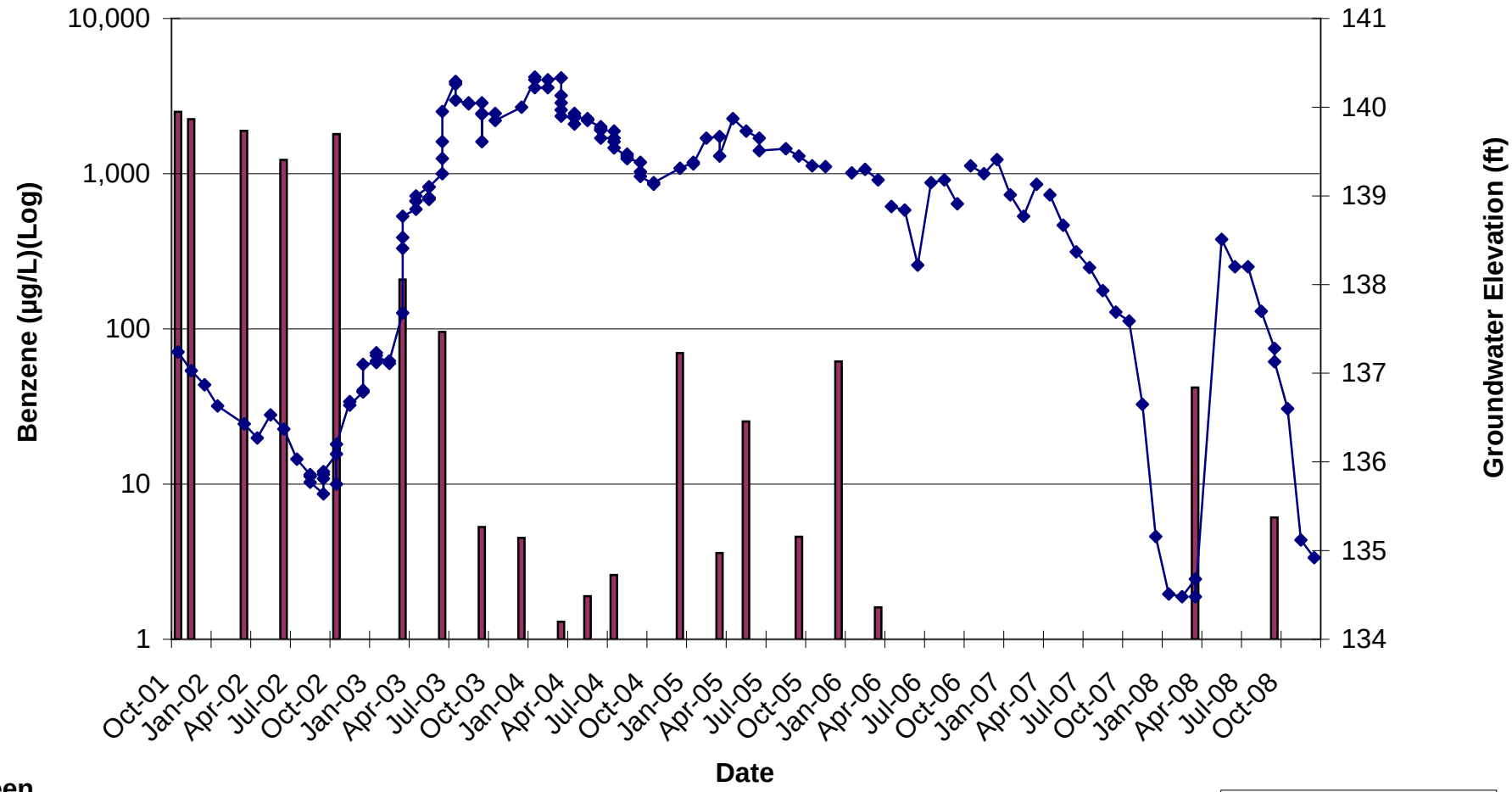
MTBE Concentrations in Deep Monitoring Wells September 2008

JOB NO.	DATE	CAD FILE
50641	12/22/08	Deep MTBE

SHEET NO. 5

Gannett Fleming

FIGURE 6: MW-18 BENZENE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

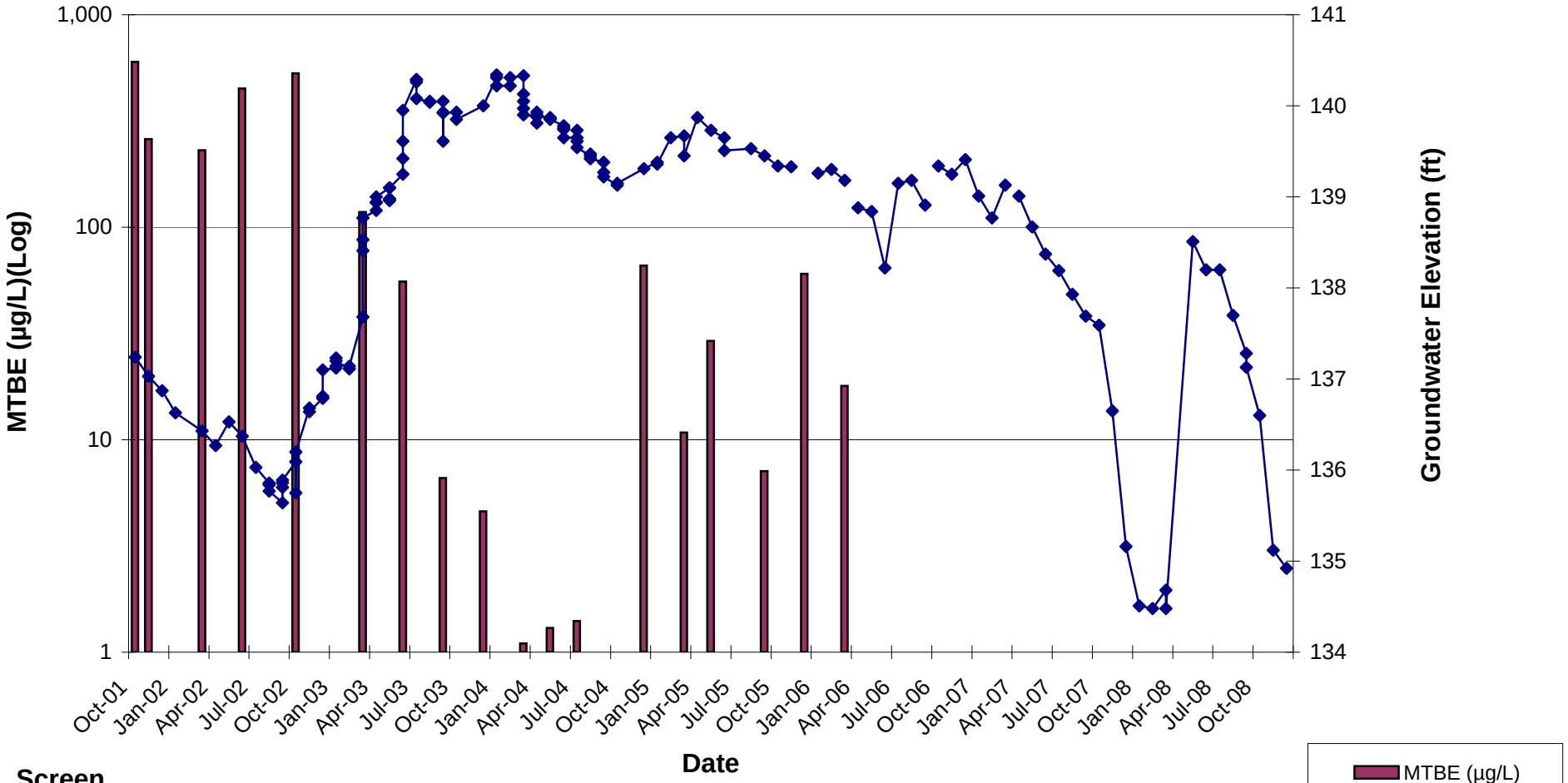


Screen
29-44 ft bgs
Screen Top: 139.45 ft
Screen Bottom: 124.45 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 7: MW-18 MTBE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

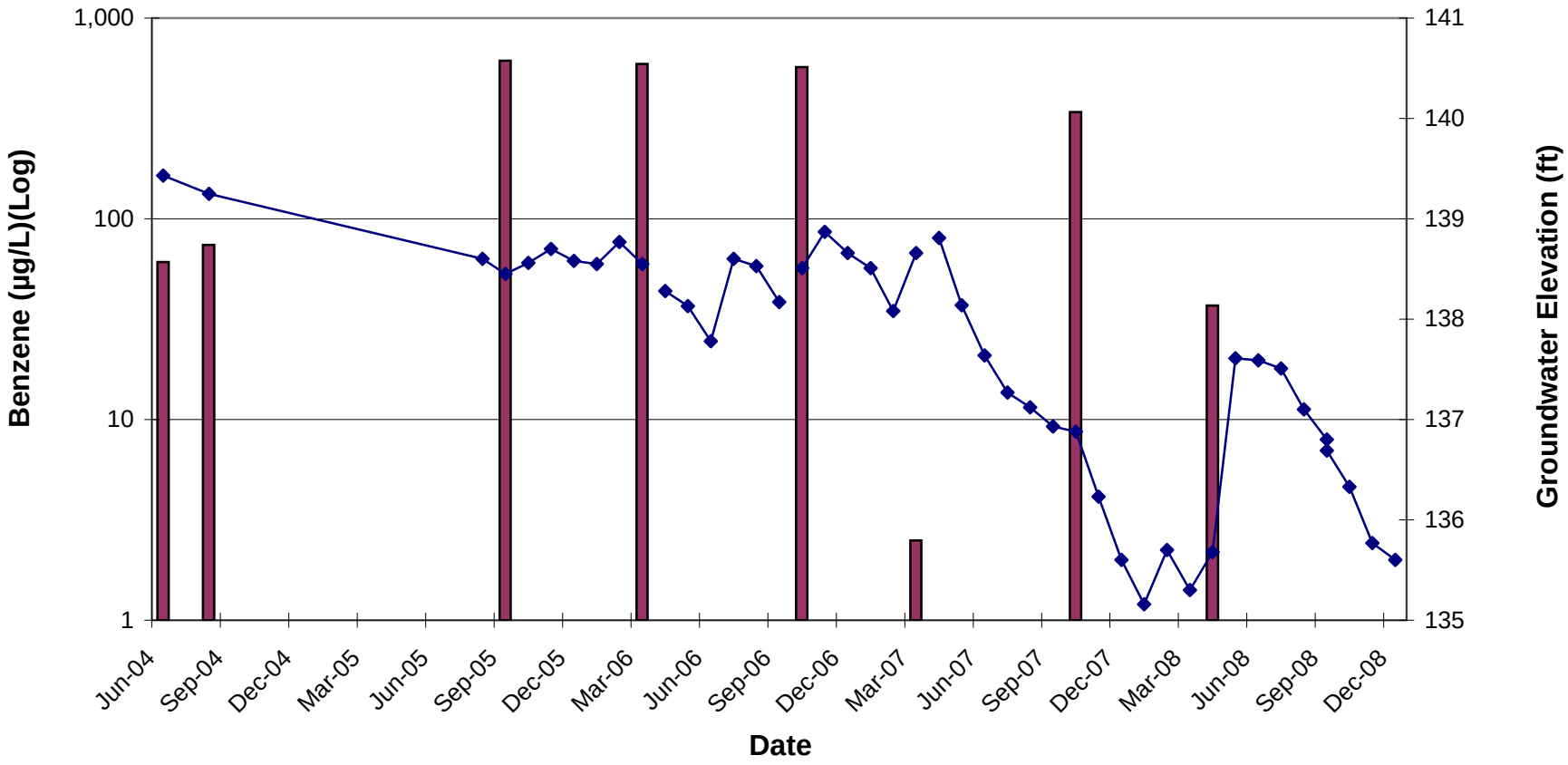


Screen
29-44 ft bgs
Screen Top: 139.45 ft
Screen Bottom: 124.45 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 8: MW-24A BENZENE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

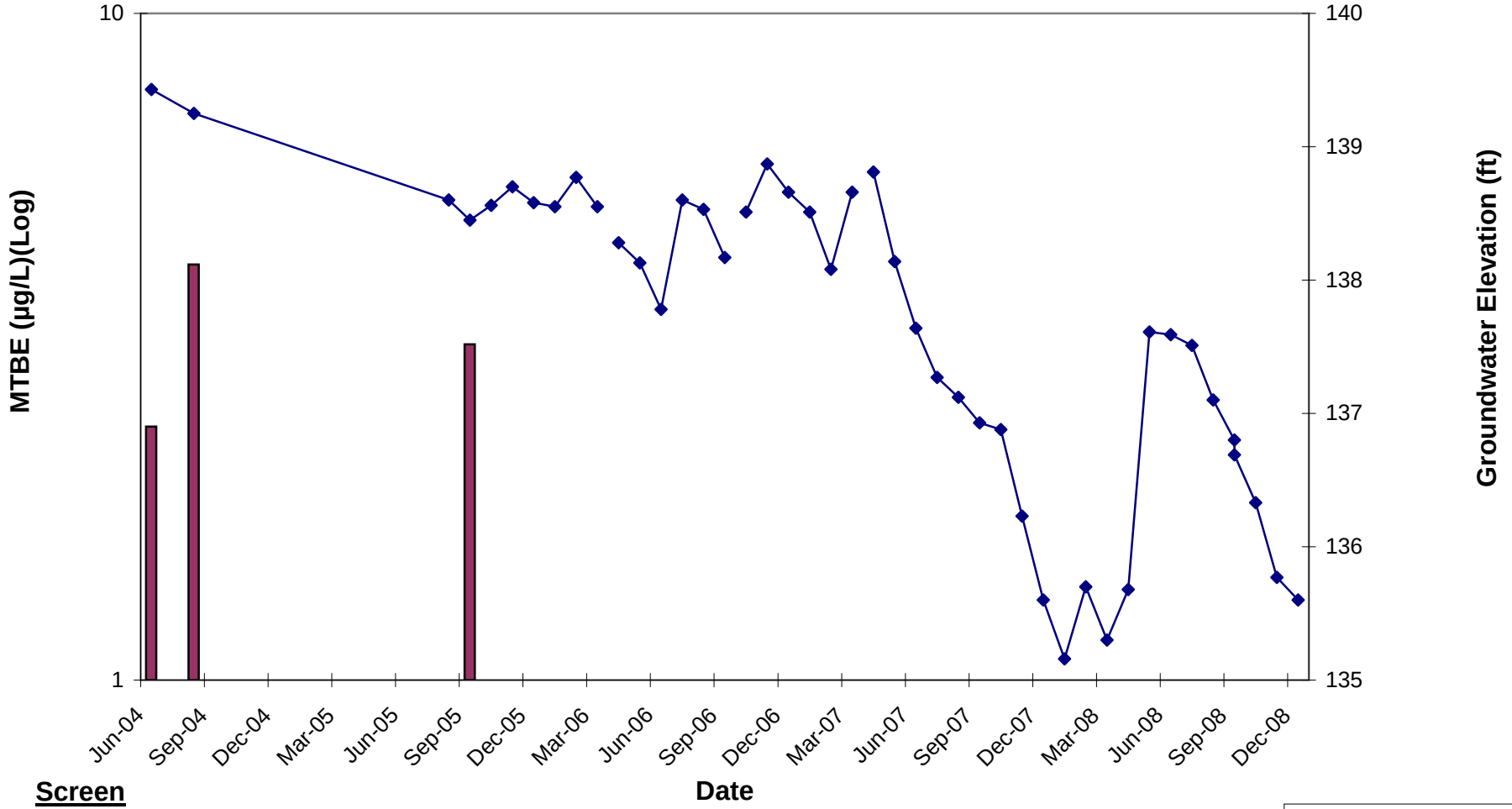


Screen
16-23.5 ft bgs
Screen Top: 141.4 ft
Screen Bottom: 133.9 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 9: MW-24A MTBE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

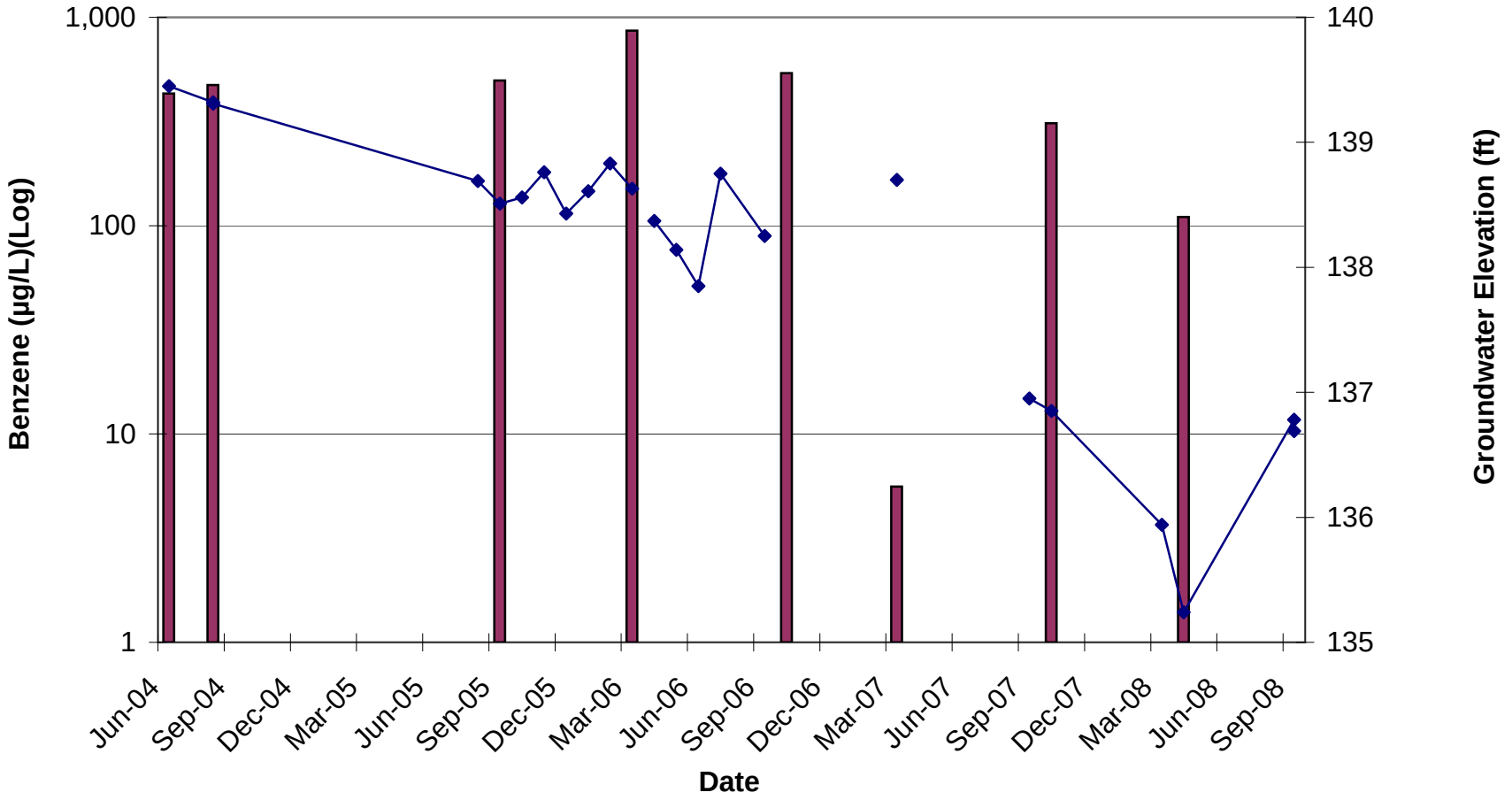


Screen
16-23.5 ft bgs
Screen Top: 141.4 ft
Screen Bottom: 133.9 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 10: MW-24B BENZENE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND



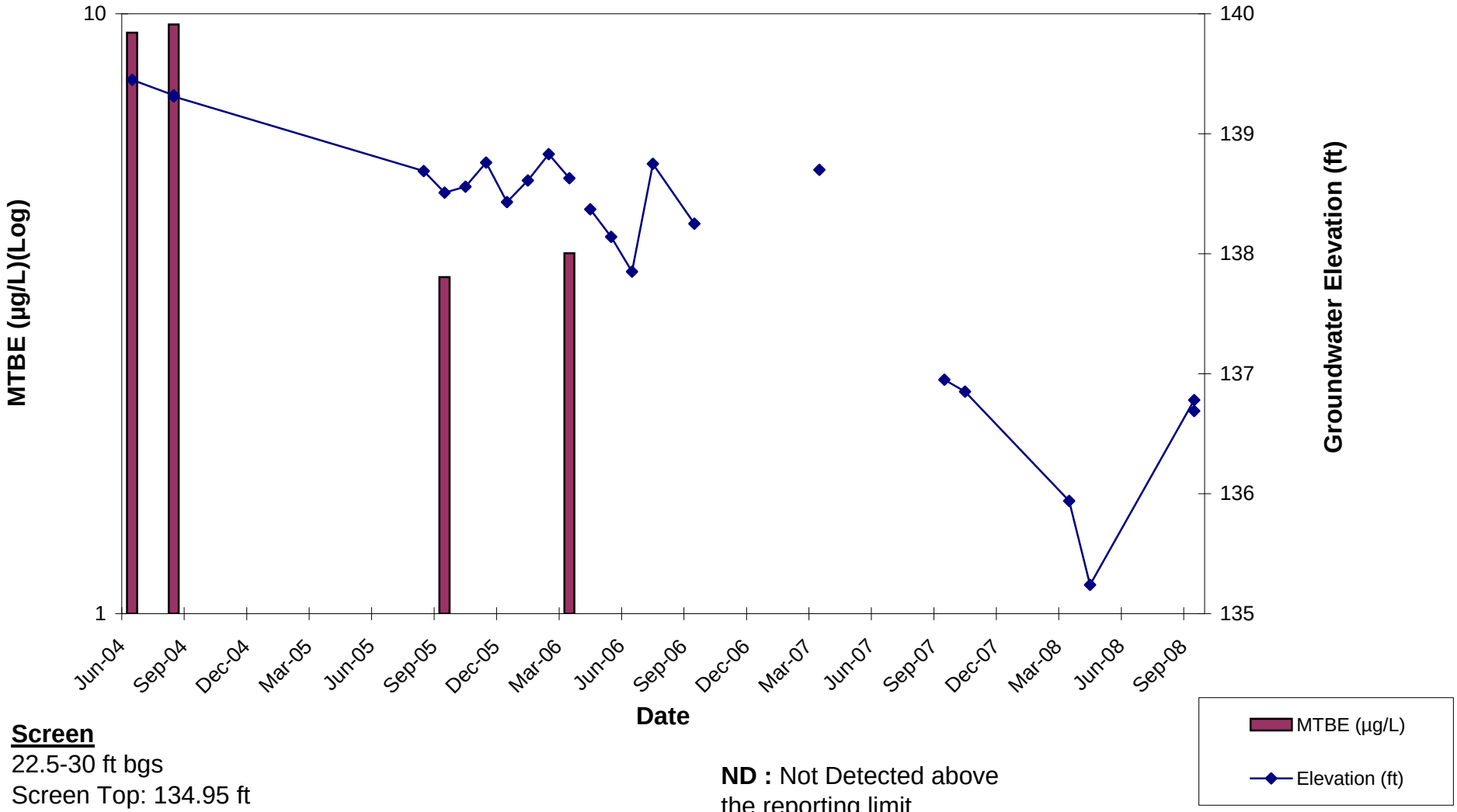
Screen
22.5-30 ft bgs
Screen Top: 134.95 ft
Screen Bottom: 127.45 ft

ND : Not Detected above the reporting limit

Benzene(µg/L)
Elevation (ft)

Gannett Fleming

FIGURE 11: MW-24B MTBE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

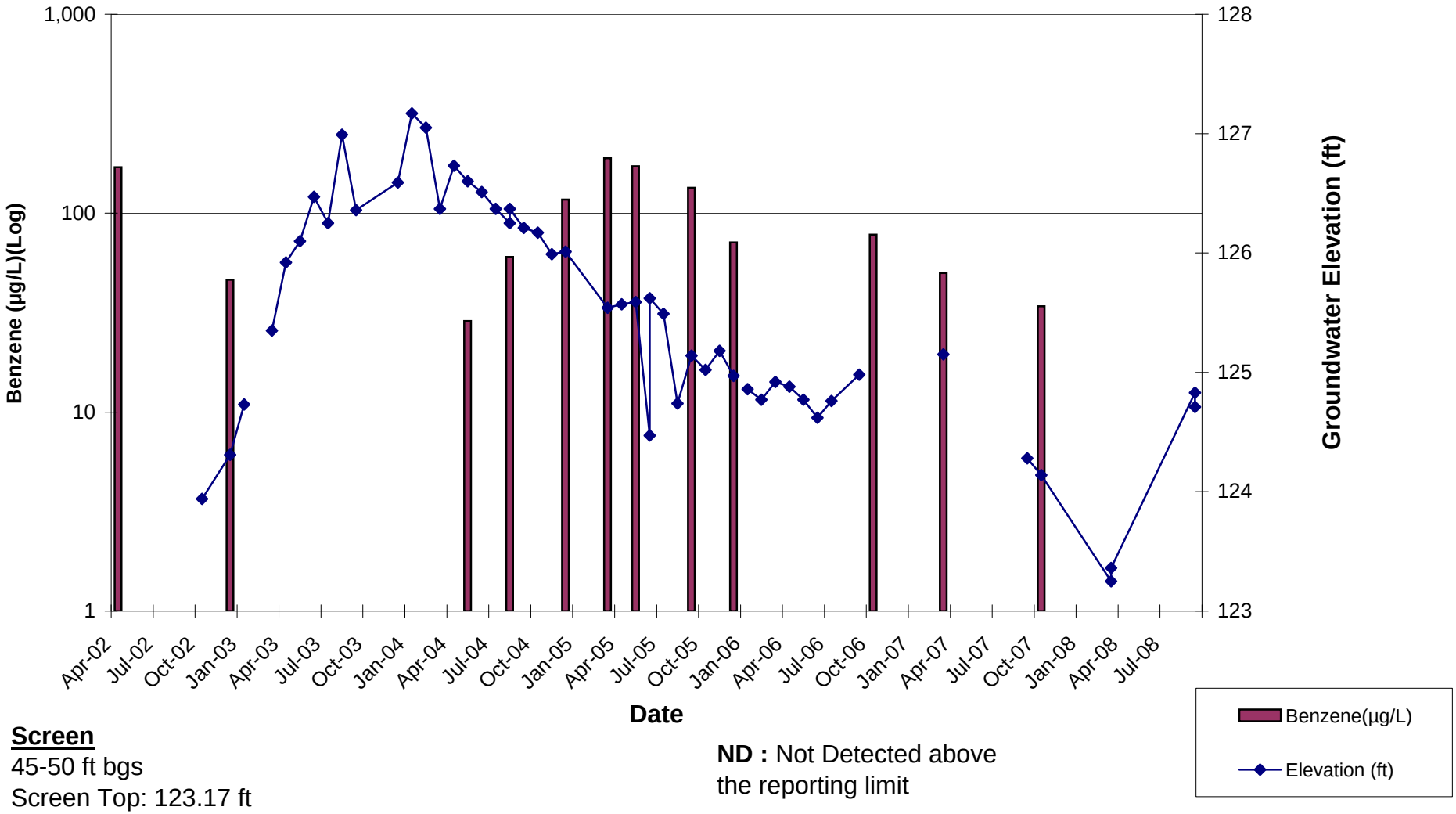


Screen
22.5-30 ft bgs
Screen Top: 134.95 ft
Screen Bottom: 127.45 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 12: GP-2E (45-50) BENZENE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

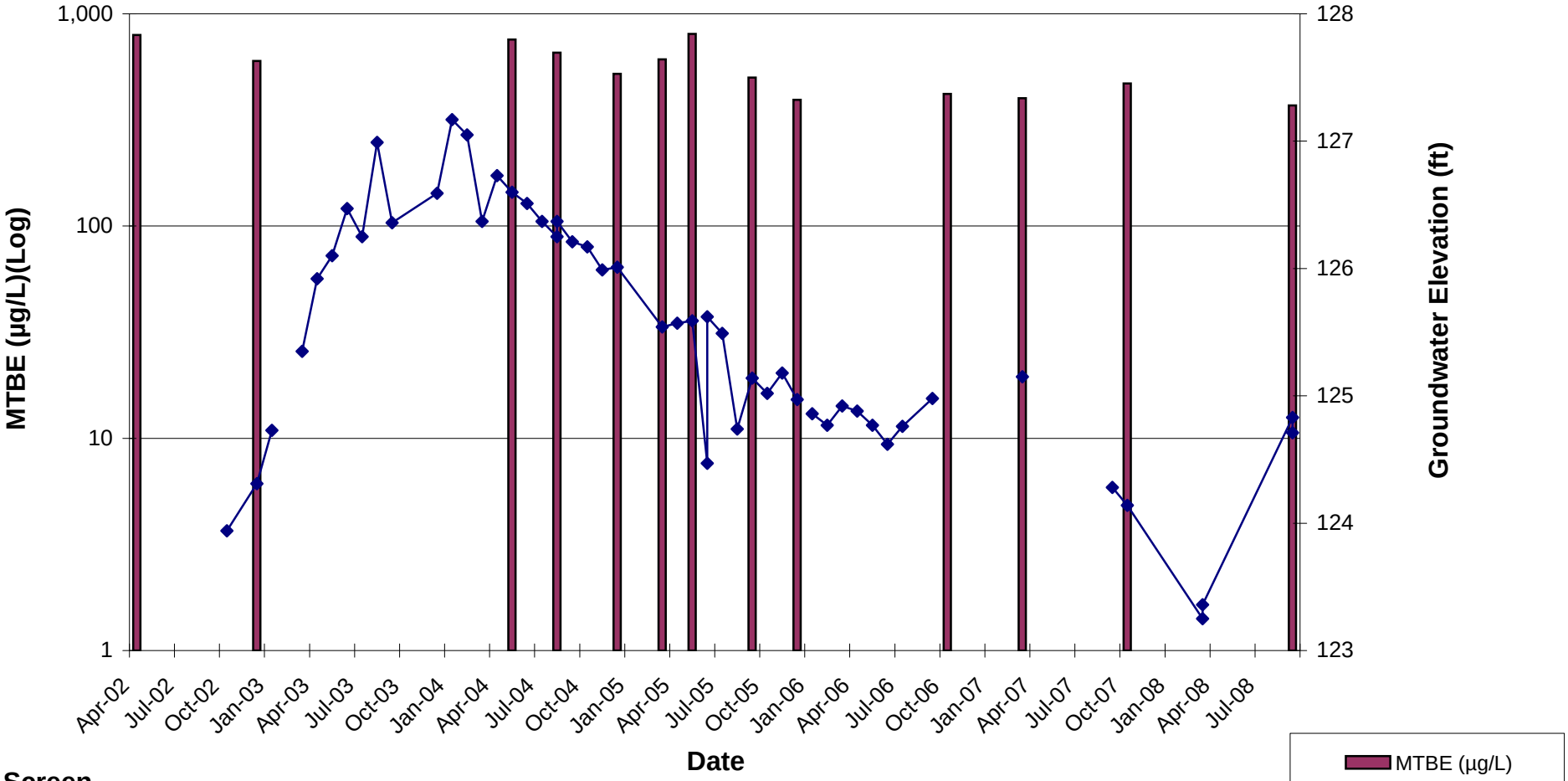


Screen
45-50 ft bgs
Screen Top: 123.17 ft
Screen Bottom: 118.17 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 13: GP-2E (45-50) MTBE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

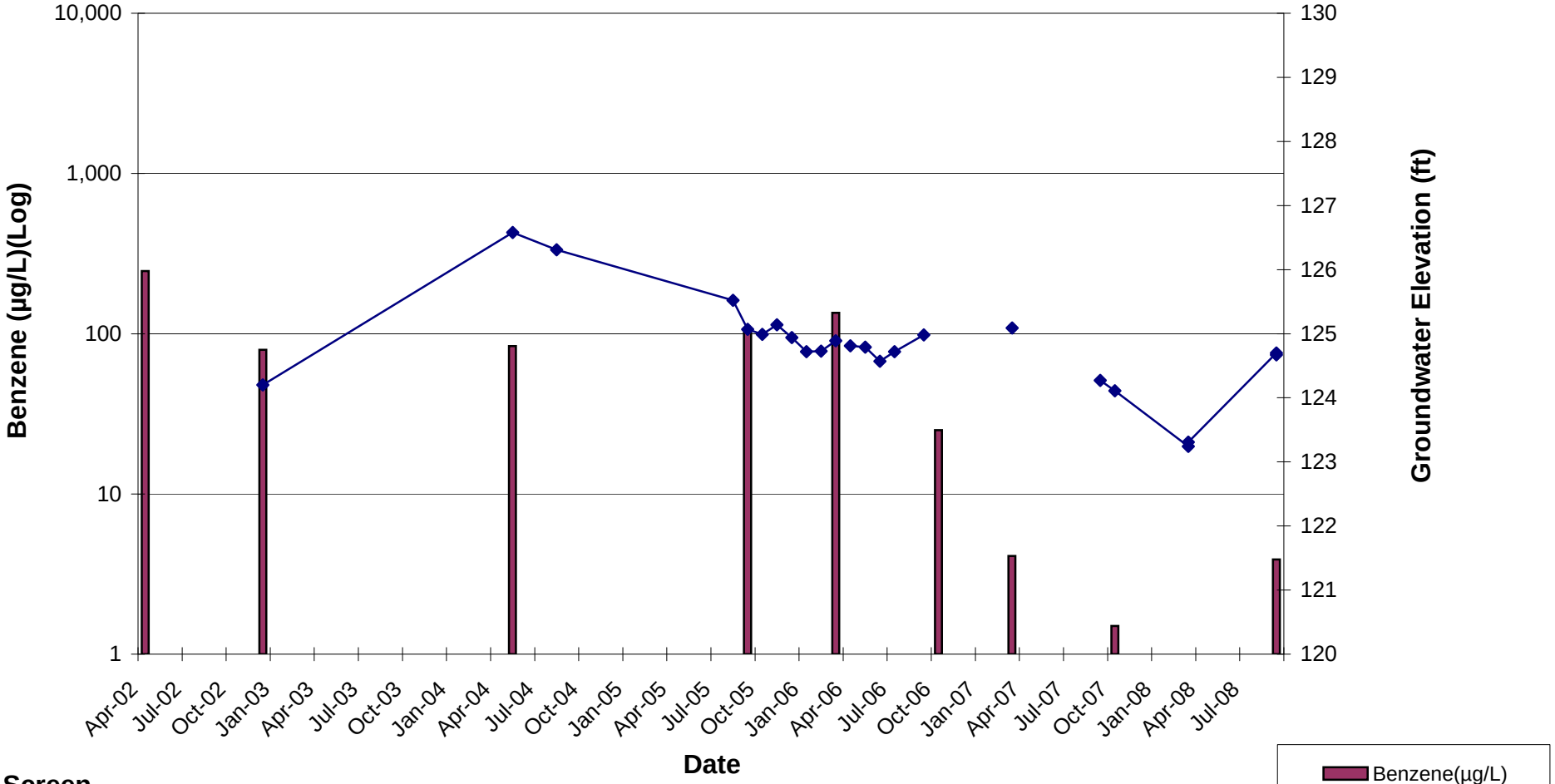


Screen
45-50 ft bgs
Screen Top: 123.17 ft
Screen Bottom: 118.17 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 14: GP-2E (55-60) BENZNE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

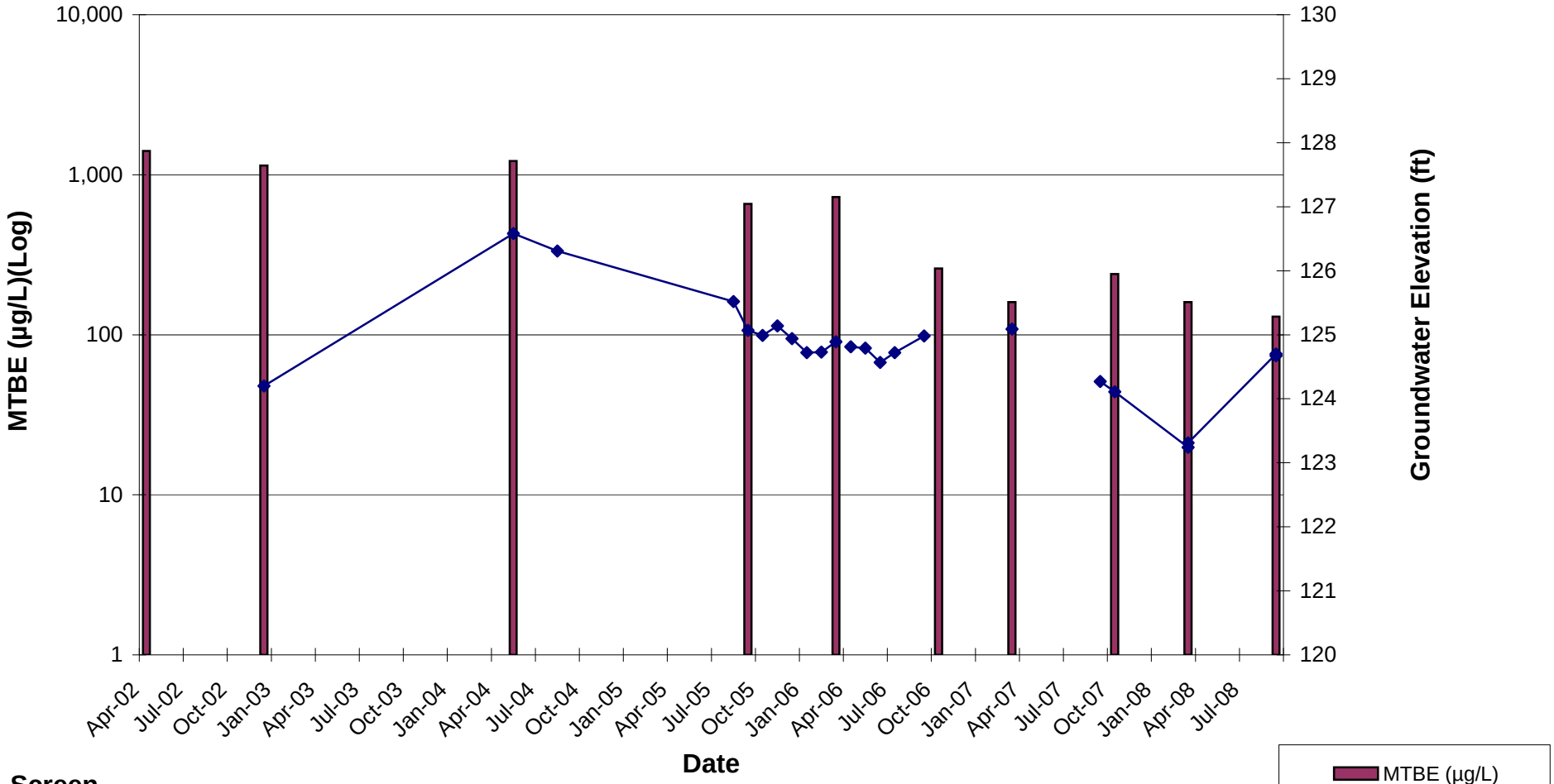


Screen
55-60 ft bgs
Screen Top: 113.53 ft
Screen Bottom: 108.53 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 15: GP-2E (55-60) MTBE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

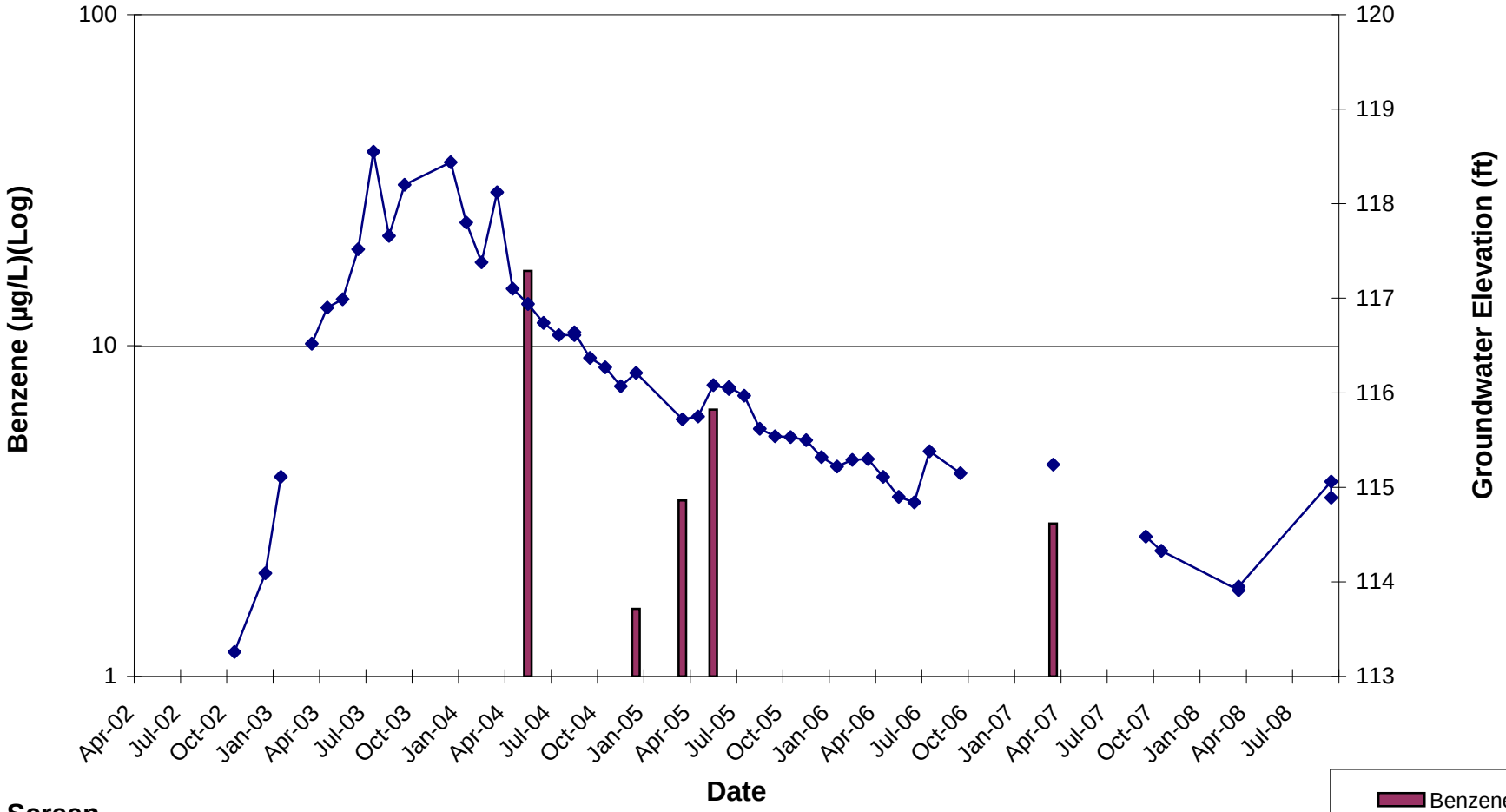


Screen
55-60 ft bgs
Screen Top: 113.53 ft
Screen Bottom: 108.53 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 16: GP-2F (45-50) BENZENE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

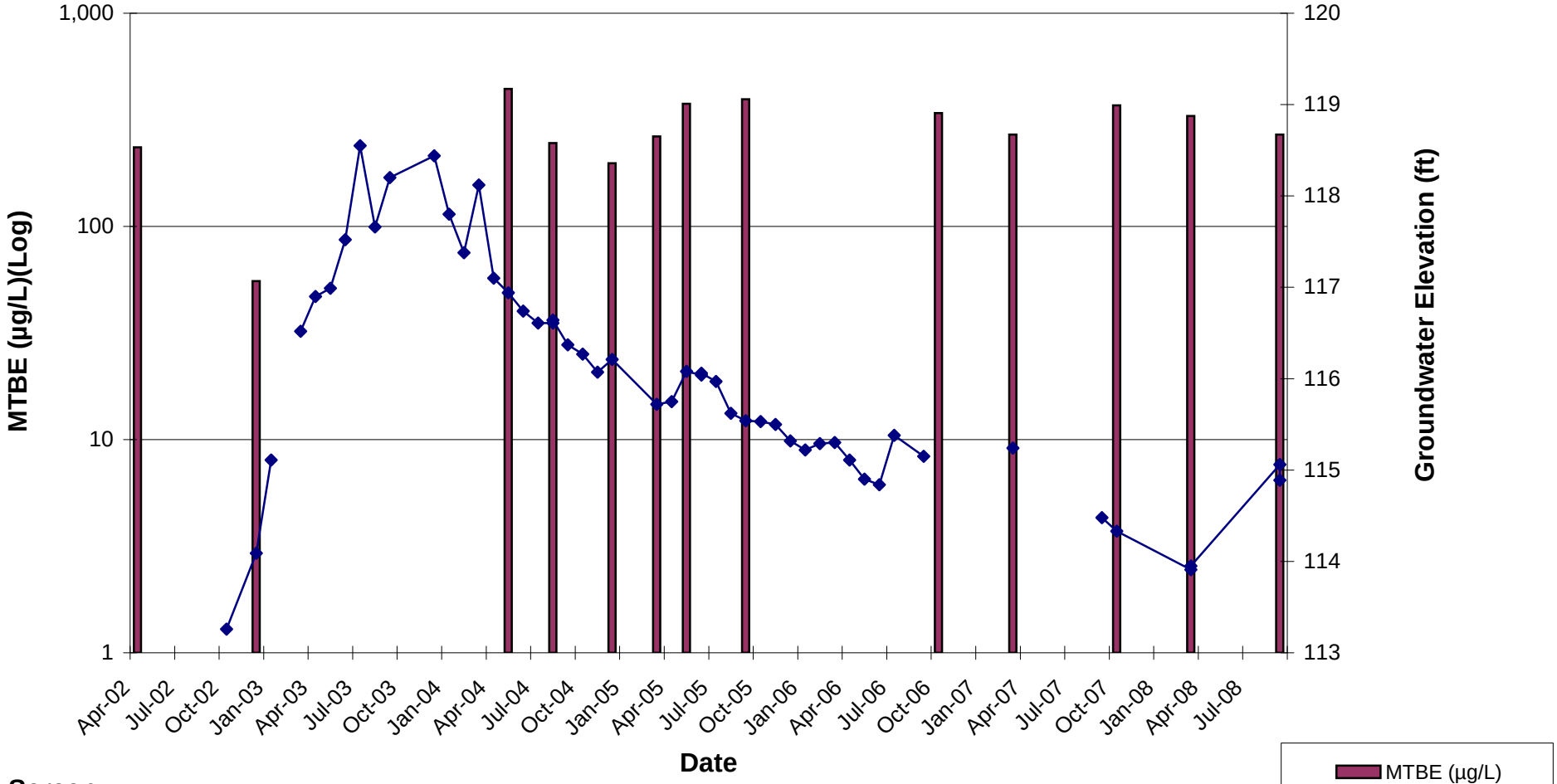


Screen
45-50 ft bgs
Screen Top: 114.59 ft
Screen Bottom: 109.59 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 17: GP-2F (45-50) MTBE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

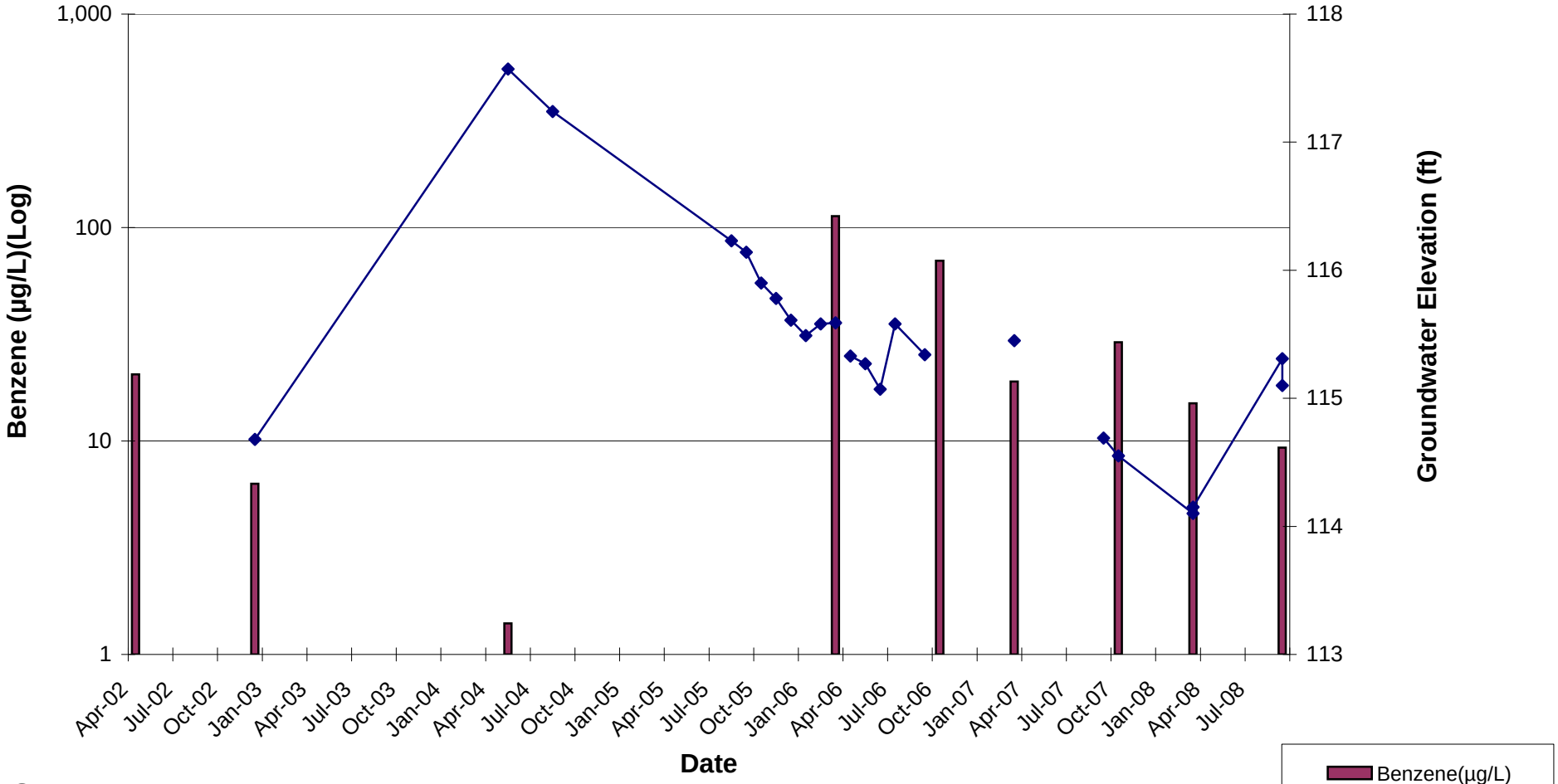


Screen
45-50 ft bgs
Screen Top: 114.59 ft
Screen Bottom: 109.59 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 18: GP-2F (50-55) BENZENE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

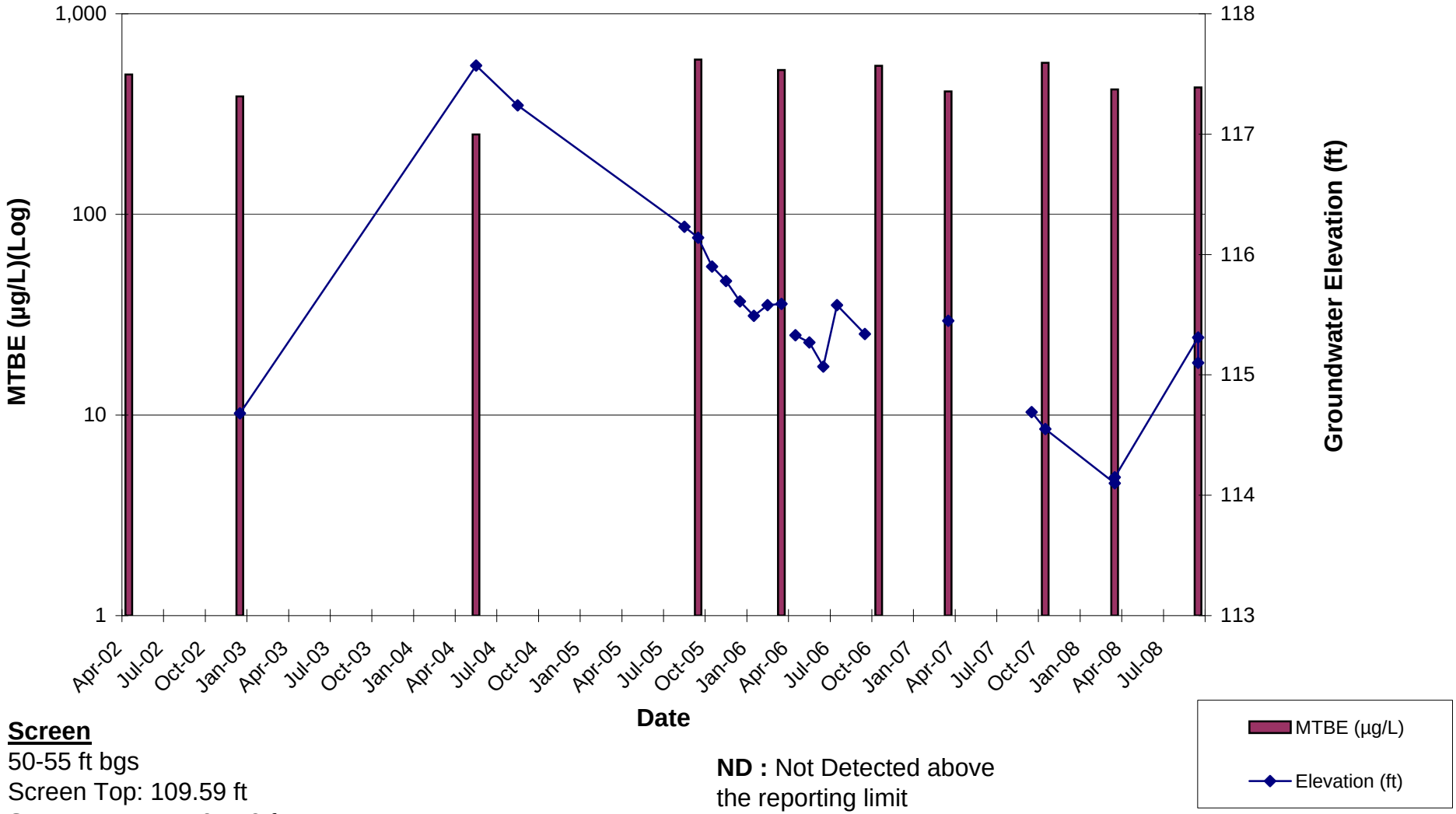


Screen
50-55 ft bgs
Screen Top: 109.59 ft
Screen Bottom: 104.59 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 19: GP-2F (50-55) MTBE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

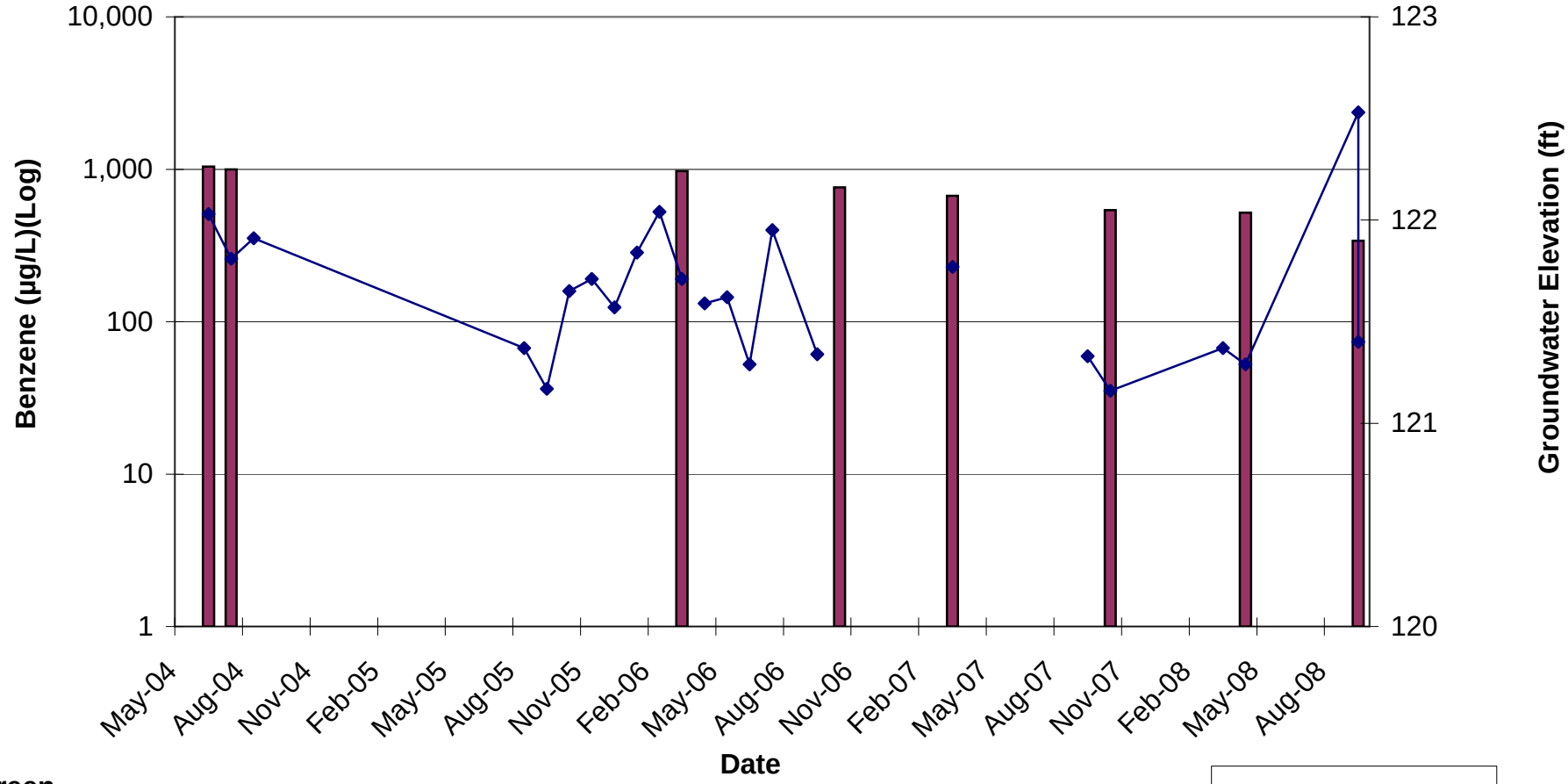


Screen
50-55 ft bgs
Screen Top: 109.59 ft
Screen Bottom: 104.59 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 20: MW-33B BENZENE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

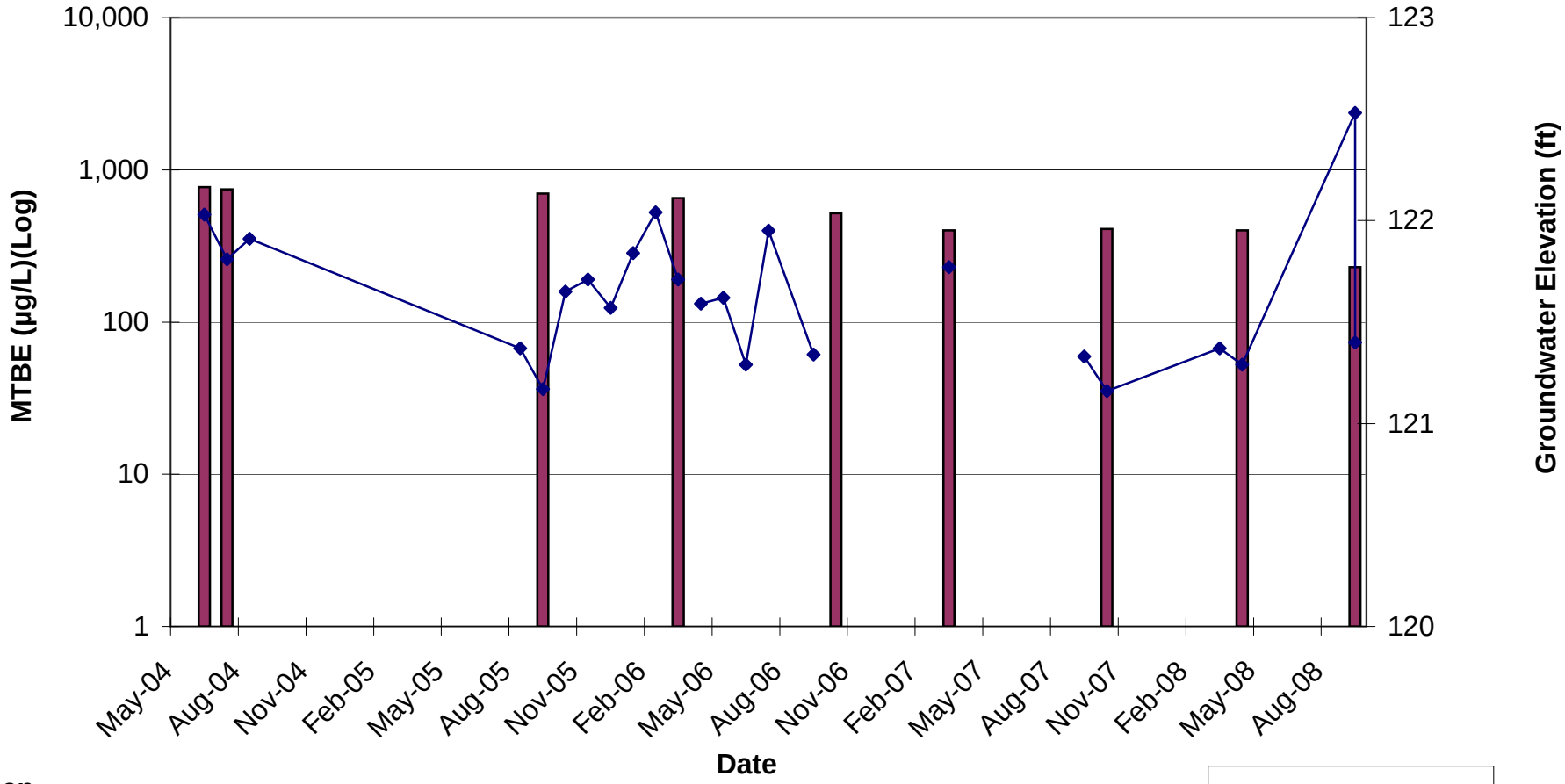


Screen
13-23 ft bgs
Screen Top: 113.16 ft
Screen Bottom: 103.13 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 21: MW-33B MTBE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

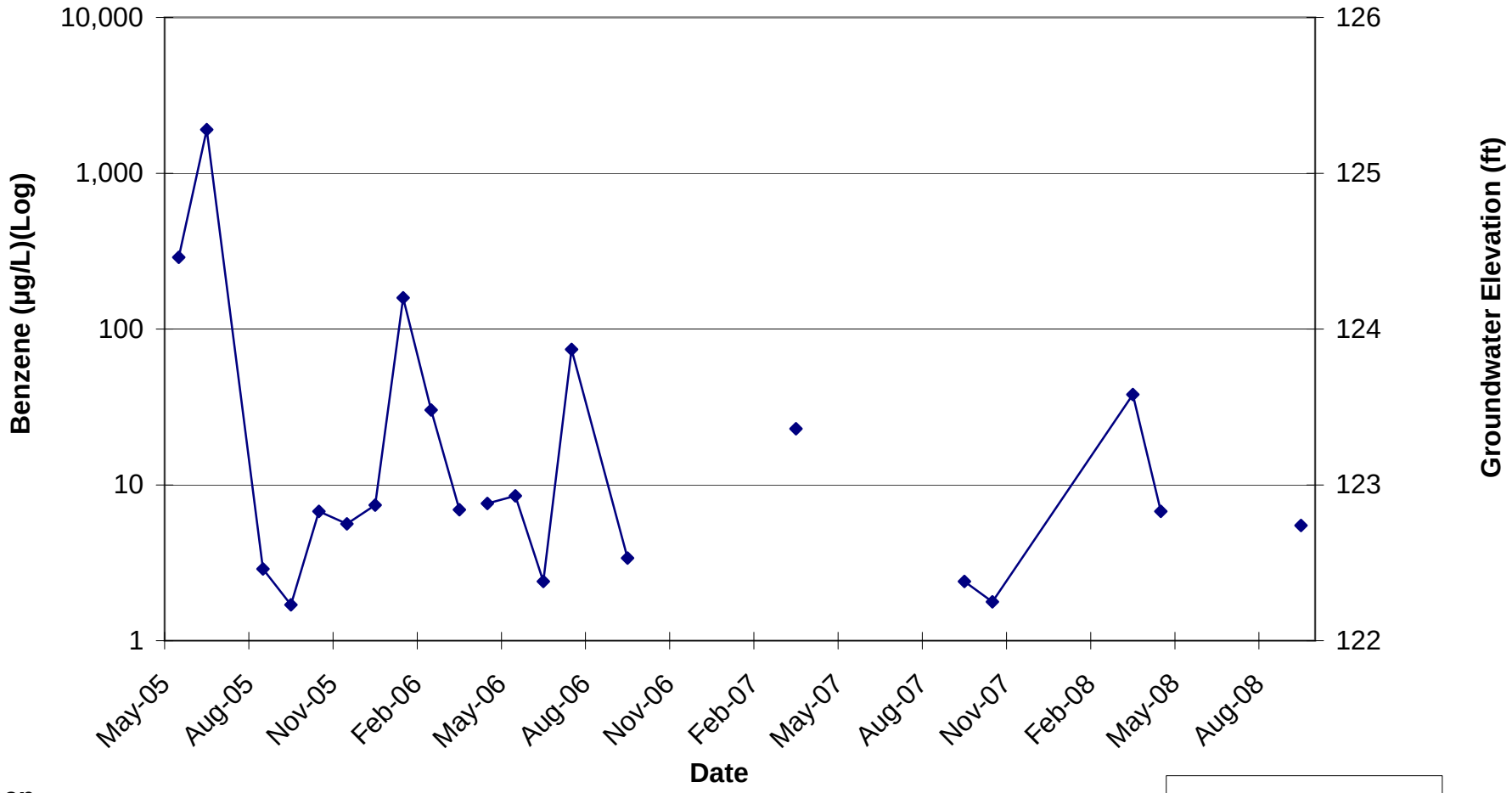


Screen
13-23 ft bgs
Screen Top: 113.16 ft
Screen Bottom: 103.13 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 22: MW-33S BENZENE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

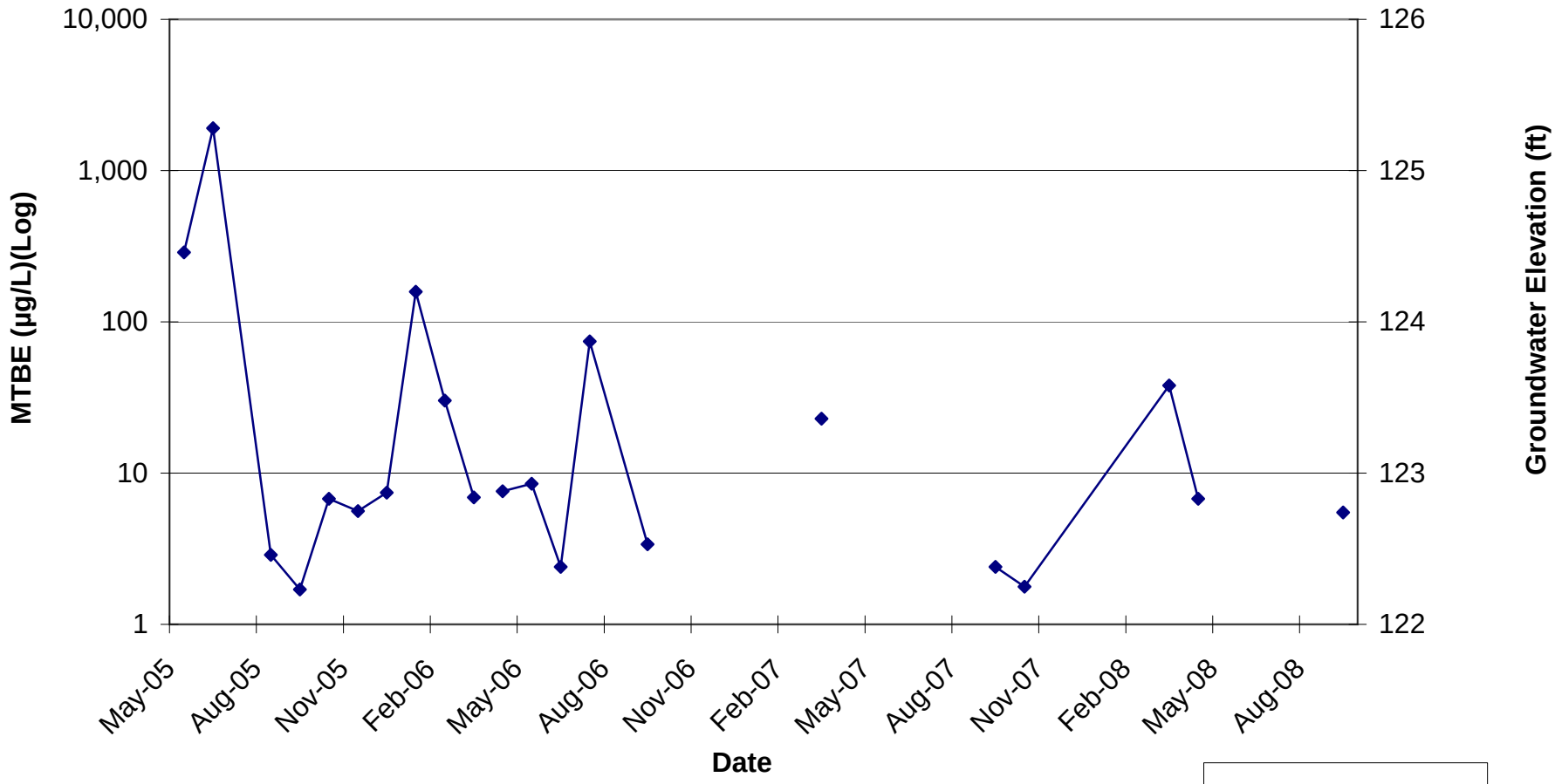


Screen
2-7 ft bgs
Screen Top: 124.58 ft
Screen Bottom: 117.58 ft

ND : Not Detected above the reporting limit

Gannett Fleming

FIGURE 23: MW-33S MTBE TREND ANALYSIS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND



Screen
2-7 ft bgs
Screen Top: 124.58 ft
Screen Bottom: 117.58 ft

ND : Not Detected above the reporting limit

APPENDIX A

DUAL-PHASE EXTRACTION SYSTEM – TOTAL FLUIDS EXTRACTION DATA

APPENDIX A

DUAL-PHASE EXTRACTION SYSTEM – TOTAL FLUIDS EXTRACTION DATA

DESCRIPTION OF DATA TABLES

Chevron uses a central database to store remediation system data and laboratory analytical data. The tabulated data in Tables A-1, A-2, and A-3 is an exported summary of the total fluids extraction system data from the database. These data were recorded by the field technician during site visits. The analytical data for influent samples collected for laboratory analysis (Table A-2) are used to calculate the mass (and to estimate the volume) of hydrocarbons recovered in the dissolved phase. Effluent sample data are included in Table A-3 for comparison with permit limits.

The data table includes all system data collected since January 1, 2008. Data collected prior to this date are available in previous progress reports.

The following table lists the column headings in the table with a brief description of each. Please refer to the Process and Instrumentation Diagram (next page) for a schematic of equipment and sample ports.

Column Heading	Description
Date / Time	Date and time data were recorded.
System Status	System ON or OFF when technician recorded the data.
Influent BTEX (µg/L)	Sum of benzene, toluene, ethylbenzene, and total xylenes from influent sample port SP-1.
Effluent BTEX (µg/L)	Sum of benzene, toluene, ethylbenzene, and total xylenes from effluent sample port SP-3.
Treatment Efficiency (%)	Equation: (Influent-Effluent) / (Influent).
Totalizer Reading (gallons)	Reading on the totalizing flow meter.
Pumped Period (gallons)	Equation: (current totalizer reading) – (previous totalizer reading).
Pumped Total (gallons)	Cumulative total gallons of groundwater recovered.
Period Average (GPM)	Equation: (Gallons Pumped During Period) / (current Date-Time – previous Date-Time)
Hydrocarbons Recovered Period (gallons)[1]	Equation: [Avg. Influent BTEX (ug/L)] * e^6 * (1/0.2) * (3.785 L/gal) * (1 lb/453.6 g) * (gallons pumped) * (1 gal/6.26 lbs). NOTE: Formula assumes BTEX equals 20% of gasoline.
Hydrocarbons Recovered Cumulative (gallons)	Equation: (Hydrocarbons Recovered During Period) + (Previous Cumulative)
Operating Extraction Points	Wells in operation during the reporting period.

Notes

(1) Assumptions: BTEX is 20% of hydrocarbon product by volume; density of hydrocarbon product is 6.26 pounds/gallon. The Average (Avg.) Influent BTEX concentration is defined as the mean of the influent concentration for the current and previous sampling events.

SERVER LOCATION K:\411\Instr\Jobs\44738_Chevron

GRS CONTROL PANEL
EOS CONTROLER

CAT OXIDIZER RUNNING
CAT OXIDIZER INLET TEMP T-1
CAT OXIDIZER OUTLET TEMP T-2
SVE AIR FLOW
KO TANK VACUUM
RUN/STOP KO PUMP P-1
KO TANK LEVEL HI/HI
KO TANK LEVEL HI
KO TANK LEVEL LO
OIL/WATER SEPERATOR LEVEL HI/HI
OIL/WATER SEPERATOR LEVEL HI
OIL/WATER SEPERATOR LEVEL LO
RUN/STOP OIL/WATER SEPERATOR PUMP P-2
SVE BLOWER RPM
SVE BLOWER SPEED SET POINT
RUN/STOP SVE BLOWER B-1
RUN/STOP AST BLOWER B-2
AST BLOWER DISCHARGE FLOW SWITCH
AST LEVEL HI/HI
AST LEVEL HI
AST LEVEL LO
RUN/STOP AST PUMP P-3
NOT USED
3-WAY COMPRESSED AIR SOLENOID VALVE
RUN/STOP COMPRESSER C-1
AST EFFLUENT FLOW PULSE

RTU-02
CONTROL PANEL

NON-CLASSIFIED ATMOSPHERE
CLASSIFIED ATMOSPHERE (CLASS 1, DIV 2)
2" PVC
TUBING
DETAIL A
2" PVC 40 (TYP)
SVE PIPE FROM WELL
SPARE
PTW-A
MW-7
MP-7
RW-3
RW-1
RW-2
MW-17
PTW-B
FROM ATMOSPHERE
DILUTION VALVE
TO ATMOSPHERE
CATALITIC OXIDIZER- FALCO 300 FALMOUTH PRODUCTS
FLAME ARRESTER
ST-200
ST-100
3" CS 40
3/4" HOSE (TYP)
1" PVC BALL VALVE (TYP)
TUBING (TYP)
TO WELL RW-1
TO WELL RW-2
TO WELL RW-3
TO WELL MW-7
TO WELL MW-17
TO WELL PTW-B
TO WELL PTW-A
WELL PUMPS: QED MOD# AP4T
FT 003
FE 003
PI 003
TI
PIT 003
SILENCER
3" PVC 40
LSHH 003
LSH 003
LSL 003
2" GLOBE VALVE
KO TANK
VFD
STARTER
SVE B-1 BLOWER TUTHILL MOD# 4009-46L3 25 HP
1" HOSE
P-1 KO PUMP MOYNO MOD #33201 2 HP
3/4" CS
DRAIN
1" PVC 80
2" PVC 80
OIL/WATER SEPARATOR HYDRO QUIP MOD #AGM-2SS-60V 30 GPM
LSHH 001
LSH 001
LSL 001
2" CS 40
P-2 OIL/WATER SEPARATOR PUMP AMT MOD #3694-97 1.5 HP
FSL 002
4" PVC 40
B-2 AST BLOWER NEW YORK BLOWER CO 5 HP
AS-1 AIR STRIPPER QED MOD #E-Z STACKER 4.4 P
ST-1
2" PVC 40
P-3 AST PUMP GRUNDFOS CRB 5 HP (42 gpm @ 230 FT. TDH)
1 1/2" PVC 80
F-1B
F-1A
BAG FILTER
DRAIN (TYP.)
ROSEDALE PRODUCTS MODEL #L0618112P125CBPB (125 PSI)
PSH 004
FE 004
FQI 004
TRAILER FLOOR SUMP
LSH
PSH 005
PSL 005
80 GAL RECEIVING TANK MAX 200 PSI
3/4" CS 40 AIR LINE
C-1 AIR COMPRESSOR SPEEDAIRE MOD #1WD67 10 HP 34.8 CFM @ 175 PSI
TSH
CONTROL ROOM
VAPOR OFF GAS
VAPOR PHASE GAC FILTERS: TIGG MOD# N-500 400-800 CFM
ACTIVATED CARBON
GAC-5
GAC-4
GAC-3 (SPARE)
ST-50
ST-51a
ST-51b
TO ATMOSPHERE
LIQUID PHASE GAC FILTERS: SIEMENS MOD# LP-61P 150 PSIG MAX
GAC FILTER
1" GS
ST-2
ST-3
INSIDE CARBON SHED
SHED FLOOR SUMP
TO STORM DRAIN IN RIGGS ROAD

FILE NAME: D:\44738_CHEVRON\44738_J&C_J02.DWG
CURR DATE: 02/18/05 CURR TIME: 3:04:50 pm

No.	DESCRIPTION	DATE	BY
1	RE-DRAWN PER AS-BUILT CONDITIONS	12/20	RTC

REVISIONS

DESIGNED	CADD	SCALE
F.S.K.	J.A.W.	AS NOTED
CHECKED	APPROVED	APPROVED
F.S.K.	F.S.K.	K.G.

Gannett Fleming
BALTIMORE, MARYLAND

CHEVRON PRODUCTS COMPANY
ATLANTA, GEORGIA

FORMER CHEVRON FACILITY NO. 122208
CHILLUM, MARYLAND

INSTRUMENTATION
PROCESS AND INSTRUMENTATION DIAGRAM

JOB No. 44738
DATE 12/20/07
SHEET No. 10
10 of 15

Gannett Fleming

TABLE A-1: TOTAL FLUIDS EXTRACTION SYSTEM DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208, 5801 RIGGS ROAD, CHILLUM, MD
PERIOD: JANUARY 2008 - DECEMBER 2008

Chevron

Date/Time	System Status	Influent BTEX (µg/L)	Effluent BTEX (µg/L)	Treatment Efficiency (%)	Totalizer Reading (gallons)	Period Pumped (gallons)	Total Pumped (gallons)	Period Average (GPM)	Hydrocarbons Recovered Period (gallons)	Hydrocarbons Recovered Cumul. (gallons)	Operating Extraction Points
1/2/08 11:40	ON	NS	NS	-	21,371,700	365,900	31,904,422	19.58	-	662.45	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
1/15/08 10:40	ON	1,266	0	100.0	21,739,200	367,500	32,271,922	19.69	9.31	671.76	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
1/28/08 12:40	ON	NS	NS	-	22,115,600	376,400	32,648,322	19.98	-	671.76	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
2/1/08 6:30	ON	NS	NS	-	22,227,500	111,900	32,760,222	20.76	-	671.76	from EOS
2/8/08 8:58	OFF	NS	NS	-	22,433,031	205,531	32,965,753	20.09	-	671.76	AST-HH Bag Filters
2/11/08 11:30	ON	NS	NS	-	22,433,031	0	32,965,753	0.00	-	671.76	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
2/14/08 11:30	ON	936	0	100.0	22,520,200	87,169	33,052,922	20.18	5.73	677.49	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
2/20/08 11:00	ON	NS	0	-	22,696,100	175,900	33,228,822	20.43	-	677.49	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
2/25/08 12:00	ON	NS	0	-	22,845,800	149,700	33,378,522	20.62	-	677.49	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
2/29/08 10:05	ON	NS	NS	-	22,960,330	114,530	33,493,052	20.29	-	677.49	from EOS
3/6/08 10:15	ON	1,057	0	100.0	23,138,200	177,870	33,670,922	20.56	4.10	681.60	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
3/10/08 12:05	ON	NS	0	-	23,257,400	119,200	33,790,122	20.31	-	681.60	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
3/17/08 18:00	ON	NS	0	-	23,468,100	210,700	34,000,822	20.19	-	681.60	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
3/28/08 9:00	ON	NS	0	-	23,768,600	300,500	34,301,322	19.64	-	681.60	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
3/31/08 6:35	ON	NS	NS	-	23,847,978	79,378	34,380,700	19.01	-	681.60	from EOS
4/3/08 14:40	ON	NS	0	-	23,943,300	95,322	34,476,022	19.84	-	681.60	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
4/9/08 11:20	ON	697	0	100.0	24,109,100	165,800	34,641,822	19.64	5.67	687.27	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
4/16/08 16:35	ON	NS	0	-	24,325,000	215,900	34,857,722	20.77	-	687.27	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
4/22/08 14:50	ON	NS	0	-	24,325,000	0	34,857,722	0.00	-	687.27	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
4/30/08 10:30	ON	NS	NS	-	24,725,425	400,425	35,258,147	35.56	-	687.27	from EOS
5/1/08 6:30	OFF	NS	NS	-	24,751,884	26,459	35,284,606	22.05	-	687.27	AST-HH Bag Filters
5/1/08 11:15	ON	NS	0	-	24,751,884	0	35,284,606	0.00	-	687.27	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
5/10/08 5:55	OFF	NS	NS	-	25,017,023	265,139	35,549,745	20.98	-	687.27	AST-HH Bag Filters
5/13/08 12:30	OFF	NS	NS	-	25,017,023	0	35,549,745	0.00	-	687.27	GAC Change - O&M
5/15/08 14:35	ON	1,284	0	100.0	25,017,023	0	35,549,745	0.00	5.99	693.27	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
5/22/08 13:15	ON	NS	0	-	25,206,500	189,477	35,739,222	18.95	-	693.27	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
5/28/08 12:25	ON	NS	0	-	25,367,800	161,300	35,900,522	18.78	-	693.27	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
6/1/08 11:15	OFF	NS	NS	-	25,495,300	127,500	36,028,022	22.41	-	693.27	AST-HH Bag Filters
6/2/08 14:00	ON	NS	0	-	25,495,300	0	36,028,022	0.00	-	693.27	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
6/7/08 5:55	OFF	NS	NS	-	25,641,800	146,500	36,174,522	21.82	-	693.27	AST-HH Bag Filters
6/9/08 13:40	ON	NS	0	-	25,641,800	0	36,174,522	0.00	-	693.27	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
6/14/08 22:15	OFF	NS	NS	-	25,807,900	166,100	36,340,622	21.53	-	693.27	AST-HH Bag Filters
6/17/08 17:45	ON	2,137	0	100.0	25,807,900	0	36,340,622	0.00	9.02	702.28	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
6/19/08 11:20	OFF	NS	NS	-	25,861,400	53,500	36,394,122	21.44	-	702.28	AST-HH Bag Filters
6/19/08 14:35	ON	NS	NS	-	25,861,400	0	36,394,122	0.00	-	702.28	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
6/24/08 10:30	ON	NS	0	-	26,007,600	146,200	36,540,322	21.02	-	702.28	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
6/27/08 0:50	OFF	NS	NS	-	26,092,114	84,514	36,624,836	22.60	-	702.28	Air Compressor Fail
7/3/08 12:15	ON	NS	0	-	26,092,114	0	36,624,836	0.00	-	702.28	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
7/29/08 9:30	ON	931	0	100.0	26,489,000	396,886	37,021,722	10.65	6.96	709.25	RW1 RW2 RW3 MW7 MW17 PTWA PTWB

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TABLE A-1: TOTAL FLUIDS EXTRACTION SYSTEM DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208, 5801 RIGGS ROAD, CHILLUM, MD
PERIOD: JANUARY 2008 - DECEMBER 2008

Chevron

Date/Time	System Status	Influent BTEX (µg/L)	Effluent BTEX (µg/L)	Treatment Efficiency (%)	Totalizer Reading (gallons)	Period Pumped (gallons)	Total Pumped (gallons)	Period Average (GPM)	Hydrocarbons Recovered Period (gallons)	Hydrocarbons Recovered Cumul. (gallons)	Operating Extraction Points
8/4/08 7:30	ON	NS	0	-	26,643,700	154,700	37,176,422	18.16	-	709.25	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
8/8/08 15:15	OFF	NS	NS	-	26,753,000	109,300	37,285,722	17.56	-	709.25	Manual shutdown by RWS
8/11/08 9:30	ON	NS	0	-	26,753,000	0	37,285,722	0.00	-	709.25	RW1 RW2 RW3 MW7 MW17 PTWA
8/19/08 7:00	ON	682	0	100.0	26,909,900	156,900	37,442,622	13.80	2.26	711.51	RW1 RW2 RW3 MW7 MW17 PTWA
8/25/08 11:00	ON	NS	0	-	27,033,200	123,300	37,565,922	13.89	-	711.51	RW1 RW2 RW3 MW7 MW17 PTWA
9/3/08 7:30	ON	NS	NS	-	27,214,800	181,600	37,747,522	14.24	-	711.51	RW1 RW2 RW3 MW7 MW17 PTWA
9/4/08 0:00	ON	NS	0	-	27,236,700	21,900	37,769,422	22.12	-	711.51	RW1 RW2 RW3 MW7 MW17 PTWA
9/8/08 7:00	ON	NS	0	-	27,316,400	79,700	37,849,122	12.90	-	711.51	RW1 RW2 RW3 MW7 MW17 PTWA
9/18/08 7:00	ON	562	0	100.0	27,515,100	198,700	38,047,822	13.80	2.51	714.02	RW1 RW2 RW3 MW7 MW17 PTWA
9/25/08 14:15	ON	NS	0	-	27,644,039	128,939	38,176,761	12.26	-	714.02	RW1 RW2 RW3 MW7 MW17 PTWA
10/1/08 6:00	ON	NS	NS	-	27,704,400	60,361	38,237,122	7.41	-	714.02	RW1 RW2 RW3 MW7 MW17 PTWA
10/2/08 0:14	OFF	NS	NS	-	27,719,751	15,351	38,252,473	14.03	-	714.02	AST-HH Backwash Carbons
10/2/08 14:00	ON	NS	NS	-	27,728,600	8,849	38,261,322	10.71	-	714.02	RW1 RW2 RW3 MW7 MW17 PTWA
10/6/08 7:00	ON	NS	0	-	27,783,500	54,900	38,316,222	10.28	-	714.02	RW1 RW2 RW3 MW7 MW17 PTWA
10/13/08 6:00	ON	NS	0	-	27,884,300	100,800	38,417,022	10.06	-	714.02	RW1 RW2 RW3 MW7 MW17 PTWA
10/16/08 16:30	OFF	NS	NS	-	27,932,500	48,200	38,465,222	9.74	-	714.02	Manual shutdown by RWS
10/17/08 12:00	ON	NS	NS	-	27,932,500	0	38,465,222	0.00	-	714.02	RW1 RW2 RW3 MW7 MW17 PTWA
10/20/08 7:00	ON	1,282	0	100.0	28,009,500	77,000	38,542,222	19.15	3.04	717.05	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
10/27/08 3:35	OFF	NS	NS	-	28,179,500	170,000	38,712,222	17.22	-	717.05	AST-HH Bag Filters
10/27/08 10:45	ON	NS	0	-	28,179,500	0	38,712,222	0.00	-	717.05	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
10/29/08 20:01	OFF	NS	NS	-	28,243,156	63,656	38,775,878	18.53	-	717.05	Control room hi temp - Air compressor fail
10/30/08 11:30	ON	NS	NS	-	28,243,156	0	38,775,878	0.00	-	717.05	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
11/3/08 8:30	ON	NS	0	-	28,341,800	98,644	38,874,522	17.68	-	717.05	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
11/10/08 7:00	ON	791	0	100.0	28,504,400	162,600	39,037,122	16.28	3.42	720.47	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
11/17/08 12:00	OFF	NS	NS	-	28,762,500	258,100	39,295,222	24.87	-	720.47	Off for routine maintenance
11/17/08 13:30	ON	NS	0	-	28,762,500	0	39,295,222	0.00	-	720.47	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
11/24/08 13:15	ON	NS	0	-	28,957,000	194,500	39,489,722	19.32	-	720.47	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
11/24/08 14:50	OFF	NS	NS	-	28,958,900	1,900	39,491,622	20.00	-	720.47	Bag filter piping failure
12/2/08 9:20	ON	NS	0	-	28,958,900	0	39,491,622	0.00	-	720.47	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
12/8/08 7:45	OFF	NS	NS	-	29,153,500	194,600	39,686,222	22.77	-	720.47	Off for routine maintenance
12/8/08 12:05	ON	773	0	100.0	29,153,500	0	39,686,222	0.00	3.38	723.86	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
12/15/08 12:20	ON	NS	0	-	29,378,800	225,300	39,911,522	22.32	-	723.86	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
12/22/08 11:30	ON	NS	NS	-	29,597,900	219,100	40,130,622	21.84	-	723.86	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
12/22/08 12:30	OFF	NS	NS	-	29,597,900	0	40,136,222	0.00	-	723.86	Off for GAC change
12/29/08 12:20	ON	NS	NS	-	29,784,600	181,100	40,317,322	21.13	-	723.86	RW1 RW2 RW3 MW7 MW17 PTWA PTWB

Notes:

(1) Hydrocarbons Recovered Period (gallons) = (avg. inf. conc.) x (e-6) x (1/0.2) x (3.785 L/gal) x (1 lb/453.6 g) x (gallons pumped) x (1 gal/6.26 lbs).

(2) Formula assumes BTEX equals 20% of gasoline.

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TABLE A-2: TOTAL FLUIDS EXTRACTION SYSTEM INFFLUENT ANALYTICAL RESULTS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208, 5801 RIGGS ROAD, CHILLUM, MD
PERIOD: JANUARY 2008 - DECEMBER 2008

Date/Time	Benzene (µg/L)	Toluene (µg/L)	E. Benzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)
1/15/08 11:30	320	550	36	360	1,266	300
2/14/08 13:46	210	380	36	310	936	330
3/6/08 11:06	260	450	37	310	1,057	310
4/9/08 13:40	220	260	21	196	697	300
5/15/08 16:40	230	520	54	480	1,284	280
6/17/08 18:30	530	870	87	650	2,137	440
7/24/08 14:50	240	390	31	270	931	240
8/19/08 10:35	190	280	22	190	682	240
9/18/08 10:55	160	240	17	145	562	260
10/20/08 10:40	360	510	52	360	1,282	300
11/10/08 13:30	200	300	28	263	791	250
12/8/08 13:30	170	310	30	263	773	170

Notes:
(1) ND: Not Detected above reporting limit.
(2) <##: Parameter not detected above the reporting limit.

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TABLE A-3: TOTAL FLUIDS EXTRACTION SYSTEM EFFLUENT ANALYTICAL RESULTS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208, 5801 RIGGS ROAD, CHILLUM, MD
PERIOD: JANUARY 2008 - DECEMBER 2008

Date/Time	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	BTEX (µg/L)	MTBE (µg/L)
1/15/08 11:15	< 1	< 1	< 1	< 3	0	18
2/14/08 13:25	< 1	< 5	< 5	< 15	0	18
2/20/08 11:15	< 1	< 1	< 1	< 3	0	16
2/25/08 12:40	< 1	< 1	< 1	< 3	0	16
3/6/08 10:50	< 1	< 1	< 1	< 3	0	15
3/10/08 12:30	< 1	< 1	< 1	< 3	0	15
3/17/08 18:00	< 1	< 1	< 1	< 3	0	13
3/28/08 9:00	< 1	< 1	< 1	< 3	0	13
4/3/08 14:40	< 1	< 1	< 1	< 3	0	17
4/9/08 13:15	< 1	< 1	< 1	< 3	0	16
4/16/08 16:35	< 1	< 1	< 1	< 3	0	16
4/22/08 15:05	< 1	< 1	< 1	< 3	0	15
5/1/08 11:15	< 1	< 1	< 1	< 3	0	12
5/15/08 16:15	< 1	< 1	< 1	< 3	0	< 1
5/22/08 13:30	< 1	< 1	< 1	< 3	0	< 1
5/28/08 12:30	< 1	< 1	< 1	< 3	0	< 1
6/2/08 14:05	< 1	< 1	< 1	< 3	0	< 1
6/9/08 13:54	< 1	< 1	< 1	< 3	0	1.1
6/17/08 18:05	< 1	< 1	< 1	< 3	0	2.2
6/24/08 14:53	< 1	< 1	< 1	< 3	0	5.3
7/24/08 14:25	< 1	< 1	< 1	< 3	0	6.6
8/4/08 12:25	< 1	< 1	< 1	< 3	0	7.3
8/11/08 14:00	<1	<1	<1	<3	0	8.5
8/19/08 10:10	<1	<1	<1	<3	0	6.4
8/25/08 11:40	<1	<1	<1	<3	0	6.8
9/4/08 16:05	<1	<1	<1	<3	0	7.7
9/8/08 14:25	<1	<1	<1	<3	0	7.1
9/18/08 10:30	<1	<1	<1	<3	0	6.2
9/25/08 14:15	<1	<1	<1	<3	0	4.6
10/6/08 7:00	<1	<1	<1	<3	0	3.6
10/13/08 10:45	<1	<1	<1	<3	0	3.9
10/20/08 10:15	<1	<1	<1	<3	0	4.3
10/27/08 11:25	<1	<1	<1	<3	0	4.7
11/3/08 9:00	<1	<1	<1	<3	0	4.4
11/10/08 13:05	<1	<1	<1	<3	0	6.4
11/17/08 15:00	<1	<1	<1	<3	0	5.6
11/24/08 14:25	<1	<1	<1	<3	0	6.4
12/2/08 10:30	<1	<1	<1	<3	0	16
12/8/08 13:05	<1	<1	<1	<3	0	9
12/15/08 14:25	<1	<1	<1	<3	0	13
12/23/08 14:10	<1	<1	<1	<3	0	<1

Notes:
(1) ND: Not Detected above reporting limit.
(2) <##: Parameter not detected above the reporting limit.

APPENDIX B

DUAL-PHASE EXTRACTION SYSTEM – SOIL VAPOR EXTRACTION DATA

APPENDIX B

DUAL-PHASE EXTRACTION SYSTEM – SOIL VAPOR EXTRACTION DATA

DESCRIPTION OF DATA TABLES

Overview

Chevron uses a central database to store remediation system data and laboratory analytical data. The tabulated data in Tables B-1, B-2 and B-3 is an exported summary of soil vapor extraction ("SVE") system data from the database. These data were recorded by the field technician during site visits. Analytical data for influent samples collected for laboratory analysis are included in Table B-2 to calculate the mass recovery rates of total petroleum hydrocarbons and benzene. Effluent sample data are included in Table B-3 for comparison with permit limits.

The data tables include all system data collected since January 1, 2008. Data collected prior to this date are available in previous progress reports.

The following table lists the column headings in the table with a brief description of each. Please refer to the Process and Instrumentation Diagram (Appendix A) for a schematic of equipment and sample ports.

Column Heading	Description
Date / Time	Date and time data were recorded.
System Status	System ON or OFF when technician recorded the data.
Hour Meter (hours)	Field measurement of the hour meter.
Manifold Vacuum (in Hg)	Field measurement of vacuum in manifold.
Influent (ppmv)	Field measurement of vapor concentration prior to treatment using a photoionization detector.
Influent (cfm)	Field measurement of total vapor flow in manifold.
Effluent (ppmv)	Field measurement of vapor concentration after treatment using a photoionization detector.
Treatment Efficiency (%)	Equation: (Influent-Effluent) / (Influent).
Hydrocarbons Recovered (lbs/day) [1]	Equation: [(Influent) / (10^{-6})] * [Manifold Extraction-Flow Rate] * CV1
Hydrocarbons Recovered Period (gal)	Equation: [(Avg. Influent) x (10^{-6})] * [Avg. Manifold Extraction-Flow Rate]
Hydrocarbons Recovered Cumulative (gal)	Equation: (Avg. Influent BTEX) * (1 L / 0.26 gal) * (lb/454x10^{6} µg) * (current Total Gallons Pumped – previous Total Gallons Pumped on last sampling date) * (gal hydrocarbons / 6.48 lbs hydrocarbons) * (0.2 gal BTEX / gal hydrocarbons).
Operating Extraction Points	Wells in operation during the reporting period.

Notes

(1) Assumptions: Hydrocarbon molecular weight is 92 grams/mole; vapor behaves like an ideal gas; Average (Avg.) Influent (ppmv) and flow rate (Manifold Extraction in the table) are averages between the current and last events. Unit conversion factors (CV) equations are:

CV1 = (92 grams/mole) * (1 mol/24.45 L) * (28.32 L/ft^3) * (1440 min/day) * (1 lb/454 grams) = 338 min*lbs/day.

CV2 = (92 grams/mole) * (1 mol/24.45 L) * (28.32 L/ft^3) * (Runtime in minutes) * (1 lb/454 grams) = 0.235 min*lbs.

SERVER LOCATION K:\411\Instr\Jobs\44738_Chevron

GRS CONTROL PANEL
EOS CONTROLER

CAT OXIDIZER RUNNING
CAT OXIDIZER INLET TEMP T-1
CAT OXIDIZER OUTLET TEMP T-2
SVE AIR FLOW
KO TANK VACUUM
RUN/STOP KO PUMP P-1
KO TANK LEVEL HI/HI
KO TANK LEVEL HI
KO TANK LEVEL LO
OIL/WATER SEPERATOR LEVEL HI/HI
OIL/WATER SEPERATOR LEVEL HI
OIL/WATER SEPERATOR LEVEL LO
RUN/STOP OIL/WATER SEPERATOR PUMP P-2
SVE BLOWER RPM
SVE BLOWER SPEED SET POINT
RUN/STOP SVE BLOWER B-1
RUN/STOP AST BLOWER B-2
AST BLOWER DISCHARGE FLOW SWITCH
AST LEVEL HI/HI
AST LEVEL HI
AST LEVEL LO
RUN/STOP AST PUMP P-3
NOT USED
3-WAY COMPRESSED AIR SOLENOID VALVE
RUN/STOP COMPRESSER C-1
AST EFFLUENT FLOW PULSE

RTU-02
CONTROL PANEL

NON-CLASSIFIED ATMOSPHERE
CLASSIFIED ATMOSPHERE (CLASS 1, DIV 2)
2" PVC
TUBING
DETAIL A
2" PVC 40 (TYP)
SVE PIPE FROM WELL
SPARE
PTW-A
MW-7
MP-7
RW-3
RW-1
RW-2
MW-17
PTW-B
FROM ATMOSPHERE
DILUTION VALVE
TO ATMOSPHERE
CATALITIC OXIDIZER- FALCO 300 FALMOUTH PRODUCTS
FLAME ARRESTER
ST-200
ST-100
3" CS 40
3/4" HOSE (TYP)
1" PVC BALL VALVE (TYP)
TUBING (TYP)
TO WELL RW-1
TO WELL RW-2
TO WELL RW-3
TO WELL MW-7
TO WELL MW-17
TO WELL PTW-B
TO WELL PTW-A
WELL PUMPS: QED MOD# AP4T
FT 003
FE 003
PI 003
TI
PIT 003
SILENCER
3" PVC 40
LSHH 003
LSH 003
LSL 003
2" GLOBE VALVE
KO TANK
VFD
STARTER
SVE B-1 BLOWER TUTHILL MOD# 4009-46L3 25 HP
1" HOSE
P-1 KO PUMP MOYNO MOD #33201 2 HP
3/4" CS
DRAIN
1" PVC 80
2" PVC 80
OIL/WATER SEPARATOR HYDRO QUIP MOD #AGM-2SS-60V 30 GPM
LSHH 001
LSH 001
LSL 001
2" CS 40
P-2 OIL/WATER SEPARATOR PUMP AMT MOD #3694-97 1.5 HP
FSL 002
4" PVC 40
B-2 AST BLOWER NEW YORK BLOWER CO 5 HP
AS-1 AIR STRIPPER QED MOD #E-Z STACKER 4.4 P
ST-1
2" PVC 40
P-3 AST PUMP GRUNDFOS CRB 5 HP (42 gpm @ 230 FT. TDH)
1 1/2" PVC 80
F-1B
F-1A
BAG FILTER
DRAIN (TYP.)
ROSEDALE PRODUCTS MODEL #L0618112P125CBPB (125 PSI)
PSH 004
FE 004
FQI 004
TRAILER FLOOR SUMP
LSH
PSH 005
PSL 005
80 GAL RECEIVING TANK MAX 200 PSI
3/4" CS 40 AIR LINE
C-1 AIR COMPRESSOR SPEEDAIRE MOD #1WD67 10 HP 34.8 CFM @ 175 PSI
TSH
CONTROL ROOM
VAPOR OFF GAS
VAPOR PHASE GAC FILTERS: TIGG MOD# N-500 400-800 CFM
ACTIVATED CARBON
GAC-5
GAC-4
GAC-3 (SPARE)
ST-50
ST-51a
ST-51b
TO ATMOSPHERE
LIQUID PHASE GAC FILTERS: SIEMENS MOD# LP-61P 150 PSIG MAX
GAC FILTER
1" GS
ST-2
ST-3
INSIDE CARBON SHED
SHED FLOOR SUMP
TO STORM DRAIN IN RIGGS ROAD

FILE NAME: D:\44738_CHEVRON\44738_J&C_J02.DWG
CURR DATE: 02/18/05 CURR TIME: 3:04:50 pm

No.	DESCRIPTION	DATE	BY
1	RE-DRAWN PER AS-BUILT CONDITIONS	12/20	RTC

REVISIONS

DESIGNED	CADD	SCALE
F.S.K.	J.A.W.	AS NOTED
CHECKED	APPROVED	APPROVED
F.S.K.	F.S.K.	K.G.

Gannett Fleming
BALTIMORE, MARYLAND

CHEVRON PRODUCTS COMPANY
ATLANTA, GEORGIA

FORMER CHEVRON FACILITY NO. 122208
CHILLUM, MARYLAND

INSTRUMENTATION
PROCESS AND INSTRUMENTATION DIAGRAM

JOB No. 44738
DATE 12/20/07
SHEET No. 10
10 of 15

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TABLE B-1: SOIL VAPOR EXTRACTION SYSTEM DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208, 5801 RIGGS ROAD, CHILLUM, MD
PERIOD: JANUARY 2008 - DECEMBER 2008

Chevron

Date/Time	System Status	Hour Meter (hours)	Manifold Vacuum (in. H2O)	Influent (ppmv)	Influent (SCFM)	Effluent (ppmv)	Treatment Efficiency	Hydrocarbons Recovered (lbs/day)	Period (gallons)	Cumul. (gallons)	Operating Extraction Points
1/2/08 11:40	ON	19,552.4	14	210	132	63.0	70.0	9.4	18.2	3,454.4	RW1 RW2 RW3 MW7 MW17 PTWA PTWB
1/15/08 10:40	ON	19,863.7	13	242	135	85.0	64.9	11.0	20.7	3,475.1	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
1/28/08 12:40	ON	20,177.5	13	240	133	95.0	60.4	10.8	22.3	3,497.4	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
2/8/08 8:58	OFF	20,438.5	-	-	-	-	-	-	-	3,497.4	AST-HH
2/11/08 11:30	ON	20,438.5	14	212	134	92.0	56.6	9.6	17.4	3,514.8	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
2/14/08 11:30	ON	20,509.6	14	212	132	92.0	56.6	9.5	4.4	3,519.2	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
2/25/08 12:00	ON	20,774.3	14	170	128	87.0	48.8	7.4	14.5	3,533.7	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
3/6/08 10:15	ON	21,012.3	14	250	127	30.0	88.0	10.7	14.0	3,547.8	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
3/28/08 14:45	ON	21,543.5	13	186	126	80.0	57.0	7.9	32.3	3,580.1	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
4/9/08 11:20	ON	21,828.2	14	168	132	72.0	57.1	7.5	14.3	3,594.4	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
5/15/08 15:35	ON	22,561.6	13	157	134	65.0	58.6	7.1	34.9	3,629.3	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
6/17/08 17:45	ON	23,207.8	14	183	131	71.0	61.2	8.1	32.1	3,661.4	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
6/27/08 0:50	OFF	23,427.2	-	-	-	-	-	-	-	3,661.4	Air Comp Fail
7/29/08 9:30	ON	23,532.2	14	50	74	19.0	62.0	1.3	8.5	3,670.0	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
8/4/08 7:30	ON	23,673.8	15	57	74	22.0	61.4	1.4	1.2	3,671.2	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
8/11/08 6:15	ON	23,776.6	16	51	74	24.0	52.9	1.3	0.9	3,672.1	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
8/19/08 7:00	ON	23,962.5	16	73	74	31.0	57.5	1.8	1.9	3,674.0	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
8/25/08 11:00	ON	24,108.5	16	65	74	29.0	55.4	1.6	1.6	3,675.6	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
9/3/08 7:30	ON	24,323.1	16	-	74	-	-	-	-	3,675.6	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
9/8/08 7:00	ON	24,442.9	16	39	74	17.0	56.4	1.0	0.8	3,676.4	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
9/18/08 7:00	ON	24,676.3	16	55	74	25.0	54.5	1.4	1.8	3,678.2	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
10/1/08 6:00	OFF	24,719.4	-	-	-	-	-	-	-	3,678.2	Catox display panel down (T2)
10/6/08 7:00	OFF	24,719.4	-	-	-	-	-	-	-	3,678.2	Catox display panel down (T3)
10/13/08 6:00	ON	24,719.4	16	50	74	24.0	52.0	1.3	0.4	3,678.5	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
10/16/08 16:30	OFF	24,805.0	-	-	-	-	-	-	-	3,678.5	VFD Remotely set to 0 due to High Temp Differential
10/17/08 12:00	ON	24,805.0	15	53	135	21.0	60.4	2.4	1.0	3,679.6	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
10/20/08 7:00	ON	24,872.1	15	39	132	19.0	51.3	1.7	0.9	3,680.5	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
10/27/08 3:35	OFF	25,034.4	-	-	-	-	-	-	-	3,680.5	AST-HH
10/27/08 10:45	ON	25,034.4	14	49	71	24.0	51.0	1.2	1.6	3,682.1	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
10/29/08 20:01	OFF	25,091.5	-	-	-	-	-	-	-	3,682.1	Air Comp Fail
10/30/08 11:30	ON	25,091.5	13	55	91	26.0	52.7	1.7	0.5	3,682.6	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
10/30/08 16:00	OFF	25,094.4	-	-	-	-	-	-	-	3,682.6	Manual shutdown by KTG due to wiring issues
10/31/08 12:30	ON	25,094.4	-	-	-	-	-	-	-	3,682.6	System re-wired; SVE working
11/3/08 8:30	ON	25,163.6	14	48	112	21.0	56.3	1.8	0.8	3,683.4	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
11/6/08 8:09	OFF	25,234.4	-	-	-	-	-	-	-	3,683.4	Catox down - wires came loose
11/10/08 9:45	ON	25,234.4	12	40	118	19.0	52.5	1.6	0.8	3,684.2	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7

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TABLE B-1: SOIL VAPOR EXTRACTION SYSTEM DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208, 5801 RIGGS ROAD, CHILLUM, MD
PERIOD: JANUARY 2008 - DECEMBER 2008

Chevron

Date/Time	System Status	Hour Meter (hours)	Manifold Vacuum (in. H2O)	Influent (ppmv)	Influent (SCFM)	Effluent (ppmv)	Treatment Efficiency	Hydrocarbons Recovered (lbs/day)	Period (gallons)	Cumul. (gallons)	Operating Extraction Points
11/17/08 12:00	OFF	25,401.0	-	-	-	-	-	-	-	3,684.2	Off for routine maintenance
11/17/08 13:30	ON	25,401.0	13	61	128	30.0	50.8	2.6	2.3	3,686.5	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
11/24/08 13:25	ON	25,572.9	13	105	132	53.0	49.5	4.7	4.1	3,690.6	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
11/24/08 14:50	OFF	25,574.5	-	-	-	-	-	-	-	3,690.6	Bag filter piping failure
12/2/08 10:00	ON	25,574.5	13	59	124	24.0	59.3	2.5	0.0	3,690.6	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
12/8/08 7:45	OFF	25,716.5	-	-	-	-	-	-	-	3,690.6	Off for routine maintenance
12/8/08 12:15	ON	25,716.5	13	103	126	47.0	54.4	4.4	3.2	3,693.8	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
12/15/08 12:20	ON	25,885.0	12	348	130	159.0	54.3	15.3	10.7	3,704.5	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
12/22/08 11:30	ON	26,052.2	13	475	128	200.0	57.9	20.5	19.6	3,724.1	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
12/22/08 12:30	OFF	26,053.2	-	-	-	-	-	-	-	3,724.1	Off for GAC Change & Stripper Clean
12/23/08 11:50	ON	26,053.2	14	446	129	172.0	61.4	19.4	0.1	3,724.2	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7
12/29/08 12:20	ON	26,198.1	12	147	128	58.0	60.5	6.4	12.2	3,736.4	RW1 RW2 RW3 MW7 MW17 PTWA PTWB MP7

Notes:

(1) Hydrocarbons recovered are expressed as toluene (MW = 92 g/mol @ 77F).

(2) Hydrocarbons Recovered (lbs/day) = (inf. conc.) x (92 g/mol) x (mol/24.45 L) x (e-6) x (inf. flow) x (28.32 L/ft3) x (1440 min/day) x (1 lb/453.6 g).

(3) Hydrocarbons Recovered Period (gallons) = (avg. inf. conc.) x (92 g/mol) x (mol/24.45 L) x (e-6) x (avg. inf. flow) x (28.32 L/ft3) x (runtime in minutes) x (1 lb/453.6 g) x (gal/6.39 lb).

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TABLE B-2: SOIL VAPOR EXTRACTION SYSTEM INFFLUENT ANALYTICAL RESULTS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208, 5801 RIGGS ROAD, CHILLUM, MD
PERIOD: JANUARY 2008 - DECEMBER 2008

Chevron

Date/Time	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	TPH (µg/L)	Flow (SCFM)	Extraction Rate Benzene (lbs/hr)	Extraction Rate TPH (lbs/day)
1/15/08 11:38	10.00	16.00	1.90	14.00	1,200	135	0.0051	14.56
2/14/08 12:25	8.10	15.00	1.90	15.00	1,000	132	0.0040	11.87
3/6/08 10:43	9.80	18.00	2.10	17.00	970	127	0.0047	11.08
4/9/08 13:55	5.70	10.00	1.80	13.00	1,000	132	0.0028	11.87
5/15/08 16:35	<19	5.00	1.00	7.00	1,200	134	UNK	14.46
6/17/08 18:45	5.00	8.00	1.00	10.00	630	131	0.0025	7.42
7/29/08 13:10	3.00	7.00	1.00	8.00	340	74	0.0008	2.26
8/19/08 11:40	0.60	1.00	0.20	1.00	89	74	0.0002	0.59
9/18/08 10:30	2.00	5.00	0.60	4.00	650	74	0.0006	4.32
10/20/08 10:00	0.80	4.00	1.00	6.00	610	132	0.0004	7.24
11/10/08 12:55	0.80	2.00	0.70	5.00	330	118	0.0004	3.50
12/8/08 13:15	1.00	6.00	1.00	9.00	820	126	0.0005	9.29

Notes:
(1) Benzene (lbs/h) = (benzene conc.) x (e-6) x (1 lb/453.6 g) x (flow) x (28.32 L/ft3) x (60 min/hr).
(2) TPH (lbs/day) = (TPH conc.) x (e-6) x (1 lb/453.6 g) x (flow) x (28.32 L/ft3) x (1440 min/day).
(3) ug/L = (ppmv) x (MW g/mol) x (mol/24.45 L), where MW benzene = 78 and MW TPH = 92.

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TABLE B-3: SOIL VAPOR EXTRACTION SYSTEM EFFLUENT ANALYTICAL RESULTS
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208, 5801 RIGGS ROAD, CHILLUM, MD
PERIOD: JANUARY 2008 - DECEMBER 2008

Chevron

Date/Time	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	TPH (µg/L)	Flow (SCFM)	Discharge Rate Benzene (lbs/hr)	Discharge Rate TPH (lbs/day)
1/15/08 11:35	4.70	5.90	0.35	2.30	540	135	0.0024	6.55
2/14/08 12:20	3.60	5.80	0.57	4.90	520	132	0.0018	6.17
3/6/08 10:40	3.80	3.60	0.25	2.00	360	127	0.0018	4.11
4/9/08 13:50	3.20	5.10	0.49	4.00	620	132	0.0016	7.36
5/15/08 16:30	<10	2.00	0.40	2.00	740	134	<0.02	8.91
6/17/08 18:40	2.00	3.00	0.20	2.00	350	131	0.0010	4.12
7/29/08 13:05	<0.06	<0.08	<0.09	<0.09	30	74	<0.02	0.20
8/19/08 11:45	1	2	0.30	2.00	180	74	0.0003	1.20
9/18/08 10:35	0.70	2.00	0.30	2.00	360	74	0.0002	2.40
10/20/08 10:05	0.4	2	0.4	2	350	132	0.0002	4.15
11/10/08 13:00	0.2	0.5	0.1	0.8	120	118	0.0001	1.27
12/8/08 13:10	0.5	2	0.5	3	400	126	0.0002	4.53

Notes:
(1) Benzene (lbs/h) = (benzene conc.) x (e-6) x (1 lb/453.6 g) x (flow) x (28.32 L/ft3) x (60 min/hr).
(2) TPH (lbs/day) = (TPH conc.) x (e-6) x (1 lb/453.6 g) x (flow) x (28.32 L/ft3) x (1440 min/day).
(3) ug/L = (ppmv) x (MW g/mol) x (mol/24.45 L), where MW benzene = 78 and MW TPH = 92.

APPENDIX C

GROUNDWATER MONITORING DATA

APPENDIX C

GROUNDWATER MONITORING DATA

DESCRIPTION OF DATA TABLE

Overview

Chevron uses a central database to store groundwater monitoring data including laboratory analytical data. The tabulated data in **Appendix C** (Table C-1) is an exported summary of groundwater elevation data and analytical data for the period beginning on January 1, 2008, and ending on December 31, 2008 (reporting period plus previous four quarters). Groundwater elevation data were measured using an interface probe in wells near the Service Station and a water level indicator at all other locations.

The following table lists the column headings in the table with a brief description of each.

Column Heading	Description
Date	Date data were recorded.
DTL (ft)	Depth to LPH (ft)
DTW (ft)	Depth to groundwater (ft)
LPH Thick. (ft)	Equation: (DTW-DTL)
GW Elev. (ft)	Corrected water table elevation equation: (TOC) – (DTW) + [(0.75)*(LPH Thickness)]
LPH Recovery	Liquid Phase Hydrocarbons Recovery
Benzene (µg/L)	Laboratory reported concentration
Toluene (µg/L)	Laboratory reported concentration
Ethylbenzene (µg/L)	Laboratory reported concentration
Total Xylenes (µg/L)	Laboratory reported concentration
MTBE (µg/L)	Laboratory reported concentration
TPH-GRO (µg/L)	Laboratory reported concentration

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TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
GP-2E(45-50)		Screen: 45.0-50.0 ft bgs			TOC: 168.17 ft							
03/17/08	---	44.92	---	123.25				No Analytical Results				
03/31/08	---	44.81	---	123.36		8.0 (2)	ND (2)	ND (2)	ND (4)	8.0	330.0 (2)	260.0 (100)
09/15/08	---	43.34	---	124.83				No Analytical Results				
09/25/08	---	43.46	---	124.71		ND (2)	ND (2)	ND (2)	NA	ND	370.0 (2)	320.0 (100)
GP-2E(50-55)		Screen: 50.0-55.0 ft bgs			TOC: 168.27 ft							
03/17/08	---	45.00	---	123.27				No Analytical Results				
09/15/08	---	43.46	---	124.81				No Analytical Results				
GP-2E(55-60)		Screen: 55.0-60.0 ft bgs			TOC: 168.53 ft							
03/17/08	---	45.29	---	123.24				No Analytical Results				
03/31/08	---	45.22	---	123.31		ND (1)	ND (1)	ND (1)	ND (2)	ND	160.0 (1)	150.0 (100)
09/15/08	---	43.83	---	124.70				No Analytical Results				
09/25/08	---	43.86	---	124.67		3.9 (1)	ND (1)	ND (1)	NA	3.9	130.0 (1)	180.0 (100)
GP-2F(45-50)		Screen: 45.0-50.0 ft bgs			TOC: 159.59 ft							
03/17/08	---	45.68	---	113.91				No Analytical Results				
03/31/08	---	45.64	---	113.95		ND (1)	ND (1)	ND (1)	ND (2)	ND	330.0 (2)	160.0 (100)
09/15/08	---	44.53	---	115.06				No Analytical Results				
09/25/08	---	44.70	---	114.89		ND (1)	ND (1)	ND (1)	NA	ND	270.0 (1)	390.0 (100)
GP-2F(50-55)		Screen: 50.0-55.0 ft bgs			TOC: 159.59 ft							
03/17/08	---	45.49	---	114.10				No Analytical Results				
03/31/08	---	45.44	---	114.15		15.0 (2)	ND (2)	ND (2)	ND (4)	15.0	420.0 (2)	310.0 (100)
09/15/08	---	44.28	---	115.31				No Analytical Results				
09/25/08	---	44.49	---	115.10		9.3 (10)	ND (10)	ND (10)	NA	9.3	430.0 (10)	490.0 (200)
GP-7A(20-25)		Screen: 20.0-25.0 ft bgs			TOC: 158.11 ft							
03/17/08	---	20.58	---	137.53				No Analytical Results				
04/01/08	---	19.68	---	138.43		ND (1)	ND (1)	ND (1)	ND (2)	ND	1.3 (1)	ND (100)

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

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TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
GP-7A(20-25)		Screen: 20.0-25.0 ft bgs			TOC: 158.11 ft							
09/15/08	---	19.07	---	139.04				No Analytical Results				
09/24/08	---	19.24	---	138.87		ND (1)	ND (1)	ND (1)	NA	ND	1.0 (1)	ND (100)
GP-7A(25-30)		Screen: 25.0-30.0 ft bgs			TOC: 158.08 ft							
03/17/08	---	20.66	---	137.42				No Analytical Results				
09/15/08	---	19.31	---	138.77				No Analytical Results				
GP-7A(30-35)		Screen: 30.0-35.0 ft bgs			TOC: 158.09 ft							
03/17/08	---	22.18	---	135.91				No Analytical Results				
04/01/08	---	22.73	---	135.36		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	21.30	---	136.79				No Analytical Results				
09/24/08	---	21.47	---	136.62		1.7 (1)	ND (1)	ND (1)	NA	1.7	1.8 (1)	ND (100)
GP-7A(35-40)		Screen: 35.0-40.0 ft bgs			TOC: 158.09 ft							
03/17/08	---	23.23	---	134.86				No Analytical Results				
04/01/08	---	22.23	---	135.86		280.0 (2)	6.0 (2)	50.0 (2)	150.0 (4)	486.0	180.0 (2)	2,700.0 (500)
09/15/08	---	21.69	---	136.40				No Analytical Results				
09/24/08	---	21.77	---	136.32		380.0 (5)	6.7 (5)	66.0 (5)	NA	452.7	310.0 (5)	2,000.0 (100)
GP-7A(40-45)		Screen: 40.0-45.0 ft bgs			TOC: 158.11 ft							
03/17/08	---	23.23	---	134.88				No Analytical Results				
09/15/08	---	21.72	---	136.39				No Analytical Results				
GP-9A(20-25)		Screen: 20.0-25.0 ft bgs			TOC: 158.86 ft							
03/17/08	---	18.56	---	140.30				No Analytical Results				
04/01/08	---	18.03	---	140.83		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	17.86	---	141.00				No Analytical Results				
09/24/08	---	17.97	---	140.89		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
GP-9A(25-30)		Screen: 25.0-30.0 ft bgs			TOC: 158.81 ft							
03/17/08	---	22.44	---	136.37				No Analytical Results				

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

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TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
GP-9A(25-30)		Screen: 25.0-30.0 ft bgs			TOC: 158.81 ft							
09/15/08	---	19.82	---	138.99				No Analytical Results				
GP-9A(30-35)		Screen: 30.0-35.0 ft bgs			TOC: 158.76 ft							
03/17/08	---	21.99	---	136.77				No Analytical Results				
09/15/08	---	21.87	---	136.89				No Analytical Results				
GP-11A(20-25)		Screen: 20.0-25.0 ft bgs			TOC: 158.28 ft							
03/17/08	---	18.71	---	139.57				No Analytical Results				
04/01/08	---	18.85	---	139.43		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	17.86	---	140.42				No Analytical Results				
09/24/08	---	17.86	---	140.42		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
GP-11A(25-30)		Screen: 25.0-30.0 ft bgs			TOC: 158.43 ft							
03/17/08												
09/15/08	---	19.96	---	138.47				No Analytical Results				
GP-11A(30-35)		Screen: 30.0-35.0 ft bgs			TOC: 158.38 ft							
03/17/08	---	21.33	---	137.05				No Analytical Results				
09/15/08	---	21.26	---	137.12				No Analytical Results				
GP-11A(35-40)		Screen: 35.0-40.0 ft bgs			TOC: 158.38 ft							
03/17/08	---	28.61	---	129.77				No Analytical Results				
09/15/08	---	29.20	---	129.18				No Analytical Results				
GP-24A		Screen: 24.0-44.0 ft bgs			TOC: 170.83 ft							
03/17/08	---	32.86	---	137.97				No Analytical Results				
03/28/08	---	32.70	---	138.13		ND (1)	ND (1)	10.0 (1)	40.0 (2)	50.0	ND (1)	1,700.0 (100)
09/15/08	---	32.03	---	138.80				No Analytical Results				
10/01/08	---	31.62	---	139.21		ND (1)	ND (1)	7.1 (1)	NA	7.1	ND (1)	1,200.0 (100)

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

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TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
GP-27A	Screen: 41.0-51.0 ft bgs				TOC: 172.06 ft							
01/29/08			Inacessible									
02/25/08	43.22	43.24	0.02	128.83	0.01			No Analytical Results				
03/17/08	44.78	44.94	0.16	127.24				No Analytical Results				
03/27/08	44.80	44.93	0.13	127.23				No Analytical Results				
05/28/08			Not gauged - covered by car									
06/24/08	---	41.92	---	130.14				No Analytical Results				
07/24/08			Covered by car									
08/25/08	---	41.81	---	130.25				No Analytical Results				
09/15/08			Covered By Car									
09/30/08	---	41.08	---	130.98		5,200.0 (100)	16,000.0 (100)	2,500.0 (100)	NA	23,700.0	3,100.0 (100)	110,000.0 (10000)
10/27/08	---	41.66	---	130.40				No Analytical Results				
11/24/08			Covered By Car									
12/15/08			Covered By Car									
					Total LPH Recov: 0.01 gal							
GP-30A	Screen: 29.0-49.0 ft bgs				TOC: 171.78 ft							
01/29/08	---	43.34	---	128.44				No Analytical Results				
02/25/08	---	43.66	---	128.12				No Analytical Results				
03/17/08	---	43.82	---	127.96				No Analytical Results				
03/28/08	---	42.92	---	128.86		9,100.0 (200)	11,000.0 (200)	920.0 (200)	5,800.0 (400)	26,820.0	49,000.0 (200)	72,000.0 (5000)
05/28/08	---	41.94	---	129.84				No Analytical Results				
06/24/08	---	41.86	---	129.92				No Analytical Results				
07/24/08	---	41.45	---	130.33				No Analytical Results				
08/25/08	---	39.65	---	132.13				No Analytical Results				
09/15/08	---	39.77	---	132.01				No Analytical Results				
09/30/08	---	36.87	---	134.91		14,000.0 (250)	14,000.0 (250)	600.0 (250)	NA	28,600.0	47,000.0 (250)	130,000.0 (5000)
10/27/08	---	39.93	---	131.85				No Analytical Results				
11/24/08	---	43.22	---	128.56				No Analytical Results				
12/15/08	---	43.15	---	128.63				No Analytical Results				
GP-35A	Screen: 25.0-45.0 ft bgs				TOC: 171.96 ft							
01/29/08	---	43.03	---	128.93				No Analytical Results				

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
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Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
GP-35A		Screen: 25.0-45.0 ft bgs			TOC: 171.96 ft							
02/25/08	---	42.97	---	128.99				No Analytical Results				
03/17/08	---	42.95	---	129.01				No Analytical Results				
03/28/08	---	44.23	---	127.73		42.0 (1)	57.0 (1)	13.0 (1)	76.0 (2)	188.0	21.0 (1)	200.0 (100)
05/28/08	---	39.52	---	132.44				No Analytical Results				
06/24/08	---	43.26	---	128.70				No Analytical Results				
07/24/08	---	43.35	---	128.61				No Analytical Results				
08/25/08	---	39.29	---	132.67				No Analytical Results				
09/15/08	---	39.74	---	132.22				No Analytical Results				
10/01/08	---	35.19	---	136.77		4,400.0 (50)	8,500.0 (50)	880.0 (50)	NA	13,780.0	1,100.0 (50)	34,000.0 (2000)
10/27/08	---	38.01	---	133.95				No Analytical Results				
11/24/08	---	44.81	---	127.15				No Analytical Results				
12/15/08	---	44.24	---	127.72				No Analytical Results				
GP-38A		Screen: 29.0-49.0 ft bgs			TOC: 171.22 ft							
01/29/08	---	41.23	---	129.99				No Analytical Results				
02/25/08	---	40.77	---	130.45				No Analytical Results				
03/17/08	---	41.23	---	129.99				No Analytical Results				
03/28/08	---	39.52	---	131.70		150.0 (2)	280.0 (2)	10.0 (2)	260.0 (4)	700.0	ND (2)	4,800.0 (500)
05/28/08	---	38.61	---	132.61				No Analytical Results				
06/24/08	---	37.76	---	133.46				No Analytical Results				
07/24/08	---	36.91	---	134.31				No Analytical Results				
08/25/08	---	36.84	---	134.38				No Analytical Results				
09/15/08	---	37.77	---	133.45				No Analytical Results				
09/30/08	---	35.56	---	135.66		3.4 (2)	5.1 (2)	4.0 (2)	NA	12.5	ND (2)	6,000.0 (100)
10/27/08	---	37.62	---	133.60				No Analytical Results				
11/24/08	---	40.59	---	130.63				No Analytical Results				
12/15/08	---	40.68	---	130.54				No Analytical Results				
GP-39A		Screen: 35.0-55.0 ft bgs			TOC: 172.46 ft							
03/17/08	---	46.02	---	126.44				No Analytical Results				
03/27/08	---	46.04	---	126.42		2,100.0 (20)	620.0 (20)	92.0 (20)	980.0 (40)	3,792.0	5,400.0 (20)	7,000.0 (500)

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
GP-39A		Screen: 35.0-55.0 ft bgs			TOC: 172.46 ft							
09/15/08	---	44.07	---	128.39				No Analytical Results				
09/30/08	---	43.76	---	128.70		2,100.0 (25)	540.0 (25)	66.0 (25)	NA	2,706.0	4,800.0 (25)	11,000.0 (2000)
GP-41A		Screen: 32.0-52.0 ft bgs			TOC: 172.28 ft							
03/17/08	---	43.86	---	128.42				No Analytical Results				
03/27/08	---	43.90	---	128.38		ND (1)	ND (1)	ND (1)	ND (2)	ND	4.1 (1)	ND (100)
09/15/08	---	41.98	---	130.30				No Analytical Results				
09/29/08	---	42.20	---	130.08		1.5 (1)	ND (1)	ND (1)	NA	1.5	5.4 (1)	ND (100)
GP-44A		Screen: 26.0-46.0 ft bgs			TOC: 176.20 ft							
03/17/08	---	30.72	---	145.48				No Analytical Results				
03/28/08	---	30.71	---	145.49		ND (2)	37.0 (2)	220.0 (2)	1,100.0 (4)	1,357.0	ND (2)	6,000.0 (500)
09/15/08	---	30.41	---	145.79				No Analytical Results				
09/30/08	---	30.35	---	145.85		ND (5)	37.0 (5)	290.0 (5)	NA	327.0	ND (5)	7,500.0 (500)
MP-7		Screen: 35.0-55.0 ft bgs			TOC: 172.21 ft							
01/29/08	---	41.64	---	130.58				No Analytical Results				
02/25/08	41.58	41.65	0.07	130.62	0.01			No Analytical Results				
03/17/08	44.18	44.78	0.60	127.90				No Analytical Results				
05/28/08	---	39.17	---	133.05				No Analytical Results				
06/24/08	---	39.37	---	132.85				No Analytical Results				
07/24/08	39.42	39.43	0.01	132.80				No Analytical Results				
08/25/08	---	38.66	---	133.56				No Analytical Results				
09/15/08	---	40.47	---	131.74				No Analytical Results				
10/27/08	---	38.87	---	133.35				No Analytical Results				
11/24/08	---	39.58	---	132.63				No Analytical Results				
12/15/08	---	39.63	---	132.58				No Analytical Results				
					Total LPH Recov: 0.01 gal							
MP-20		Screen: 40.0-55.0 ft bgs			TOC: 172.16 ft							
03/17/08	---	44.67	---	127.49				No Analytical Results				
09/15/08			Covered By Car									

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MP-30		Screen: 40.0-55.0 ft bgs			TOC: 171.57 ft							
03/17/08	---	42.83	---	128.74				No Analytical Results				
09/15/08	---	40.60	---	130.97				No Analytical Results				
MP-40		Screen: 40.0-55.0 ft bgs			TOC: 172.11 ft							
03/17/08	---	42.90	---	129.21				No Analytical Results				
09/15/08	---	40.51	---	131.60				No Analytical Results				
MW-1		Screen: 20.0-35.0 ft bgs			TOC: 170.46 ft							
03/17/08	---	32.79	---	137.67				No Analytical Results				
09/15/08	---	31.97	---	138.49				No Analytical Results				
MW-2		Screen: 20.0-35.0 ft bgs			TOC: 171.41 ft							
03/17/08	---	32.13	---	139.28				No Analytical Results				
09/15/08	---	31.95	---	139.46				No Analytical Results				
MW-3		Screen: 20.0-35.0 ft bgs			TOC: 170.41 ft							
03/17/08	---	33.41	---	137.00				No Analytical Results				
09/15/08	---	31.28	---	139.13				No Analytical Results				
MW-4		Screen: 20.0-35.0 ft bgs			TOC: 171.14 ft							
03/17/08	---	32.60	---	138.54				No Analytical Results				
09/15/08	---	30.67	---	140.47				No Analytical Results				
MW-5		Screen: 20.0-35.0 ft bgs			TOC: 172.31 ft							
03/17/08			Dry (Bottom 34.80)									
03/28/08			Dry									
09/15/08			Dry									
10/01/08	---	31.75	---	140.56		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-6		Screen: 30.0-45.0 ft bgs			TOC: 171.12 ft							
03/17/08	---	36.25	---	134.87				No Analytical Results				
03/28/08	---	35.87	---	135.25		3.2 (1)	ND (1)	ND (1)	ND (2)	3.2	ND (1)	ND (100)
09/15/08	---	34.15	---	136.97				No Analytical Results				
10/01/08	---	33.17	---	137.95		1.9 (2)	4.9 (2)	48.0 (2)	NA	54.8	ND (2)	1,900.0 (200)
MW-7		Screen: 20.0-68.0 ft bgs			TOC: 177.11 ft							
01/29/08	---	57.25	---	119.86				No Analytical Results				
02/25/08	---	57.25	---	119.86				No Analytical Results				
03/17/08	---	57.20	---	119.91				No Analytical Results				
03/28/08	---	57.25	---	119.86		700.0 (10)	1,300.0 (10)	94.0 (10)	1,200.0 (20)	3,294.0	420.0 (10)	4,600.0 (500)
05/28/08	---	57.20	---	119.91				No Analytical Results				
06/24/08	---	57.20	---	119.91				No Analytical Results				
07/24/08	---	57.20	---	119.91				No Analytical Results				
08/25/08	---	57.20	---	119.91				No Analytical Results				
09/15/08	---	34.66	---	142.45				No Analytical Results				
10/01/08	---	34.66	---	142.45		ND (2)	230.0 (2)	17.0 (2)	NA	247.0	240.0 (2)	1,200.0 (100)
10/27/08	---	57.20	---	119.91				No Analytical Results				
11/24/08	---	57.20	---	119.91				No Analytical Results				
12/15/08	---	57.20	---	119.91				No Analytical Results				
MW-12		Screen: 25.0-55.0 ft bgs			TOC: 171.50 ft							
03/17/08	---	43.97	---	127.53				No Analytical Results				
09/15/08	---	37.57	---	133.93				No Analytical Results				
MW-13		Screen: 25.0-40.0 ft bgs			TOC: 172.47 ft							
03/17/08	---	36.88	---	135.59				No Analytical Results				
09/15/08	---	36.77	---	135.70				No Analytical Results				
MW-15		Screen: 10.0-50.0 ft bgs			TOC: 172.34 ft							
03/17/08	---	30.58	---	141.76				No Analytical Results				
03/28/08	---	30.56	---	141.78		8.6 (1)	47.0 (1)	22.0 (1)	65.0 (2)	142.6	ND (1)	900.0 (100)

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-15		Screen: 10.0-50.0 ft bgs			TOC: 172.34 ft							
09/15/08	---	30.21	---	142.13				No Analytical Results				
09/30/08	---	30.27	---	142.07		7.9 (1)	16.0 (1)	23.0 (1)	NA	46.9	ND (1)	710.0 (100)
MW-16		Screen: UNK			TOC: 171.05 ft							
01/29/08	---	40.38	---	130.67				No Analytical Results				
02/25/08	---	40.31	---	130.74				No Analytical Results				
03/17/08	---	40.35	---	130.70				No Analytical Results				
03/31/08	---	40.37	---	130.68				No Analytical Results				
05/28/08			Dry									
06/24/08	---	40.27	---	130.78				No Analytical Results				
07/24/08	---	39.03	---	132.02				No Analytical Results				
08/25/08	---	39.57	---	131.48				No Analytical Results				
09/15/08	---	39.69	---	131.36				No Analytical Results				
09/25/08	---	39.50	---	131.55		4,700.0 (100)	13,000.0 (100)	1,400.0 (100)	NA	19,100.0	560.0 (100)	38,000.0 (2000)
10/27/08	---	39.79	---	131.26				No Analytical Results				
11/24/08	---	40.38	---	130.67				No Analytical Results				
12/15/08	---	40.31	---	130.74				No Analytical Results				
MW-17		Screen: 30.0-50.0 ft bgs			TOC: 170.67 ft							
03/17/08	---	44.40	---	126.27				No Analytical Results				
03/31/08	---	44.62	---	126.05		1,500.0 (25)	3,100.0 (25)	310.0 (25)	2,200.0 (50)	7,110.0	1,800.0 (25)	30,000.0 (5000)
09/15/08	---	42.80	---	127.87				No Analytical Results				
10/01/08	---	42.80	---	127.87		5,700.0 (50)	10,000.0 (50)	1,100.0 (50)	NA	16,800.0	6,500.0 (50)	43,000.0 (2000)
MW-18		Screen: 29.0-44.0 ft bgs			TOC: 168.45 ft							
01/29/08	---	33.94	---	134.51				No Analytical Results				
02/25/08	---	33.97	---	134.48				No Analytical Results				
03/17/08	---	33.77	---	134.68				No Analytical Results				
03/31/08	---	33.97	---	134.48		42.0 (10)	1,600.0 (10)	450.0 (10)	4,000.0 (20)	6,092.0	ND (10)	25,000.0 (1000)
05/28/08	---	29.94	---	138.51				No Analytical Results				
06/24/08	---	30.25	---	138.20				No Analytical Results				

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-18		Screen: 29.0-44.0 ft bgs			TOC: 168.45 ft							
07/24/08	---	30.25	---	138.20				No Analytical Results				
08/25/08	---	30.75	---	137.70				No Analytical Results				
09/15/08	---	31.17	---	137.28				No Analytical Results				
09/25/08	---	31.32	---	137.13		6.1 (20)	670.0 (20)	270.0 (20)	NA	946.1	ND (20)	27,000.0 (10000)
10/27/08	---	31.85	---	136.60				No Analytical Results				
11/24/08	---	33.33	---	135.12				No Analytical Results				
12/15/08	---	33.53	---	134.92				No Analytical Results				
MW-19		Screen: 30.0-45.0 ft bgs			TOC: 169.56 ft							
03/17/08	---	38.05	---	131.51				No Analytical Results				
03/31/08	---	38.33	---	131.23		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	35.93	---	133.63				No Analytical Results				
09/25/08	---	35.76	---	133.80		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
MW-20		Screen: 30.0-50.0 ft bgs			TOC: 176.27 ft							
03/17/08	---	38.38	---	137.89				No Analytical Results				
03/28/08	---	38.29	---	137.98		2.0 (1)	ND (1)	ND (1)	ND (2)	2.0	ND (1)	140.0 (100)
09/15/08	---	37.61	---	138.66				No Analytical Results				
09/30/08	---	37.57	---	138.70				No Analytical Results				
10/01/08						2.3 (1)	5.5 (1)	2.7 (1)	NA	10.5	ND (1)	420.0 (100)
MW-21		Screen: 28.0-48.0 ft bgs			TOC: 173.37 ft							
03/17/08	---	37.25	---	136.11				No Analytical Results				
03/28/08	---	36.96	---	136.41		8.6 (1)	ND (1)	ND (1)	6.7 (2)	15.3	19.0 (1)	110.0 (100)
09/15/08	---	36.47	---	136.89				No Analytical Results				
09/30/08	---	36.16	---	137.21		10.0 (1)	18.0 (1)	7.1 (1)	NA	35.1	15.0 (1)	430.0 (100)
MW-22		Screen: 31.5-51.5 ft bgs			TOC: 171.23 ft							
01/29/08	---	41.90	---	129.33				No Analytical Results				
02/25/08	---	42.33	---	128.90				No Analytical Results				
03/17/08	---	42.21	---	129.02				No Analytical Results				

Notes:

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TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-22	Screen: 31.5-51.5 ft bgs				TOC: 171.23 ft							
03/31/08	---	42.25	---	128.70		4,900.0 (100)	12,000.0 (100)	1,200.0 (100)	8,200.0 (200)	26,300.0	710.0 (100)	46,000.0 (2000)
05/28/08	---	41.53	---	129.70		No Analytical Results						
06/24/08	---	41.21	---	130.02		No Analytical Results						
07/24/08	---	40.92	---	130.31		No Analytical Results						
08/25/08	---	40.27	---	130.96		No Analytical Results						
09/15/08	---	40.50	---	130.73		No Analytical Results						
09/25/08	---	40.09	---	131.14		1,100.0 (5)	730.0 (5)	95.0 (5)	NA	1,925.0	1,100.0 (5)	4,400.0 (100)
10/27/08	---	40.55	---	130.68		No Analytical Results						
11/24/08	---	41.83	---	130.73		No Analytical Results						
12/15/08	---	44.11	---	130.73		No Analytical Results						
MW-23	Screen: 32.0-52.0 ft bgs				TOC: 171.31 ft							
03/17/08	---	45.09	---	126.21		No Analytical Results						
03/31/08	---	45.00	---	126.31		ND (1)	ND (1)	ND (1)	ND (2)	ND	7.7 (1)	ND (100)
09/15/08	---	43.31	---	127.99		No Analytical Results						
09/25/08	---	43.52	---	127.79		6.5 (1)	ND (1)	ND (1)	NA	6.5	16.0 (1)	ND (100)
MW-24A	Screen: 16.0-23.5 ft bgs				TOC: 157.38 ft							
01/29/08	---	22.22	---	135.16		No Analytical Results						
02/25/08	---	21.68	---	135.70		No Analytical Results						
03/17/08	---	22.08	---	135.30		No Analytical Results						
04/01/08	---	21.70	---	135.68		37.0 (25)	1,400.0 (25)	750.0 (25)	9,200.0 (50)	11,387.0	ND (25)	75,000.0 (5000)
05/28/08	---	19.77	---	137.61		No Analytical Results						
06/24/08	---	19.79	---	137.59		No Analytical Results						
07/24/08	---	19.87	---	137.51		No Analytical Results						
08/25/08	---	20.28	---	137.10		No Analytical Results						
09/15/08	---	20.58	---	136.80		No Analytical Results						
09/24/08	---	20.69	---	136.69		ND (20)	160.0 (20)	640.0 (20)	NA	800.0	ND (20)	26,000.0 (1000)
10/27/08	---	21.05	---	136.33		No Analytical Results						
11/24/08	---	21.61	---	135.77		No Analytical Results						
12/15/08	---	21.78	---	135.60		No Analytical Results						

Notes:

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TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-24B		Screen: 22.5-30.0 ft bgs			TOC: 157.45 ft							
03/17/08	---	21.51	---	135.94				No Analytical Results				
04/01/08	---	22.21	---	135.24		110.0 (20)	1,900.0 (20)	750.0 (20)	7,200.0 (40)	9,960.0	ND (20)	26,000.0 (1000)
09/15/08	---	20.67	---	136.78				No Analytical Results				
09/24/08	---	20.76	---	136.69		ND (20)	110.0 (20)	460.0 (20)	NA	570.0	ND (20)	22,000.0 (500)
MW-25A		Screen: 22.0-29.5 ft bgs			TOC: 149.99 ft							
03/17/08	---	27.41	---	122.58				No Analytical Results				
04/01/08	---	27.31	---	122.68		ND (1)	ND (1)	ND (1)	ND (2)	ND	36.0 (1)	ND (100)
09/15/08	---	26.28	---	123.71				No Analytical Results				
09/24/08	---	26.32	---	123.67		ND (1)	ND (1)	ND (1)	NA	ND	4.6 (1)	ND (100)
MW-25B		Screen: 45.0-55.0 ft bgs			TOC: 150.95 ft							
03/17/08	---	27.68	---	123.26				No Analytical Results				
04/01/08	---	28.19	---	122.76		180.0 (2)	ND (2)	ND (2)	27.0 (4)	207.0	310.0 (2)	520.0 (100)
09/15/08	---	27.83	---	123.11				No Analytical Results				
09/24/08	---	26.94	---	124.01		240.0 (2)	ND (2)	ND (2)	NA	240.0	350.0 (2)	990.0 (100)
MW-26A		Screen: 2.0-9.5 ft bgs			TOC: 135.62 ft							
03/17/08	---	3.86	---	131.75				No Analytical Results				
04/02/08	---	4.37	---	131.25		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	4.44	---	131.17				No Analytical Results				
09/23/08	---	4.69	---	130.93		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
MW-26B		Screen: 21.5-26.5 ft bgs			TOC: 135.74 ft							
03/17/08	---	6.86	---	128.88				No Analytical Results				
04/02/08	---	6.63	---	129.11		94.0 (1)	ND (1)	ND (1)	5.2 (2)	99.2	170.0 (1)	270.0 (100)
09/15/08	---	10.65	---	125.09				No Analytical Results				
09/23/08	---	3.48	---	132.26		110.0 (1)	ND (1)	ND (1)	NA	110.0	200.0 (1)	490.0 (100)

Notes:

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Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-27A		Screen: 8.0-15.5 ft bgs			TOC: 128.92 ft							
03/17/08	---	11.18	---	117.73				No Analytical Results				
04/02/08	---	11.27	---	117.65		ND (1)	ND (1)	ND (1)	ND (2)	ND	52.0 (1)	ND (100)
09/15/08	---	10.36	---	118.55				No Analytical Results				
09/23/08	---	10.49	---	118.43		ND (1)	ND (1)	ND (1)	NA	ND	23.0 (1)	ND (100)
MW-27B		Screen: 30.5-40.5 ft bgs			TOC: 128.92 ft							
03/17/08	---	13.30	---	115.61				No Analytical Results				
04/02/08	---	13.37	---	115.55		34.0 (1)	ND (1)	ND (1)	5.2 (2)	39.2	240.0 (2)	280.0 (100)
09/15/08	---	12.87	---	116.04				No Analytical Results				
09/23/08	---	12.47	---	116.45		37.0 (1)	ND (1)	ND (1)	NA	37.0	240.0 (1)	380.0 (100)
MW-28A		Screen: 3.0-10.5 ft bgs			TOC: 126.13 ft							
03/17/08	---	4.53	---	121.60				No Analytical Results				
04/03/08	---	4.62	---	121.51		ND (1)	ND (1)	ND (1)	ND (2)	ND	1.9 (1)	ND (100)
09/15/08	---	4.44	---	121.69				No Analytical Results				
09/22/08	---	4.59	---	121.54		ND (1)	ND (1)	ND (1)	NA	ND	1.8 (1)	ND (100)
MW-28B		Screen: 15.5-25.5 ft bgs			TOC: 125.49 ft							
03/17/08	---	4.67	---	120.82				No Analytical Results				
04/03/08	---	4.60	---	120.89		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	4.31	---	121.18				No Analytical Results				
09/22/08	---	4.40	---	121.09		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
MW-29A		Screen: 5.0-12.5 ft bgs			TOC: 115.70 ft							
03/17/08	---	7.69	---	108.00				No Analytical Results				
04/03/08	---	7.81	---	107.89		ND (1)	ND (1)	ND (1)	ND (2)	ND	8.5 (1)	ND (100)
09/15/08	---	7.65	---	108.04				No Analytical Results				
09/22/08	---	7.73	---	107.97		ND (1)	ND (1)	ND (1)	NA	ND	9.4 (1)	ND (100)
MW-29B		Screen: 19.0-29.0 ft bgs			TOC: 115.54 ft							
03/17/08	---	6.79	---	108.74				No Analytical Results				

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ND: Not Detected above reporting limit
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Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-29B		Screen: 19.0-29.0 ft bgs			TOC: 115.54 ft							
04/03/08	---	6.78	---	108.76		ND (1)	ND (1)	ND (1)	ND (2)	ND	75.0 (1)	ND (100)
09/15/08	---	6.61	---	108.92				No Analytical Results				
09/22/08	---	6.54	---	109.00		ND (1)	ND (1)	ND (1)	NA	ND	74.0 (1)	ND (100)
MW-30		Screen: 15.0-30.0 ft bgs			TOC: 156.87 ft							
03/17/08	---	21.78	---	135.09				No Analytical Results				
04/01/08	---	21.77	---	135.10		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	20.26	---	136.61				No Analytical Results				
09/24/08	---	20.36	---	136.51		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
MW-31A		Screen: 4.0-11.5 ft bgs			TOC: 135.19 ft							
03/17/08	---	5.57	---	129.62				No Analytical Results				
09/15/08	---	5.77	---	129.42				No Analytical Results				
MW-31B		Screen: 11.5-21.5 ft bgs			TOC: 135.81 ft							
03/17/08	---	5.48	---	130.33				No Analytical Results				
04/03/08	---	5.53	---	130.28		ND (1)	ND (1)	ND (1)	ND (2)	ND	1.2 (1)	ND (100)
09/15/08	---	8.14	---	127.67				No Analytical Results				
09/23/08	---	5.25	---	130.56		ND (1)	ND (1)	ND (1)	NA	ND	1.2 (1)	ND (100)
MW-32		Screen: 5.0-15.0 ft bgs			TOC: 128.47 ft							
03/17/08	---	11.31	---	117.16				No Analytical Results				
09/15/08	---	5.49	---	122.98				No Analytical Results				
MW-33A		Screen: 2.0-9.5 ft bgs			TOC: 126.35 ft							
03/17/08	---	3.33	---	123.02				No Analytical Results				
04/02/08	---	3.87	---	122.48		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	3.55	---	122.80				No Analytical Results				
09/23/08	---	3.86	---	122.49		ND (1)	ND (1)	ND (1)	NA	ND	1.1 (1)	ND (100)

Notes:

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4) BTEX summed before rounding.

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FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-33B		Screen: 13.0-23.0 ft bgs			TOC: 126.16 ft							
03/17/08	---	4.79	---	121.37				No Analytical Results				
04/02/08	---	4.87	---	121.29		520.0 (5)	ND (2)	ND (2)	14.0 (4)	534.0	400.0 (2)	1,000.0 (100)
09/15/08	---	3.63	---	122.53				No Analytical Results				
09/23/08	---	4.76	---	121.40		340.0 (2)	ND (2)	ND (2)	NA	340.0	230.0 (2)	1,000.0 (100)
MW-33C		Screen: 23.0-33.0 ft bgs			TOC: 125.84 ft							
03/17/08	---	4.76	---	121.07				No Analytical Results				
04/02/08	---	4.84	---	121.00		13.0 (1)	ND (1)	ND (1)	ND (2)	13.0	37.0 (1)	ND (100)
09/15/08	---	4.49	---	121.34				No Analytical Results				
09/23/08	---	4.60	---	121.24		12.0 (1)	ND (1)	ND (1)	NA	12.0	35.0 (1)	ND (100)
MW-33S		Screen: 2.0-7.0 ft bgs			TOC: 126.58 ft							
03/17/08	---	2.99	---	123.58				No Analytical Results				
04/02/08	---	3.75	---	122.83		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08			Could Not Find Well									
09/23/08	---	3.84	---	122.74		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
MW-34A		Screen: 7.0-14.5 ft bgs			TOC: 107.41 ft							
03/17/08	---	9.17	---	98.24				No Analytical Results				
09/15/08	---	9.07	---	98.34				No Analytical Results				
MW-34B		Screen: 14.5-24.5 ft bgs			TOC: 107.40 ft							
03/17/08	---	9.55	---	97.85				No Analytical Results				
09/15/08	---	8.79	---	98.61				No Analytical Results				
MW-37		Screen: 8.0-15.5 ft bgs			TOC: 152.61 ft							
03/17/08			Dry									
09/15/08			Dry									
MW-38		Screen: 8.0-15.5 ft bgs			TOC: 146.91 ft							
03/17/08	---	10.67	---	136.23				No Analytical Results				

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FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-38	Screen: 8.0-15.5 ft bgs				TOC: 146.91 ft							
04/02/08	---	10.53	---	136.38		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	10.25	---	136.65		No Analytical Results						
09/24/08	---	10.41	---	136.50		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
MW-39	Screen: 6.0-13.5 ft bgs				TOC: 146.01 ft							
03/17/08			Dry									
09/15/08			Dry									
MW-39R	Screen: 13.0-20.5 ft bgs				TOC: 146.01 ft							
03/17/08	---	17.08	---	128.93		No Analytical Results						
04/02/08	---	17.06	---	128.95		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	16.42	---	129.59		No Analytical Results						
09/24/08	---	16.84	---	129.17		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
MW-40	Screen: 20.0-27.5 ft bgs				TOC: 145.18 ft							
03/17/08	---	23.51	---	121.66		No Analytical Results						
04/02/08	---	23.48	---	121.70		ND (1)	ND (1)	ND (1)	ND (2)	ND	12.0 (1)	ND (100)
09/15/08	---	22.44	---	122.73		No Analytical Results						
09/24/08	---	22.58	---	122.60		ND (1)	ND (1)	ND (1)	NA	ND	1.3 (1)	ND (100)
MW-41A	Screen: 17.0-24.5 ft bgs				TOC: 136.96 ft							
03/17/08	---	20.14	---	116.81		No Analytical Results						
04/01/08	---	19.86	---	117.10		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	19.32	---	117.63		No Analytical Results						
09/24/08	---	18.91	---	118.05		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
MW-41B	Screen: 28.0-38.0 ft bgs				TOC: 136.82 ft							
03/17/08	---	20.88	---	115.94		No Analytical Results						
04/01/08	---	20.38	---	116.44		ND (1)	ND (1)	ND (1)	ND (2)	ND	17.0 (1)	ND (100)
09/15/08	---	18.83	---	117.99		No Analytical Results						
09/24/08	---	27.37	---	109.45		ND (1)	ND (1)	ND (1)	NA	ND	20.0 (1)	ND (100)

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-42		Screen: 2.0-9.5 ft bgs			TOC: 140.03 ft							
03/17/08	---	8.57	---	131.45				No Analytical Results				
04/02/08	---	8.67	---	131.36		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	7.92	---	132.10				No Analytical Results				
09/23/08	---	8.02	---	132.01		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
MW-43A		Screen: 2.0-9.5 ft bgs			TOC: 133.98 ft							
03/17/08	---	3.52	---	130.46				No Analytical Results				
04/02/08	---	3.72	---	130.26		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	4.20	---	129.78				No Analytical Results				
09/23/08	---	4.32	---	129.66		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
MW-43B		Screen: 21.0-31.0 ft bgs			TOC: 134.09 ft							
03/17/08												
04/02/08	---	9.30	---	124.79		8.6 (1)	ND (1)	ND (1)	ND (2)	8.6	40.0 (1)	ND (100)
09/15/08	---	8.73	---	125.36				No Analytical Results				
09/23/08	---	9.71	---	124.38		4.3 (1)	ND (1)	ND (1)	NA	4.3	21.0 (1)	ND (100)
MW-44A		Screen: 6.0-13.5 ft bgs			TOC: 130.22 ft							
03/17/08	---	10.07	---	120.15				No Analytical Results				
04/02/08	---	10.11	---	120.11		ND (1)	ND (1)	ND (1)	ND (2)	ND	100.0 (1)	ND (100)
09/15/08	---	9.51	---	120.71				No Analytical Results				
09/23/08	---	9.62	---	120.60		ND (1)	ND (1)	ND (1)	NA	ND	42.0 (1)	ND (100)
MW-44B		Screen: 29.0-39.0 ft bgs			TOC: 130.24 ft							
03/17/08	---	12.54	---	117.70				No Analytical Results				
04/02/08	---	12.50	---	117.74		ND (1)	ND (1)	ND (1)	ND (2)	ND	25.0 (1)	ND (100)
09/15/08	---	11.96	---	118.28				No Analytical Results				
09/23/08	---	11.91	---	118.33		ND (1)	ND (1)	ND (1)	NA	ND	95.0 (1)	120.0 (100)

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

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DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-45		Screen: 35.0-55.0 ft bgs			TOC: 173.89 ft							
03/17/08	---	45.53	---	128.36				No Analytical Results				
03/27/08	---	45.50	---	128.39		55.0 (1)	7.0 (1)	1.2 (1)	93.0 (2)	156.2	ND (1)	880.0 (100)
09/15/08	---	43.63	---	130.26				No Analytical Results				
09/29/08	---	42.61	---	131.28		30.0 (1)	ND (1)	ND (1)	NA	30.0	ND (1)	680.0 (100)
MW-46		Screen: 38.0-58.0 ft bgs			TOC: 174.12 ft							
03/17/08	---	48.69	---	125.42				No Analytical Results				
03/27/08	---	48.72	---	125.40		ND (1)	ND (1)	ND (1)	ND (2)	ND	16.0 (1)	ND (100)
09/15/08	---	47.11	---	127.00				No Analytical Results				
09/29/08	---	47.15	---	126.97		ND (1)	ND (1)	ND (1)	NA	ND	21.0 (1)	ND (100)
MW-47		Screen: 40.0-60.0 ft bgs			TOC: 171.50 ft							
03/17/08	---	47.32	---	124.17				No Analytical Results				
03/27/08	---	47.30	---	124.20		360.0 (2)	89.0 (2)	2.9 (2)	85.0 (4)	536.9	ND (2)	1,300.0 (100)
09/15/08	---	45.94	---	125.55				No Analytical Results				
09/29/08	---	45.92	---	125.58		230.0 (2)	51.0 (2)	1.3 (2)	NA	282.3	15.0 (2)	1,000.0 (100)
MW-48		Screen: 38.0-58.0 ft bgs			TOC: 165.96 ft							
03/17/08	---	43.30	---	122.65				No Analytical Results				
03/27/08	---	43.27	---	122.69		ND (1)	ND (1)	ND (1)	ND (2)	ND	9.7 (1)	ND (100)
09/15/08	---	42.00	---	123.95				No Analytical Results				
09/29/08	---	41.89	---	124.07		ND (1)	ND (1)	ND (1)	NA	ND	3.5 (1)	ND (100)
MW-49		Screen: 33.0-53.0 ft bgs			TOC: 159.15 ft							
03/17/08	---	45.70	---	113.45				No Analytical Results				
03/27/08	---	45.68	---	113.47		29.0 (1)	ND (1)	ND (1)	3.3 (2)	32.3	290.0 (1)	250.0 (100)
09/15/08	---	44.70	---	114.45				No Analytical Results				
09/29/08	---	42.83	---	116.32		14.0 (2)	ND (2)	ND (2)	NA	14.0	270.0 (2)	350.0 (100)
MW-50		Screen: 31.0-51.0 ft bgs			TOC: 156.12 ft							
03/17/08	---	38.68	---	117.44				No Analytical Results				

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
MW-50		Screen: 31.0-51.0 ft bgs			TOC: 156.12 ft							
03/27/08	---	38.67	---	117.45		5.1 (1)	ND (1)	ND (1)	ND (2)	5.1	160.0 (1)	140.0 (100)
09/15/08	---	37.76	---	118.36				No Analytical Results				
09/29/08	---	37.80	---	118.32		4.4 (1)	ND (1)	ND (1)	NA	4.4	130.0 (1)	240.0 (100)
MW-51		Screen: 44.0-64.0 ft bgs			TOC: 158.12 ft							
03/17/08	---	50.57	---	107.54				No Analytical Results				
03/27/08	---	50.32	---	107.80		49.0 (1)	ND (1)	ND (1)	ND (2)	49.0	84.0 (1)	280.0 (100)
09/15/08	---	49.41	---	108.70				No Analytical Results				
09/29/08	---	49.51	---	108.61		28.0 (1)	ND (1)	ND (1)	NA	28.0	74.0 (1)	270.0 (100)
MW-52		Screen: 2.0-7.0 ft bgs			TOC: 127.58 ft							
03/17/08	---	2.81	---	124.77				No Analytical Results				
09/15/08	---	3.35	---	124.23				No Analytical Results				
MW-53		Screen: 5.5-10.5 ft bgs			TOC: 116.18 ft							
03/17/08	---	6.45	---	109.73				No Analytical Results				
04/03/08	---	6.43	---	109.75		17.0 (1)	ND (1)	ND (1)	ND (2)	17.0	160.0 (1)	140.0 (100)
09/15/08	---	6.09	---	110.09				No Analytical Results				
09/22/08	---	6.01	---	110.17		23.0 (1)	ND (1)	ND (1)	NA	23.0	160.0 (1)	330.0 (100)
MW-54		Screen: 2.0-7.0 ft bgs			TOC: 121.76 ft							
03/17/08	---	4.75	---	117.00				No Analytical Results				
04/03/08	---	4.95	---	116.81		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	5.09	---	116.66				No Analytical Results				
09/22/08	---	5.20	---	116.56		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)
MW-55		Screen: 3.5-8.5 ft bgs			TOC: 131.49 ft							
03/17/08	---	1.55	---	129.93				No Analytical Results				
04/03/08	---	1.71	---	129.78		ND (1)	ND (1)	ND (1)	ND (2)	ND	ND (1)	ND (100)
09/15/08	---	1.53	---	129.95				No Analytical Results				
09/23/08	---	1.78	---	129.71		ND (1)	ND (1)	ND (1)	NA	ND	ND (1)	ND (100)

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

Gannett Fleming

TABLE C-1. GROUNDWATER MONITORING DATA
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD, CHILLUM, MARYLAND

Chevron

PERIOD: 1/1/2008 - 12/31/2008

Date	DTL (ft)	DTW (ft)	LPH Thick. (ft)	GW Elev (ft)	LPH Recov. (gal)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
PTW-A		Screen: 40.0-65.0 ft bgs			TOC: 172.28 ft							
03/17/08	---	44.10	---	128.17				No Analytical Results				
03/28/08	---	44.10	---	128.18		10.0 (1)	9.0 (1)	ND (1)	16.0 (2)	35.0	26.0 (1)	120.0 (100)
09/15/08	---	41.81	---	130.46				No Analytical Results				
10/01/08	---	41.81	---	130.47		9.3 (1)	ND (1)	ND (1)	NA	9.3	23.0 (1)	ND (100)
PTW-B		Screen: 34.0-54.0 ft bgs			TOC: 171.75 ft							
03/17/08	---	48.20	---	123.55				No Analytical Results				
03/28/08	---	48.20	---	123.55		150.0 (2)	140.0 (2)	16.0 (2)	110.0 (4)	416.0	440.0 (2)	700.0 (500)
09/15/08	---	37.61	---	134.14				No Analytical Results				
10/01/08	---	37.61	---	134.14		270.0 (10)	1,200.0 (10)	410.0 (10)	NA	1,880.0	23.0 (10)	13,000.0 (1000)
RW-1		Screen: 34.0-54.0 ft bgs			TOC: 173.36 ft							
03/17/08	---	55.80	---	117.56				No Analytical Results				
03/28/08	---	55.80	---	117.56		1,000.0 (10)	1,900.0 (10)	150.0 (10)	1,100.0 (20)	4,150.0	590.0 (10)	5,500.0 (500)
09/15/08	---	55.40	---	117.96				No Analytical Results				
10/01/08	---	55.40	---	117.96		1,700.0 (10)	2,500.0 (10)	110.0 (10)	NA	4,310.0	1,100.0 (10)	11,000.0 (500)
RW-2		Screen: 30.0-55.0 ft bgs			TOC: 172.21 ft							
03/17/08	---	54.50	---	117.71				No Analytical Results				
03/28/08	---	54.50	---	117.71		2,200.0 (20)	2,700.0 (20)	240.0 (20)	1,700.0 (40)	6,840.0	3,700.0 (20)	9,600.0 (1000)
09/15/08	---	45.86	---	126.35				No Analytical Results				
10/01/08	---	45.86	---	126.35		2,000.0 (20)	2,600.0 (20)	240.0 (20)	NA	4,840.0	3,300.0 (20)	13,000.0 (1000)
RW-3		Screen: 28.0-48.0 ft bgs			TOC: 171.62 ft							
03/17/08	---	45.60	---	126.02				No Analytical Results				
03/28/08	---	45.60	---	126.02		480.0 (5)	900.0 (5)	63.0 (5)	810.0 (10)	2,253.0	650.0 (5)	2,800.0 (100)
09/15/08	---	36.21	---	135.41				No Analytical Results				
10/01/08	---	36.21	---	135.41		620.0 (20)	4,400.0 (20)	430.0 (20)	NA	5,450.0	33.0 (20)	16,000.0 (1000)

Notes:

1) Reporting limit shown in parenthesis.
2) Groundwater elevation corrected for presence of LPH.
3) Analytical and LPH Recovery results were rounded.
4) BTEX summed before rounding.

Abbreviations:

DTL: Depth to LPH
DTW: Depth to Water
LPH: Liquid Phase Hydrocarbons
GW Elev: Groundwater Elevation
TOC: Top of Casing
ND: Not Detected above reporting limit
NA: Not Analyzed
UNK: Unknown

APPENDIX D

SOIL VAPOR MONITORING DATA

Gannett Fleming

TABLE D-1. SOIL VAPOR MONITORING REPORT
FOURTH QUARTER 2008 REPORT
FORMER CHEVRON FACILITY 122208
5801 RIGGS ROAD CHILLUM, MARYLAND

Chevron

PERIOD: 3/26/2007 - 12/31/2008

Date	Benzene µg/m³	Toluene µg/m³	Ethyl-benzene µg/m³	m,p-Xylene µg/m³	o-Xylene µg/m³	MTBE µg/m³	Difluoroethane µg/m³	Oxygen Percent	Carbon Dioxide Percent	Methane Percent
VW-1										
03/26/07	ND (5.1)	ND (6)	ND (6.9)	ND (6.9)	ND (6.9)	ND (5.8)	NS	8.0	9.0	0.0
09/27/07	ND (3.9)	ND (4.6)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4.4)	ND (13)	5.4	16.8	0.0
03/27/08	ND (3.8)	ND (4.5)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4.3)	ND (13)	9.4	7.5	0.0
09/18/08	ND (3.9)	ND (4.6)	ND (5.4)	ND (5.4)	ND (5.4)	ND (4.4)	ND (13)	5.7	15.3	0.0
VW-2										
09/27/07	ND (3.9)	ND (4.6)	ND (5.2)	ND (5.2)	ND (5.2)	53.0 (4.4)	1,400 E (13)	11.5	11.5	0.0
09/27/07	ND (3.9)	ND (4.6)	ND (5.2)	ND (5.2)	ND (5.2)	73.0 (4.4)	14.0 (13)	11.5	11.5	0.0
09/18/08	ND (7.7)	ND (9.1)	ND (10)	ND (10)	ND (10)	49 (8.7)	ND (26)	12.1	9.5	0.0
VW-03										
03/26/07	ND (5.2)	ND (6.2)	ND (7.1)	ND (7.1)	ND (7.1)	ND (5.9)	NS	16.5	3.9	0.0
09/27/07	ND (16)	ND (19)	ND (22)	ND (22)	ND (22)	ND (18)	>240,000 S (56)	19.4	0.9	4.4
11/08/07	ND (180,000)	ND (210,000)	ND (240,000)	ND (240,000)	ND (240,000)	ND (200,000)	300,000,000 E (590,000)	NS	NS	NS
3/27/08	ND (3.6)	ND (4.3)	ND (5.0)	ND (5.0)	ND (5.0)	ND (4.1)	940 (12)	10.4	4.2	0.0
09/18/08	6.6 (3.7)	27 (4.4)	41 (5.0)	69 (5.0)	65 (5.0)	5.2 (4.2)	540 (12)	13.5	6.8	0.0
VW-04										
03/26/07	ND (5.1)	ND (6)	ND (6.9)	7.6 (6.9)	ND (6.9)	ND (5.8)	NS	0.2	8.9	21.1
09/27/07	ND (3.9)	ND (4.6)	ND (5.2)	21.0 (5.2)	ND (5.2)	12.0 (4.4)	17,000 E (13)	15.8	4.3	1.2

Notes:

1) Reporting limit shown in parenthesis.
2) Analytical results were rounded.
3) ND: Not Detected above reporting limit.
4) NS: Analyte was not sampled.
5) Well VW-03 was reinstalled in February 2008
6) Wells VW-2 and VW-4 were not sampled in March 2008 due to water in the well.

APPENDIX E

MANN KENDALL STATISTICAL ANALYSIS

Mann-Kendall Statistical Analysis
Former Chevron Facility 122208
5801 Riggs Road, Chillum, Maryland
December 2008

The Mann-Kendall statistical analysis was used to determine trends in dissolved-phase hydrocarbon concentrations at the Chillum site. These data will be used to support the site-wide groundwater remedial strategy of monitored natural attenuation (MNA).

SITE-WIDE GROUNDWATER REMEDIAL OBJECTIVE

The approved Corrective Measures Study (CMS) (Gannett Fleming, 2007) presents a site-wide groundwater remediation strategy that includes MNA. One method to demonstrate that MNA is effective at decreasing hydrocarbon concentrations is the statistical evaluation of sampling results. The Mann-Kendall statistical analysis was selected as an industry-accepted method to provide evidence that dissolved-phase hydrocarbon concentrations are stable and/or decreasing over time.

MANN-KENDALL BACKGROUND

The Mann-Kendall statistical analysis is used to determine if dissolved-phase hydrocarbon concentrations in groundwater are increasing, decreasing, or stable over time. The technique requires that individual wells with the highest concentrations along the centerline of mapped dissolved-phase hydrocarbons in the groundwater be used to identify trends in dissolved-phase hydrocarbon concentrations over time.

The Mann-Kendall statistical analysis compares every data point (e.g., semi-annual sampling event results) in a data set to every other data point (sampling result) for a particular well along the centerline of mapped dissolved-phase hydrocarbons. A value of 1 or -1 is assigned as each data point is compared based on whether it is higher or lower than the previous. As few as 5 and as many as 10 data points may be used in the analysis; however, the greater the number of data points used, the more reliable the trend analysis becomes.

The output of the analysis is a Mann-Kendall S statistic for the data set for each well. The S statistic shows: 1) the confidence level in the data; 2) the strength of the data trend; and 3) the variability in the data (Wiedemeier, 1999). The absolute value of S is then compared to the 95 percent confidence level in the trend. A positive S suggests an increasing trend and a negative S suggests a decreasing tend. An S outside of the 95 percent confidence level is considered to have no trend (e.g., a stable trend). The 95 percent confidence interval is used as a conservative guide to establishing trends.

The analysis is robust because missing values are allowed and the data set need not conform to any particular distribution. Also, laboratory data reported as below the laboratory detection limit can be used and are reported as half the laboratory detection limit (US EPA, 1998). This approach can be used because the Mann-Kendall methodology uses only the relative magnitudes of the laboratory data rather than actual measured values (Gilbert, 1987).

METHODS

A Geoprobe® was used to obtain an exhaustive profile of groundwater at the site during 2001 and 2002. The Geoprobe groundwater data were used to map the centerline of dissolved-phase hydrocarbon concentrations in groundwater and subsequently install monitoring wells along the centerline of dissolved-phase hydrocarbons (Gannett Fleming, 2006).

The presence of a mappable clay body in the subsurface (as evidenced from the Geoprobe soil investigation) splits the dissolved-phase hydrocarbons in groundwater into two separate centerlines. As a result, these two centerlines are identified as the west centerline and the east centerline (Figure 1). Wells used to define the centerlines are as follows:

West Centerline	East Centerline
MW-22	MW-22
MW-24B	GP-39A
MW-26B	MW-47
MW-33B	GP-2E(45-50)
	MW-25B
	MW-27B
	MW-53

The Mann-Kendall statistical analysis was performed using benzene and methyl tert butyl ether (MTBE) for each well within the centerlines. Mann-Kendall trend analysis tables for each well along the west and east centerlines are presented in Attachment A and B, respectively. The 10 most recent groundwater sampling results were used in the analysis. For wells that have not been sampled 10 times, all available sampling data were used. Values that were reported as below the laboratory detection limit were assigned a value of half of the detection limit.

RESULTS OF MANN-KENDALL ANALYSES

Tables 1 and 2 provide groundwater sampling results for individual wells along the west and east centerlines. Table 3 provides a general summary of the Mann-Kendall statistical analyses performed for both benzene and MTBE. Several trends were noted that are provided below.

Results of the analysis for the west centerline are as follows:

- Benzene and MTBE concentrations in wells MW-22, MW-24B, and MW-26B were stable; and

- Benzene and MTBE concentrations in MW-33B were decreasing.

Results of the analysis for the east centerline are as follows:

- Benzene and MTBE concentrations in MW-22, MW-47, and MW-25B were stable;

- Benzene and MTBE concentrations in GP-39A were increasing, which may be a result of an extended period in 2004 and 2005 when the remediation system was turned off for construction. The range of benzene and MTBE concentrations since March 2007 has only varied from 2,100 to 2,600 and 5,200 to 5,600 µg/L respectively, therefore the recent data trend over the last 1.5 years is stable;

- Benzene and MTBE concentrations in GP-2E (45-50) were decreasing;

- Benzene concentrations in MW-27B were stable and MTBE concentrations were decreasing; and

- Benzene and MTBE concentrations in MW-53 were increasing. However, the range of benzene and MTBE concentrations since October 2006 has only varied from 15 to 61 and 110 to 270 µg/L respectively, therefore the recent data trend over the last 2 years is stable. This well is also the farthest from the service station. It will take a long time for remediation efforts at the service station to affect this area.

SUMMARY AND CONCLUSIONS

Dissolved-phase hydrocarbon concentrations for centerline wells were either stable or decreasing based on long and short-term sampling data. Therefore, the overall trend for each centerline was stable. This is to be expected because active remediation is not complete near the service station. Based on this line of evidence, MNA was working to decrease dissolved-phase hydrocarbon concentrations at the site.

Based on a range of five to ten sampling events conducted since 2004, benzene and MTBE concentrations along the west centerline were stable or decreasing for all wells. The east centerline wells show a similar tendency. All wells were either stable or decreasing except benzene and MTBE in GP-39A and MW-53. However, based on short-term sampling data from the last 2 years, the trend is stable.

RECOMMENDATION

Based on the data results and conclusions, it is recommended that the Mann-Kendall statistical analysis be performed on an annual basis using the semi-annual groundwater monitoring data for wells along the west and east centerlines to confirm that hydrocarbon concentrations are continuing to decrease or remain stable.

REFERENCES

Gannett Fleming, 2006, *Site Investigation Report*, Former Chevron Facility 122208, 5801 Riggs Road, Chillum Maryland, dated January 2006.

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Gilbert, Richard O., 1987, *Statistical Methods for Environmental Pollution Monitoring*, Van Nostrand Reinhold, NY, NY, 319 pages.

U.S. Environmental Protection Agency (EPA), 1998, *Guidance for Data Quality Assessment*, EPA/600/R-96/084.

Wiedemeier Todd H., et. al., 1999, *Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface*, John Wiley and Sons, Inc. NY, NY, 617 pages.

TABLES

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Table 1. Groundwater Monitoring Results - West Centerline
Mann-Kendall Statistical Analysis
Former Chevron Facility122208
5801 Riggs Road, Chillum, Maryland

Chevron

PERIOD: June 2004 - September 2008

Date	Benzene (µg/L)	MTBE (µg/L)
MW-22		
06/08/04	5,620.0 (100)	866.0 (20)
08/03/04	7,960.0 (200)	1,620.0 (10)
09/07/05	8,790.0 (50)	1,780.0 (50)
03/23/06	6,860.0 (100)	2,020.0 (100)
10/02/06	7,900.0 (100)	1,100.0 (100)
03/26/07	2,400.0 (100)	570.0 (100)
10/01/07	7,000.0 (100)	1,000.0 (100)
03/31/08	4,900.0 (100)	710.0 (100)
09/25/08	1,100.0 (5)	1,100.0 (5)
MW-24B		
06/08/04	431.0 (10)	9.3 (1)
08/02/04	474.0 (10)	9.6 (1)
09/15/05	497.0 (10)	3.6 (1)
03/27/06	864.0 (20)	4.0 (1)
10/04/06	540.0 (50)	ND (50)
03/27/07	5.6 (1)	ND (1)
10/02/07	310.0 (20)	ND (20)
04/01/08	110.0 (20)	ND (20)
09/24/08	ND (20)	ND (20)
MW-26B		
06/07/04	30.5 (1)	112.0 (1)
07/30/04	34.4 (1)	114.0 (1)
09/16/05	24.9 (1)	168.0 (1)
03/28/06	144.0 (1)	221.0 (10)
10/05/06	100.0 (1)	210.0 (1)
03/28/07	140.0 (1)	270.0 (1)
10/04/07	110.0 (1)	230.0 (1)
04/02/08	94.0 (1)	170.0 (1)
09/23/08	110.0 (1)	200.0 (1)
MW-33B		
06/02/04	1,040.0 (20)	770.0 (20)
07/27/04	1,000.0 (20)	744.0 (20)
09/13/05	ND (1)	698.0 (10)
03/28/06	974.0 (10)	653.0 (10)
10/05/06	760.0 (5)	520.0 (5)
03/29/07	670.0 (5)	400.0 (5)
10/05/07	540.0 (2)	410.0 (2)
04/02/08	520.0 (5)	400.0 (2)
09/23/08	340.0 (2)	230.0 (2)

Notes:

1) Reporting limit shown in parenthesis.
2) Analytical results were rounded.
3) ND: Not Detected above reporting limit.
4) BTEX summed before rounding.

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Table 2. Groundwater Monitoring Results - East Centerline
Mann-Kendall Statistical Analysis
Former Chevron Facility 122208
5801 Riggs Road, Chillum, Maryland

Chevron

PERIOD: April 2002 -September 2008

Date	Benzene (µg/L)	MTBE (µg/L)
GP-2E(45-50)		
04/18/02	170.0 (2)	795.0 (20)
12/19/02	46.3 (1)	600.0 (10)
05/19/04	28.7 (1)	756.0 (10)
08/16/04	60.2 (1)	656.0 (5)
12/15/04	117.0 (1)	522.0 (10)
03/21/05	189.0 (1)	610.0 (10)
05/26/05	172.0 (1)	803.0 (10)
09/14/05	134.0 (1)	501.0 (5)
12/20/05	71.4 (1)	394.0 (10)
10/02/06	78.0 (5)	420.0 (5)
03/26/07	50.0 (5)	400.0 (5)
10/01/07	34.0 (2)	470.0 (2)
03/31/08	8.0 (2)	330.0 (2)
09/25/08	ND (2)	370.0 (2)
GP-39A		
10/02/02	ND (1)	ND (1)
03/26/03	ND (1)	1.1 (1)
06/17/03	ND (1)	1.1 (1)
09/23/03	ND (1)	2.1 (1)
12/10/03	535.0 (10)	1,770.0 (10)
03/24/04	570.0 (20)	1,940.0 (20)
05/18/04	473.0 (10)	1,680.0 (10)
08/16/04	476.0 (20)	2,060.0 (20)
12/16/04	725.0 (50)	2,520.0 (50)
03/21/05	7.1 (1)	3,200.0 (20)
05/26/05	905.0 (50)	3,550.0 (50)
09/08/05	721.0 (10)	2,490.0 (100)
12/19/05	995.0 (25)	3,360.0 (25)
03/22/06	1,570.0 (50)	5,960.0 (50)
09/28/06	2,500.0 (25)	6,500.0 (25)
03/22/07	2,600.0 (20)	5,800.0 (20)
09/24/07	2,300.0 (25)	5,200.0 (25)
03/27/08	2,100.0 (20)	5,400.0 (20)
09/30/08	2,100.0 (25)	4,800.0 (25)
MW-22		
06/08/04	5,620.0 (100)	866.0 (20)
08/03/04	7,960.0 (200)	1,620.0 (10)
09/07/05	8,790.0 (50)	1,780.0 (50)
03/23/06	6,860.0 (100)	2,020.0 (100)
10/02/06	7,900.0 (100)	1,100.0 (100)
03/26/07	2,400.0 (100)	570.0 (100)
10/01/07	7,000.0 (100)	1,000.0 (100)
03/31/08	4,900.0 (100)	710.0 (100)
09/25/08	1,100.0 (5)	1,100.0 (5)

Notes:

1) Reporting limit shown in parenthesis.
2) Analytical results were rounded.
3) ND: Not Detected above reporting limit.
4) BTEX summed before rounding.

Gannett Fleming

Chevron

Table 3. Mann-Kendall Results Summary
Mann-Kendall Statistical Analysis
Former Chevron Facility 122208
5801 Riggs Road, Chillum, Maryland

West Centerline - Benzene

Well ID	Distance from MW-22 (ft)	Trend	Date Range	Number of Data Points
MW-22	0	Stable	6/8/2004 - 9/25/2008	9
MW-24B	232	Stable	6/8/2004 - 4/1/2008	9
MW-26B	666	Stable	6/7/2004 - 9/23/2008	9
MW-33B	944	Decreasing	6/2/2004 - 9/23/2008	9

West Centerline - MTBE

Well ID	Distance from MW-22 (ft)	Trend	Date Range	Number of Data Points
MW-22	0	Stable	6/8/2004 - 9/25/2008	9
MW-24B[1]	232	Stable	6/8/2004 - 3/272007	8
MW-26B	666	Stable	6/7/2004 - 9/23/2008	9
MW-33B	944	Decreasing	6/2/2004 - 9/23/2008	9

East Centerline - Benzene

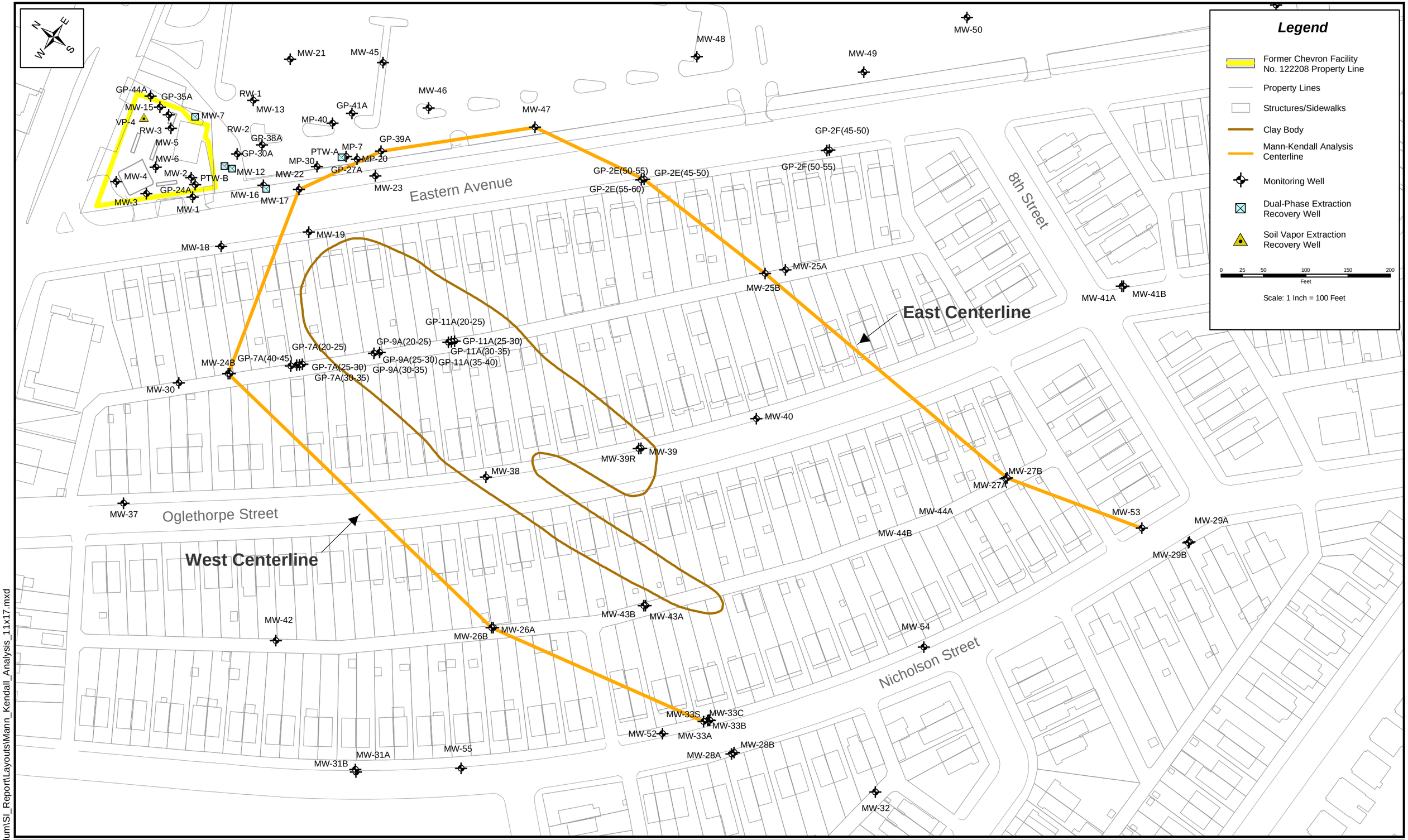
Well ID	Distance from MW-22 (ft)	Trend	Date Range	Number of Data Points
MW-22	0	Stable	6/8/2004 - 9/25/2008	9
GP-39A	109	Increasing	12/16/2004 - 9/30/2008	10
MW-47	292	Stable	11/19/2004 - 9/29/2008	8
GP-2E (45-50)	445	Decreasing	8/16/2004 - 9/25/2008	10
MW-25B	618	Stable	11/22/2004 - 9/24/2008	8
MW-27B	991	Stable	6/2/2004 - 9/23/2008	9
MW-53	1163	Increasing	5/3/2005 - 9/22/2008	9

East Centerline - MTBE

Well ID	Distance from MW-22 (ft)	Trend	Date Range	Number of Data Points
MW-22	0	Stable	6/8/2004 - 9/25/2008	9
GP-39A	109	Increasing	12/16/2004 - 9/30/2008	10
MW-47	292	Stable	11/19/2004 - 9/29/2008	8
GP-2E (45-50)	445	Decreasing	8/16/2004 - 9/25/2008	10
MW-25B	618	Stable	11/22/2004 - 9/24/2008	8
MW-27B	991	Decreasing	6/2/2004 - 9/23/2008	9
MW-53	1163	Increasing	5/3/2005 - 9/22/2008	9

Note:
1. MTBE data collected from MW-24B on 10/04/06 were excluded from the data set because the value was reported below a laboratory detection limit of 50 µg/L.

FIGURES



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NO.	REVISIONS	DATE	BY	DESIGNED	GIS	SCALE	Gannett Fleming	FORMER CHEVRON FACILITY NO. 122208 CHILLUM, MARYLAND	Centerlines for Mann-Kendall Analysis	GF PROJECT NO.	SHEET NO.
	DESCRIPTION			RWS	CER	AS NOTED	BALTIMORE, MARYLAND			44738	1
				CHECKED	APPROVED					DATE 07-17-08	
				RWS						GIS FILE Mann_Kendall_Analysis_11x17.mxd	

ATTACHMENT A

Mann-Kendall Analysis Tables – West Centerline

WEST CENTERLINE - MW-22 - BENZENE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- Benzene
Well-- MW-22

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	5,620	7,960	8,790	6,860	7,900	2,400	7,000	4,900	1,100		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	1	1	1	-1	1	-1	-1		2
Compared to Event 2	*****	*****	1	-1	-1	-1	-1	-1	-1		-5
Compared to Event 3	*****	*****	*****	-1	-1	-1	-1	-1	-1		-6
Compared to Event 4	*****	*****	*****	*****	1	-1	1	-1	-1		-1
Compared to Event 5	*****	*****	*****	*****	*****	-1	-1	-1	-1		-4
Compared to Event 6	*****	*****	*****	*****	*****	*****	1	1	-1		1
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1		-2
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	-1		-1
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -16

Statistical Confidence Level

>90% Confidence

I S I ≥ 13

Result Decreasing Trend

>95% Confidence

I S I ≥ 17

Result No Trend

WEST CENTERLINE - MW-22 - MTBE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- MTBE
Well-- MW-22

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	866	1,620	1,780	2,020	1,100	570	1,000	710	1,100		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	1	1	1	-1	1	-1	1		4
Compared to Event 2	*****	*****	1	1	-1	-1	-1	-1	-1		-3
Compared to Event 3	*****	*****	*****	1	-1	-1	-1	-1	-1		-4
Compared to Event 4	*****	*****	*****	*****	-1	-1	-1	-1	-1		-5
Compared to Event 5	*****	*****	*****	*****	*****	-1	-1	-1	0		-3
Compared to Event 6	*****	*****	*****	*****	*****	*****	1	1	1		3
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	1		0
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	1		1
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -7

Statistical Confidence Level

>90% Confidence

I S I ≥ 13

Result No Trend

>95% Confidence

I S I ≥ 17

Result No Trend

WEST CENTERLINE - MW-24B - BENZENE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- Benzene
Well-- MW-24B

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	431	474	497	864	540	6	310	110	10		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	1	1	1	-1	-1	-1	-1		0
Compared to Event 2	*****	*****	1	1	1	-1	-1	-1	-1		-1
Compared to Event 3	*****	*****	*****	1	1	-1	-1	-1	-1		-2
Compared to Event 4	*****	*****	*****	*****	-1	-1	-1	-1	-1		-5
Compared to Event 5	*****	*****	*****	*****	*****	-1	-1	-1	-1		-4
Compared to Event 6	*****	*****	*****	*****	*****	*****	1	1	1		3
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1		-2
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	-1		-1
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -12

Statistical Confidence Level

>90% Confidence		**>95% Confidence**	
I S I ≥	13	**I S I ≥**	17
Result	No Trend	**Result**	No Trend

WEST CENTERLINE - MW-24B - MTBE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- MTBE
Well-- MW-24B

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	9	10	4	4	1	10	10	10			8
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	-1	-1	-1	1	1	1			1
Compared to Event 2	*****	*****	-1	-1	-1	1	1	1			0
Compared to Event 3	*****	*****	*****	1	-1	1	1	1			3
Compared to Event 4	*****	*****	*****	*****	-1	1	1	1			2
Compared to Event 5	*****	*****	*****	*****	*****	1	1	1			3
Compared to Event 6	*****	*****	*****	*****	*****	*****	0	0			0
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	0			0
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****			
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = 9

Statistical Confidence Level

>90% Confidence

I S I ≥ 11

Result No Trend

>95% Confidence

I S I ≥ 15

Result No Trend

WEST CENTERLINE - MW-26B - BENZENE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- Benzene
Well-- MW-26B

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	31	34	25	144	100	140	110	94	110		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	-1	1	1	1	1	1	1		6
Compared to Event 2	*****	*****	-1	1	1	1	1	1	1		5
Compared to Event 3	*****	*****	*****	1	1	1	1	1	1		6
Compared to Event 4	*****	*****	*****	*****	-1	-1	-1	-1	-1		-5
Compared to Event 5	*****	*****	*****	*****	*****	1	1	-1	1		2
Compared to Event 6	*****	*****	*****	*****	*****	*****	-1	-1	-1		-3
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	0		-1
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	1		1
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = 11

Statistical Confidence Level

>90% Confidence

I S I ≥ 13

Result No Trend

>95% Confidence

I S I ≥ 17

Result No Trend

WEST CENTERLINE - MW-26B - MTBE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- MTBE
Well-- MW-26B

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	112	114	168	221	210	270	230	170	200		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	1	1	1	1	1	1	1		8
Compared to Event 2	*****	*****	1	1	1	1	1	1	1		7
Compared to Event 3	*****	*****	*****	1	1	1	1	1	1		6
Compared to Event 4	*****	*****	*****	*****	-1	1	1	-1	-1		-1
Compared to Event 5	*****	*****	*****	*****	*****	1	1	-1	-1		0
Compared to Event 6	*****	*****	*****	*****	*****	*****	-1	-1	-1		-3
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1		-2
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	1		1
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = 16

Statistical Confidence Level

>90% Confidence

I S I ≥ 13

Result Increasing Trend

>95% Confidence

I S I ≥ 17

Result No Trend

WEST CENTERLINE - MW-33B - BENZENE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- Benzene
Well-- MW-33B

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	1,040	1,000	1	974	760	670	540	520	340		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	-1	-1	-1	-1	-1	-1	-1	-1		-8
Compared to Event 2	*****	*****	-1	-1	-1	-1	-1	-1	-1		-7
Compared to Event 3	*****	*****	*****	1	1	1	1	1	1		6
Compared to Event 4	*****	*****	*****	*****	-1	-1	-1	-1	-1		-5
Compared to Event 5	*****	*****	*****	*****	*****	-1	-1	-1	-1		-4
Compared to Event 6	*****	*****	*****	*****	*****	*****	-1	-1	-1		-3
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1		-2
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	-1		-1
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -24

Statistical Confidence Level

>90% Confidence

I S I ≥ 13

Result Decreasing Trend

>95% Confidence

I S I ≥ 17

Result Decreasing Trend

WEST CENTERLINE - MW-33B - MTBE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- MTBE
Well-- MW-33B

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	770	744	698	653	520	400	410	400	230		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	-1	-1	-1	-1	-1	-1	-1	-1		-8
Compared to Event 2	*****	*****	-1	-1	-1	-1	-1	-1	-1		-7
Compared to Event 3	*****	*****	*****	-1	-1	-1	-1	-1	-1		-6
Compared to Event 4	*****	*****	*****	*****	-1	-1	-1	-1	-1		-5
Compared to Event 5	*****	*****	*****	*****	*****	-1	-1	-1	-1		-4
Compared to Event 6	*****	*****	*****	*****	*****	*****	1	0	-1		0
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1		-2
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	-1		-1
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -33

Statistical Confidence Level

>90% Confidence

I S I ≥ 13

Result Decreasing Trend

>95% Confidence

I S I ≥ 17

Result Decreasing Trend

ATTACHMENT B

Mann-Kendall Analysis Tables – East Centerline

EAST CENTERLINE - MW-22 - BENZENE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- Benzene
Well-- MW-22

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	5,620	7,960	8,790	6,860	7,900	2,400	7,000	4,900	1,100		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	1	1	1	-1	1	-1	-1		2
Compared to Event 2	*****	*****	1	-1	-1	-1	-1	-1	-1		-5
Compared to Event 3	*****	*****	*****	-1	-1	-1	-1	-1	-1		-6
Compared to Event 4	*****	*****	*****	*****	1	-1	1	-1	-1		-1
Compared to Event 5	*****	*****	*****	*****	*****	-1	-1	-1	-1		-4
Compared to Event 6	*****	*****	*****	*****	*****	*****	1	1	-1		1
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1		-2
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	-1		-1
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -16

Statistical Confidence Level

>90% Confidence

I S I ≥ 13

Result Decreasing Trend

>95% Confidence

I S I ≥ 17

Result No Trend

EAST CENTERLINE - MW-22 - MTBE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- MTBE
Well-- MW-22

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	866	1,620	1,780	2,020	1,100	570	1,000	710	1,100		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	1	1	1	-1	1	-1	1		4
Compared to Event 2	*****	*****	1	1	-1	-1	-1	-1	-1		-3
Compared to Event 3	*****	*****	*****	1	-1	-1	-1	-1	-1		-4
Compared to Event 4	*****	*****	*****	*****	-1	-1	-1	-1	-1		-5
Compared to Event 5	*****	*****	*****	*****	*****	-1	-1	-1	0		-3
Compared to Event 6	*****	*****	*****	*****	*****	*****	1	1	1		3
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	1		0
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	1		1
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -7

Statistical Confidence Level

>90% Confidence		**>95% Confidence**	
I S I ≥	13	**I S I ≥**	17
Result	No Trend	**Result**	No Trend

EAST CENTERLINE - GP-39A - BENZENE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- Benzene
Well-- GP-39A

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	7	905	721	995	1,570	2,500	2,600	2,300	2,100	2,100	10
	--	--	--	--	--	--	--	--	--		**Sum**
Compared to Event 1	*****	1	1	1	1	1	1	1	1	1	9
Compared to Event 2	*****	*****	-1	1	1	1	1	1	1	1	6
Compared to Event 3	*****	*****	*****	1	1	1	1	1	1	1	7
Compared to Event 4	*****	*****	*****	*****	1	1	1	1	1	1	6
Compared to Event 5	*****	*****	*****	*****	*****	1	1	1	1	1	5
Compared to Event 6	*****	*****	*****	*****	*****	*****	1	-1	-1	-1	-2
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1	-1	-3
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	-1	-1	-2
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****	0	

Mann-Kendall Statistic 'S' = 26

Statistical Confidence Level

>90% Confidence

I S I ≥ 15

Result Increasing Trend

>95% Confidence

I S I ≥ 20

Result Increasing Trend

EAST CENTERLINE - GP-39A - MTBE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- MTBE
Well-- GP-39A

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	3,200	3,550	2,490	3,360	5,960	6,500	5,800	5,200	5,400	4,800	10
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	-1	1	1	1	1	1	1	1	7
Compared to Event 2	*****	*****	-1	-1	1	1	1	1	1	1	4
Compared to Event 3	*****	*****	*****	1	1	1	1	1	1	1	7
Compared to Event 4	*****	*****	*****	*****	1	1	1	1	1	1	6
Compared to Event 5	*****	*****	*****	*****	*****	1	-1	-1	-1	-1	-3
Compared to Event 6	*****	*****	*****	*****	*****	*****	-1	-1	-1	-1	-4
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1	-1	-3
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	1	-1	0
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****	-1	-1

Mann-Kendall Statistic 'S' = 13

Statistical Confidence Level

>90% Confidence

I S I ≥ 15

Result No Trend

>95% Confidence

I S I ≥ 20

Result No Trend

EAST CENTERLINE - MW-47 - BENZENE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- Benzene
Well-- MW-47

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	116	315	459	380	240	260	360	230			8
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	1	1	1	1	1	1			7
Compared to Event 2	*****	*****	1	1	-1	-1	1	-1			0
Compared to Event 3	*****	*****	*****	-1	-1	-1	-1	-1			-5
Compared to Event 4	*****	*****	*****	*****	-1	-1	-1	-1			-4
Compared to Event 5	*****	*****	*****	*****	*****	1	1	-1			1
Compared to Event 6	*****	*****	*****	*****	*****	*****	1	-1			0
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1			-1
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****			
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -2

Statistical Confidence Level

>90% Confidence

I S I ≥ 11

Result No Trend

>95% Confidence

I S I ≥ 15

Result No Trend

EAST CENTERLINE - MW-47 - MTBE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- MTBE
Well-- MW-47

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	27	18	13	22	58	1	1	15			8
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	-1	-1	-1	1	-1	-1	-1			-5
Compared to Event 2	*****	*****	-1	1	1	-1	-1	-1			-2
Compared to Event 3	*****	*****	*****	1	1	-1	-1	1			1
Compared to Event 4	*****	*****	*****	*****	1	-1	-1	-1			-2
Compared to Event 5	*****	*****	*****	*****	*****	-1	-1	-1			-3
Compared to Event 6	*****	*****	*****	*****	*****	*****	0	1			1
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	1			1
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****			
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -9

Statistical Confidence Level

>90% Confidence

I S I ≥ 11

Result No Trend

>95% Confidence

I S I ≥ 15

Result No Trend

EAST CENTERLINE - GP-2E(45-50) - BENZENE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- Benzene
Well-- GP-2E(45-50)

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	117	189	172	134	71	78	50	34	8	1	10
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	1	1	-1	-1	-1	-1	-1	-1	-3
Compared to Event 2	*****	*****	-1	-1	-1	-1	-1	-1	-1	-1	-8
Compared to Event 3	*****	*****	*****	-1	-1	-1	-1	-1	-1	-1	-7
Compared to Event 4	*****	*****	*****	*****	-1	-1	-1	-1	-1	-1	-6
Compared to Event 5	*****	*****	*****	*****	*****	1	-1	-1	-1	-1	-3
Compared to Event 6	*****	*****	*****	*****	*****	*****	-1	-1	-1	-1	-4
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1	-1	-3
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	-1	-1	-2
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****	-1	-1

Mann-Kendall Statistic 'S' = -37

Statistical Confidence Level

>90% Confidence

I S I ≥ 15

Result Decreasing Trend

>95% Confidence

I S I ≥ 20

Result Decreasing Trend

EAST CENTERLINE - GP-2E(45-50) - MTBE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- MTBE
Well-- GP-2E(45-50)

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	522	610	803	501	394	420	400	470	330	370	10
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	1	-1	-1	-1	-1	-1	-1	-1	-5
Compared to Event 2	*****	*****	1	-1	-1	-1	-1	-1	-1	-1	-6
Compared to Event 3	*****	*****	*****	-1	-1	-1	-1	-1	-1	-1	-7
Compared to Event 4	*****	*****	*****	*****	-1	-1	-1	-1	-1	-1	-6
Compared to Event 5	*****	*****	*****	*****	*****	1	1	1	-1	-1	1
Compared to Event 6	*****	*****	*****	*****	*****	*****	-1	1	-1	-1	-2
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	1	-1	-1	-1
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	-1	-1	-2
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****	1	1

Mann-Kendall Statistic 'S' = -27

Statistical Confidence Level

>90% Confidence

I S I ≥ 15

Result Decreasing Trend

>95% Confidence

I S I ≥ 20

Result Decreasing Trend

EAST CENTERLINE - MW-25B - BENZENE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- Benzene
Well-- MW-25B

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	456	1	403	470	320	340	180	240			8
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	-1	-1	1	-1	-1	-1	-1			-5
Compared to Event 2	*****	*****	1	1	1	1	1	1			6
Compared to Event 3	*****	*****	*****	1	-1	-1	-1	-1			-3
Compared to Event 4	*****	*****	*****	*****	-1	-1	-1	-1			-4
Compared to Event 5	*****	*****	*****	*****	*****	1	-1	-1			-1
Compared to Event 6	*****	*****	*****	*****	*****	*****	-1	-1			-2
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	1			1
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****			
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -8

Statistical Confidence Level

>90% Confidence

I S I ≥ 11

Result No Trend

>95% Confidence

I S I ≥ 15

Result No Trend

EAST CENTERLINE - MW-25B - MTBE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- MTBE
Well-- MW-25B

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	502	386	461	550	370	490	310	350			8
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	-1	-1	1	-1	-1	-1	-1			-5
Compared to Event 2	*****	*****	1	1	-1	1	-1	-1			0
Compared to Event 3	*****	*****	*****	1	-1	1	-1	-1			-1
Compared to Event 4	*****	*****	*****	*****	-1	-1	-1	-1			-4
Compared to Event 5	*****	*****	*****	*****	*****	1	-1	-1			-1
Compared to Event 6	*****	*****	*****	*****	*****	*****	-1	-1			-2
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	1			1
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****			
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -12

Statistical Confidence Level

>90% Confidence

I S I ≥ 11

Result Decreasing Trend

>95% Confidence

I S I ≥ 15

Result No Trend

EAST CENTERLINE - MW-27B - BENZENE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- Benzene
Well-- MW-27B

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	193	142	146	168	150	200	82	34	37		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	-1	-1	-1	-1	1	-1	-1	-1		-6
Compared to Event 2	*****	*****	1	1	1	1	-1	-1	-1		1
Compared to Event 3	*****	*****	*****	1	1	1	-1	-1	-1		0
Compared to Event 4	*****	*****	*****	*****	-1	1	-1	-1	-1		-3
Compared to Event 5	*****	*****	*****	*****	*****	1	-1	-1	-1		-2
Compared to Event 6	*****	*****	*****	*****	*****	*****	-1	-1	-1		-3
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1		-2
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	1		1
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -14

Statistical Confidence Level

>90% Confidence

I S I ≥ 13

Result Decreasing Trend

>95% Confidence

I S I ≥ 17

Result No Trend

EAST CENTERLINE - MW-27B - MTBE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- MTBE
Well-- MW-27B

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	534	507	417	451	370	530	310	240	240		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	-1	-1	-1	-1	-1	-1	-1	-1		-8
Compared to Event 2	*****	*****	-1	-1	-1	1	-1	-1	-1		-5
Compared to Event 3	*****	*****	*****	1	-1	1	-1	-1	-1		-2
Compared to Event 4	*****	*****	*****	*****	-1	1	-1	-1	-1		-3
Compared to Event 5	*****	*****	*****	*****	*****	1	-1	-1	-1		-2
Compared to Event 6	*****	*****	*****	*****	*****	*****	-1	-1	-1		-3
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1		-2
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	0		
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = -25

Statistical Confidence Level

>90% Confidence

I S I ≥ 13

Result Decreasing Trend

>95% Confidence

I S I ≥ 17

Result Decreasing Trend

EAST CENTERLINE - MW-53 - BENZENE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- Benzene
Well-- MW-53

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	1	1	1	4	54	15	61	17	23		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	0	0	1	1	1	1	1	1		6
Compared to Event 2	*****	*****	0	1	1	1	1	1	1		6
Compared to Event 3	*****	*****	*****	1	1	1	1	1	1		6
Compared to Event 4	*****	*****	*****	*****	1	1	1	1	1		5
Compared to Event 5	*****	*****	*****	*****	*****	-1	1	-1	-1		-2
Compared to Event 6	*****	*****	*****	*****	*****	*****	1	1	1		3
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1		-2
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	1		1
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = 23

Statistical Confidence Level

>90% Confidence

I S I ≥ 13

Result Increasing Trend

>95% Confidence

I S I ≥ 17

Result Increasing Trend

EAST CENTERLINE - MW-53 - MTBE

Mann-Kendall Statistical Method Worksheet

Site-- Chillum
Compound-- MTBE
Well-- MW-53

	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Events
Concentration	66	97	88	103	240	110	270	160	160		9
	--	--	--	--	--	--	--	--	--	--	**Sum**
Compared to Event 1	*****	1	1	1	1	1	1	1	1		8
Compared to Event 2	*****	*****	-1	1	1	1	1	1	1		5
Compared to Event 3	*****	*****	*****	1	1	1	1	1	1		6
Compared to Event 4	*****	*****	*****	*****	1	1	1	1	1		5
Compared to Event 5	*****	*****	*****	*****	*****	-1	1	-1	-1		-2
Compared to Event 6	*****	*****	*****	*****	*****	*****	1	1	1		3
Compared to Event 7	*****	*****	*****	*****	*****	*****	*****	-1	-1		-2
Compared to Event 8	*****	*****	*****	*****	*****	*****	*****	*****	0		0
Compared to Event 9	*****	*****	*****	*****	*****	*****	*****	*****	*****		

Mann-Kendall Statistic 'S' = 23

Statistical Confidence Level

>90% Confidence

I S I ≥ 13

Result Increasing Trend

>95% Confidence

I S I ≥ 17

Result Increasing Trend