JC

January 20, 2015

Mr. Jonathan Hazen, P.G.
PA Department of Environmental Protection
Environmental Cleanup
208 West Third Street, Suite 101
Williamsport, PA 17701

RE: Remedial Action Progress Report (Fourth Quarter of 2014)
Former D D Garage / Root Oil Facility
Main Street
Knoxville, PA 16928
PADEP Facility ID #59-11706

Dear Mr. Hazen,

Enclosed please find the Fourth Quarter of 2014 Remedial Action Progress Report for the above referenced facility. Should you have any questions regarding the report, or any other aspect of the project, please feel free to contact me at 814.303.2536 or Chris@JuniataGeo.com.

Sincerely,
Juniata Geosciences, LLC

Christopher C. Luedeker
Project Scientist

Enclosure

Cc: Mr. Don Root, Root Oil Company
Ms. Jolene Cramer, ICF International

Corrective Action Process Report/Plan Cover Sheet

CHAPTER 245
STORAGE TANK ACT

(check all that apply to the enclosed submission)

☐ **Site Characterization Report – Section 245.310(b)**

☐ **Site Characterization Report – Site-Specific Standard**

☐ **Site Characterization Report – Statewide Health or Background Standard**

☐ **Site Characterization Report PLUS – Statewide Health Standard**

☐ **Remedial Action Plan – Statewide Health or Background Standard**

☐ **Remedial Action Plan – Site Specific Standard**

☒ **Remedial Action Progress Report**

☐ **Remedial Action Completion Report – Statewide Health or Background Standard**

☐ **Remedial Action Completion Report – Site-Specific Standard**

☐ **Post Remediation Care Plan Report**

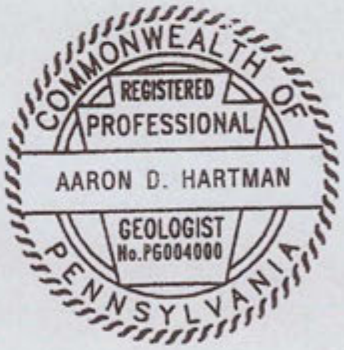
☐ **Environmental Covenant**

Facility Name	Former D D Garage
Facility ID Number	59-11706
Facility Address	Main St.
	Knoxville
	Tioga County

REMEDIAL ACTION PROGRESS REPORT
FOURTH QUARTER OF 2014
FORMER D&D GARAGE
PADEP FACILITY ID #59-11706

Prepared for
Mr. Don Root
Root Oil Company

Prepared by



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Submitted on
January 20, 2015

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ABBREVIATIONS AND ACRONYMS

BGS – Below Ground Surface
Juniata – Juniata Geosciences, LLC
µg/l – Micrograms per liter (parts per billion)
mg/l – Milligrams per liter (parts per million)
MSC – Media Specific Concentration
MTBE – Methyl tert-Butyl Ether
PADEP – Pennsylvania Department of Environmental Protection
PID – Photoionization Detector
POC – Point of Compliance
RAP – Remedial Action Plan
RAPR – Remedial Action Progress Report
RACR – Remedial Action Closure Report
ROL – Relief of Liability
Root – Root Oil Company
SCR – Site Characterization Report
SHS – Residential Statewide Health Standard
SRS – Sensitive Receptor Survey
TOC – Top of Casing
TMB – Trimethyl Benzene
UST – Underground Storage Tank

EXECUTIVE SUMMARY

Juniata is pleased to present this RAPR for the former DD Garage site located at 156 Main St., Knoxville, Pennsylvania. This RAPR includes the data collected during the fourth quarter of 2014 including the December 3, 2014, groundwater sampling event and additional site characterization activities.

Environmental site characterization activities were conducted in accordance with PADEP UST regulations outlined in Title 25, Chapter 245 at the Former DD Garage Facility owned by Root Oil located in Knoxville, Pennsylvania. The Site characterization was prompted due to an unleaded gasoline release identified during UST removal activities in July 2012.

A SCR was submitted on January 20, 2014. To date, characterization activities included installation of soil borings, soil vapor points, and monitoring wells, the collection and analysis of soil, soil gas, and groundwater samples, the measurement of groundwater elevations, creation of groundwater elevation contour maps, and the creation of contaminant isoconcentration maps.

Characterization results consist of the following:

- The overall groundwater gradient in the overburden aquifer is to the southeast. MW-1 and MW-3 are the site's down gradient POC wells.
- The UST Closure Report identified benzene, toluene, ethyl benzene, xylenes, naphthalene, 1,2,4-TMB, and 1,3,5-TMB in unsaturated soil at concentrations greater than their PADEP SHS.
- Initial soil borings collected by Juniata, identified 1,2,4-TMB and 1,3,5-TMB in unsaturated soil above PADEP SHS.
- Samples collected from down gradient POC monitoring wells MW-1, MW-3, and MW-6 have been reported to contain benzene, ethyl benzene, xylenes (total), MTBE, naphthalene, 1,2,4-TMB, and 1,3,5-TMB at concentrations greater than the PADEP SHS.
- Additional characterization of the Site's soil and groundwater was conducted during the fourth quarter of 2014. Two additional monitoring wells (and associated soil borings), MW-7 and MW-8, were installed on November 18, 2014.
- Down gradient off Site wells, MW-7 and MW-8, did not contain contaminants at concentrations greater than the lab detection limits during the fourth quarter 2014 groundwater sampling event.

Additional characterization of the site's soil and groundwater was conducted during the fourth quarter of 2014. The attainment standard for the site is currently SHS in a residential setting for unleaded gasoline short list parameters including: benzene, toluene, ethyl benzene, total xylenes, MTBE, cumene, naphthalene, 1,2,4-TMB, and 1,3,5-TMB. The Site impacts are considered

completely delineated at this time, based on off Site access limitations. Juniata was granted off Site access by the Knoxville Borough and installed two additional monitoring wells and two soil borings on November 18, 2014.

1.0 INTRODUCTION

Juniata was retained by Root Oil to complete site characterization activities for their former retail gasoline and service garage facility (former DD Garage), located on West Main Street in Knoxville Borough, Tioga County, Pennsylvania. The site characterization was prompted due to an unleaded gasoline release observed during UST removal activities completed in July 2012. The majority of the impacted soil was observed under the former dispenser area. No soil or groundwater impacts were identified in the UST field.

Site characterization activities, including installation of soil borings, installation of soil vapor points, installation of groundwater monitoring wells, and the collection of soil, soil vapor, and groundwater samples have occurred. These events were completed from August 2013 through December 2014. Site characterization is complete, based on off Site access limitations. On Site down-gradient POC wells indicate benzene, ethyl benzene, MTBE, naphthalene, 1,2,4-TMB, and 1,3,5-TMB groundwater plumes have potentially migrated off Site. Off Site down-gradient wells, MW-7 and 8, indicated no impact of contaminants of concern above laboratory detection limits.

The following RAPR includes data generated during the reporting period (fourth quarter of 2014). It also describes the progress to date towards attainment of the SHS for groundwater. Per §245.312 Remedial Action, at minimum this report contains the following necessary elements based on the nature, extent, type, volume, and/or complexity of the release.

- Summary of remedial progress made during the reporting period,
- Depth to water measurements collected from the monitoring wells,
- Groundwater contour maps depicting groundwater flow direction,
- Quantitative analytical results from groundwater sampling,

This report is organized as follows:

- Section 2.0 Project History which reviews the site characterization activities and remedial approach to the site,
- Section 3.0 Groundwater Monitoring reviews the analytical results from the fourth quarter of 2014 groundwater sampling event as well as how they show progress towards obtaining the remedial goals for the site, and
- Section 4.0 Additional Site Characterization Activities, and
- Section 5.0 Summary and Recommendations reviews the results of the groundwater sampling events and the currently recommended path to closure.

2.0 PROJECT HISTORY

2.1 Site History and Summary of Characterization Activities

Based on a file review on February 1, 2013, as well as correspondence with Professional Petroleum Company (Professional) who removed three USTs at the time of the July 2012 release and Mr. Don Root (Claimant), the following summarizes the known historic and current status of UST(s) and AST(s) at the site.

- November 23, 1989 – Four USTs (Tanks #001 through #004) are registered. They include: two 4,000-gallon unleaded gasoline tanks (Tanks #001 and #002), one 2,000-gallon gasoline tank (Tank #003), and one 1,000-gallon kerosene tank (Tank #004). The locations of all four tanks are shown on the attached Figure 2 – Site Base Map. It includes the locations of three unleaded gasoline dispensers and product piping.
- November 20, 1998 – A UST upgrade occurred which included replacement of bare steel product lines with "flexible non-metallic" piping between tanks #001 through #003 and the three dispensers. During line replacement, 13.64 tons of impacted soil from beneath the lines was excavated and disposed of off Site.
- January 13, 1999 – A PADEP phone log between Phil Zechman (PADEP) and the Claimant shows the Claimant had the kerosene tank (Tank #004) grouted and closed in place sometime in the 1980s.
- June 9, 1999 – PADEP issued a relief of liability for the November 20, 1998, release.
- June 6, 2003 – A PADEP letter identifies the tanks (#001 through #003) are in T-status (temporarily out of use).
- February 11, 2008 – PADEP issued an NOV stating that Tank #001 contained 3.5 inches of water and Tank #001 contained 1.25 inches of water with a trace amount of product. T-status tanks can only contain 1 inch of residue. The vent pipes were also removed and needed to be replaced if tanks would remain in T-status.
- March 6, 2008 – PADEP documented that Brooks Petroleum had pumped the tanks out, repaired the tank tops, and replaced the vent pipes on February 22, 2008, in order to be compliant.
- July 25, 2012 – Professional removed Tanks #001 through #003. Tank #004 was considered a ghost tank and left in place due to its proximity to the sidewalk and Main Street. The product lines and dispensers were also removed. Impacted soil was identified in the associated laboratory report under the three dispenser locations. The water within the tank field was reported to contain a sheen, but no detections above laboratory detection limits or PADEP SHS were identified in the laboratory report. This UST Closure Report is included in Appendix IV – UST Closure Report.
- May 13, 2013 – Juniata installed six soil borings (SB-1 through SB-6). Soil impact above PADEP SHS was observed.

- August 12 – 13, 2013 – Juniata installed of five monitoring wells (MW-1 through MW-5). All wells were drilled to a nominal depth of 20 feet bgs. Sample results indicated impact above PADEP SHS in Site POC wells.
- January 20, 2014 – Juniata submitted the SCR to PADEP for review and approval.
- February 4, 2014 – Juniata installed MW-6 to further delineate the contamination. Soil vapor points SVP-1 and SVP-2 were installed during this event to delineate soil gas on Site.
- February 19, 2014 – Juniata completes the initial soil vapor sampling event.
- March 30, 2014 – Juniata completed a second soil vapor sampling event.
- August 19, 2014 – Juniata completed the third quarter of 2014 groundwater sampling event.
- November 18, 2014 - Juniata installed two monitoring wells (MW-7 and MW-8). Both wells were drilled to a nominal depth of 20 feet bgs. Sample results indicated no impacts greater than the Laboratory Detection Limits.
- December 3, 2014 – Juniata completed the fourth quarter of 2014 groundwater sampling event.

3.0 GROUNDWATER MONITORING

The following section describes the groundwater gauging and analytical results from the groundwater sampling event which took place on December 3, 2014. These results are also used to aid in determining an effective remedial strategy to obtain the remedial goals for the Site.

3.1 Groundwater Elevations

Prior to sampling, depth to water measurements were collected in order to calculate groundwater elevations, direction of groundwater flow, and hydraulic gradients. The following summarizes the December 3, 2014, gauging event data:

- Groundwater elevations ranged from 90.63 in MW-1 to 89.22 in MW-8,
- Direction of groundwater flow is towards the southeast.
- Hydraulic gradient was 0.007 feet/foot as measured along groundwater flow direction in the area between the MW-6 and MW-4.

The December 2014 depth to water and groundwater elevation data is included in Appendix I, Table 1 – Groundwater Sampling Results as well as Table 2 – Historic Groundwater Sampling Results. A groundwater contour map for the December 3, 2014, groundwater gauging event is included in Appendix II, Figure 2.

3.2 Groundwater Analytical Results

The site was sampled during the fourth quarter of 2014 on December 3, 2014, by Juniata. Eight monitoring wells, a blind duplicate of MW-1 (labeled MW-X), equipment blank, and a trip blank were sampled and analyzed for PADEP's "New" list for unleaded gasoline and kerosene parameters including benzene, toluene, ethyl benzene, xylenes (total), cumene, MTBE, naphthalene, 1,2,4-TMB, and 1,3,5-TMB. The results are as follows:

- MW-1 contained benzene, ethyl benzene, xylenes (total), naphthalene, 1,2,4-TMB and 1,3,5-TMB (6.40, 1,590, 10,500, 448, 3,630, and 929 µg/l, respectively) at concentrations greater than their PADEP SHS (5, 700, 10,000, 100, 15, and 13 µg/l, respectively),
- MW-3 contained benzene, ethyl benzene, naphthalene, 1,2,4-TMB, and 1,3,5-TMB (6.80, 1,100, 375, 2,770, and 731 µg/l, respectively) at concentrations greater than their PADEP SHS (5, 700, 100, 15, and 13 µg/l, respectively),
- MW-6 contained MTBE (108 µg/l) at a concentration greater than PADEP SHS (20 µg/l),
- MW-X (a blind duplicate of MW-1) contained benzene, ethyl benzene, xylenes (total), naphthalene, 1,2,4-TMB and 1,3,5 TMB (6.00, 1,710, 11,500, 450, 3,940, and 892 µg/l, respectively) at concentrations greater than their PADEP SHS (5, 700, 10,000, 100, 15, and 13 µg/l, respectively),

- The Trip Blank was reported to have no contaminants detected above the laboratory detection limit, and
- The Equipment Blank was reported to have no contaminant detects above the above laboratory detection limits with the exception of ehtyl benzene, xylenes (total), naphthalene, 1,2,4-TMB and 1,3,5-TMB. One contaminant, 1,2,4-TMB was detected above the PADEP SHS, and
- All other contaminant concentrations were below the PADEP SHS and/or below the laboratory detection limit.

Results of the December 3, 2014, groundwater sampling event are included in Appendix I, Table 1 – Groundwater Sampling Results as well as Table 2 – Historic Groundwater Sampling Results. The laboratory analytical reports are included in Appendix III.

3.3 Progress Towards Remedial Goals

One line of evidence was considered when determining if progress towards the Site's remedial goals are being met: *overall* unleaded gasoline contaminant trends. This line of evidence is the primary method to identify if contaminants are entering the groundwater at rates greater or less than the rate at which natural attenuation is occurring. A review of the *recent* and *overall* unleaded gasoline contaminant trends is discussed below.

3.3.1 Unleaded Gasoline Contaminant Trend Analysis

A contaminant trend analysis was performed for each well which currently or historically (since August 2013) contained at least one contaminant concentration greater than its PADEP SHS. For the purpose of this report, the analysis is based on the most recent four quarters of data collected from August 2013 through the most recent quarter of groundwater sampling (fourth quarter of 2014).

Charts were created using the analytical data and depth to groundwater. These charts are linear plots with contaminant concentrations and groundwater elevations on opposite y-axes. The sample dates are on the X-axis. These charts were created for fourteen contaminant/well pairs including benzene in MW-1 and MW-3, ethyl benzene in MW-1 and MW-3, xylenes (total) in MW-1, MTBE in MW-1, MW-3 and MW-6, naphthalene in MW-1 and MW-3, 1,2,4-TMB, in MW-1 and MW-3, and 1,3,5-TMB in MW-1 and MW-3. The charts are included as Chart 1 through 14 in Appendix IV. A second set of charts show the same contaminant concentrations versus only the groundwater elevations in order to identify if groundwater fluctuations are influencing contaminant trends (increasing, decreasing, or oscillating). These charts are also included in Appendix IV, Charts 15 through 28. Results of both analyses are broken down in Appendix I, Table 3 – Contaminant Trend Summary and are summarized as follows:

- Twelve contaminant concentrations were above their PADEP SHS during the fourth quarter of 2014 (benzene in MW-1 and 3, ethyl benzene in MW-1 and 3, xylenes (total) in MW-1, MTBE in MW- 6, naphthalene in MW-1 and 3, 1,2,4-TMB in MW-1 and 3, and 1,3,5-TMB in MW-1 and 3),
- *Recent* trends during the fourth quarter of 2014 compared to the third quarter of 2014 show eight of the fourteen contaminant/well pairs (ethyl benzene in MW-1 and 3, xylenes (total) in MW-1, 1,2,4-TMB in MW-1 and 3, 1,3,5-TMB in MW-3, and MTBE in MW-3 and 6) increased and six of the fourteen contaminant/well pairs decreased (benzene in MW-1 and 3, MTBE in MW-1, naphthalene in MW-1 and 3, and 1,3,5-TMB in MW-1),
- *Overall* contaminant vs. time trends using data from August 2013 through December 2014 shows four of the fourteen contaminant/well pairs are decreasing. Ethyl benzene concentrations in MW-1 and 3, xylenes (total) concentrations in MW-1, MTBE concentrations in MW-6, naphthalene concentrations in MW-1 and 3, 1,2,4-TMB concentrations in MW-1 and 3, and 1,3,5-TMB concentrations in MW-1 and 3 are all increasing *overall* trends,
- *Overall* R-squared values for contaminant vs. time charts ranged from 0.9430 (1,2,4-TMB in MW-3) to 0.0012 (benzene in MW-3), and
- There appears to be some correlation between contaminant concentrations and depth to groundwater with the highest R-squared value of 0.9437 (MTBE in MW-6) to the lowest of 0.00001 (ethyl benzene in MW-3) with an average of 0.1786. Eight of the analyzed contaminant/well pairs showed *higher* contaminant concentrations with *lower* groundwater elevations while six contaminant/well pairs showed *lower* contaminant concentrations with *lower* groundwater elevations.

Based on this data, it appears natural attenuation of unleaded gasoline parameters occurred at a rate less than the overall dissolution of these contaminants into the groundwater during the period between the third quarter of 2014 and fourth quarter of 2014 sampling events. In general the plumes increased or remained stable. These results are summarized in Appendix I, Table 3– Contaminant Trend Summary.

4.0 Additional Site Characterization Activities

In order to further assess the extent of soil and groundwater impacts, Juniata installed two additional soil borings and monitoring wells on November 18, 2014. Juniata was granted off Site access by the Knoxville Borough and installed monitoring wells MW-7 and 8 off Site and down gradient of the source area. The monitoring wells were sampled in December 2014.

4.1 Investigation Methods

The following sample collection methods were utilized during site characterization activities. Soft digging with air knife technology was completed on each soil boring and well location to a depth of five feet bgs in accordance with Juniata's site specific health and safety plan.

4.1.1 Soil

Juniata collected soil samples during the November 14, 2014, soil boring and monitoring well installation event.

Soil borings and monitoring wells were installed using a Geoprobe® rig with HSA and direct push technology. Soil samples were collected using five foot long polyethylene sampling tubes. The soil was screened using a PID to measure levels of volatile organic compounds. Soil samples were collected at the highest PID reading. If no PID readings were noted, a sample was collected at the soil / water interface. Soil samples were collected using appropriate laboratory bottleware and Chain of Custody procedures. Samples were analyzed for the PA short list of unleaded gasoline constituents (benzene, toluene, ethyl-benzene, total xylenes, MTBE, naphthalene, cumene, 1,2,4-TMB, and 1,3,5-TMB) via EPA method 5035 and 8260B.

Soil generated during site characterization activities was containerized in steel 55 gallon drums for disposal. Disposal of the soil cuttings was performed by Environmental Waste Minimization, Inc. (Northhampton, PA) on January 14, 2014. Waste manifests are included Appendix V.

On November 18, 2014, Juniata completed the installation of two monitoring wells (MW-7 and MW-8) at the site to further address the extent of unleaded gasoline groundwater impacts. The continuous soil borings (MW-7 and MW-8) were installed to a depth of approximately 20 feet bgs.

A total of two soil samples were collected during the November 18, 2014, monitoring well installation event. Soil samples were collected at a depth of 7 feet bgs (interpreted top of water table) in each monitoring well. Each soil sample was analyzed by Fairway for the PA Short list of unleaded gasoline constituents via EPA method 5035/8260B.

Boring locations can be found in Appendix II, Figure 1 - Site Base Map. The boring logs, including lithology, sample locations, and PID readings can be found in Appendix VI – Soil Boring and Monitoring Well Construction Logs.

4.1.2 Groundwater

Monitoring wells were installed with a Geoprobe® using HSA technology (4.25-inch ID augers). Two-inch PVC screen and riser was used to construct the wells within each boring. Each was constructed with 15 feet of 2-inch 10-slot PVC screen across the water table from 5 to 20 feet bgs. #1 Well Grade Sand was installed in the annulus from the total depth to two feet above the top of the screen. Bentonite was used to one foot below grade and an 8-inch flush mount and locking well plug was placed within a two foot diameter concrete collar.

On November 18, 2014, MW-7 and MW-8 were installed. Groundwater monitoring well locations can be found in Appendix II, Figure 2 - Site Base Map. Each monitoring well was drilled to approximately 20 feet bgs. Monitoring well logs can be found in Appendix VI – Soil Boring and Monitoring Well Construction Logs.

Wells were developed to remove fines and sediment from around the well screen. Development procedures consisted of surging the well with a surge block and subsequently purging the disturbed water with a submersible pump. This process was repeated until well water was free of sediment. The water removed during the development procedures was filtered through an onsite granular activated carbon filtration system consisting of a 50 micron bag filter and 30-gallon carbon vessel prior to discharge to the ground surface. Groundwater monitoring wells were surveyed by a Licensed Professional Surveyor following installation activities.

The wells were allowed to stabilize for two weeks prior to sampling. Prior to sampling on December 3, 2014, Juniata collected a full round of liquid levels from the monitoring well network. The liquid level measurements were completed with an electronic oil/water interface probe capable of measuring to the nearest 0.01 feet. Each measurement was from a pre-determined measuring point at the top of the PVC riser. The depth to water was subtracted from the measuring point elevation to obtain a water level elevation which was correlated between all monitoring wells to determine a direction of groundwater flow as well as a hydraulic gradient.

After the full round of liquid levels were measured, groundwater samples were collected from the entire monitoring well network. The groundwater sampling events included:

- A three well volume purge method in accordance with generally accepted practices as outlined in the final version of the PADEP Groundwater Monitoring Guidance Manual.
- Prior to the collection of groundwater samples, the water column in each site monitoring well was purged by removal of three volumes of the water column using a variable speed submersible pump.
- All non-dedicated purging and sampling equipment was decontaminated between wells in accordance with generally accepted industry practices including a wash in an Alconox solution and clean water rinse. New polyethylene tubing was used at each well location.

- Following purging activities, the pumping rate was reduced to approximately 100 milliliters per minute and a sample was collected directly from the tubing into laboratory supplied bottleware. This method is consistent with the final version of the PADEP Groundwater Monitoring Guidance Manual (i.e. preferred method of using the same equipment to sample the well as was used to purge the well) and limits aeration of the sample by removal of the pump and then bailing a sample.
- The purge water was run through a bag type filter, a granular activated carbon treatment system, and then discharged to the ground surface per the PADEP Northwest Regional Office requirements.
- Samples were properly handled under chain of custody documentation protocol and kept cold on ice from sample collection until the samples were relinquished to Fairway (a Pennsylvania Certified Analytical Laboratory).
- Samples were analyzed for the PADEP unleaded gasoline short list parameters using laboratory method 8260B in accordance with Pennsylvania's Storage Tank Regulation procedures and cleanup standard criteria as specified in Pennsylvania's Act 2.
- In addition to the samples collected from the monitoring wells, one duplicate sample, one equipment blank sample (taken by pouring lab supplied DI water over the non-disposal equipment (pump) and collected in appropriate bottleware), and one trip blank sample were submitted for analysis during both groundwater sampling event.

4.2 Additional Site Characterization Results

4.2.1 Soil

Soil analytical results are summarized in Appendix I, Table 4 - Soil Analytical Results and are compared to the PADEP SHS in residential and non-residential settings. All contaminants were reported at concentrations below the PADEP SHS and the laboratory detection limits. Laboratory data reports are included in Appendix III – Laboratory Reports.

4.2.2 Groundwater

Groundwater analytical results for MW-7 and MW-8 are summarized in Appendix I, Table 3 – Historic Groundwater Analytical Results and are compared to the residential PADEP SHS. Refer to Appendix III - Laboratory Reports for copies of the laboratory data reports. No contaminants of concern were reported at or above the laboratory detection limits in these off Site monitoring wells..

5.0 Summary and Recommendations

The site was sampled during the fourth quarter of 2014 on December 3, 2014. MW-1, MW-3, and MW-6 were reported to contain contaminant concentrations above PADEP SHS. The off Site down-gradient wells, installed on November 18, 2014, did not indicate any impact of contaminants of concern at or above the laboratory detection limits.

Juniata will continue to sample the monitoring wells quarterly and submit RAPRs while a RAP is prepared.

APPENDIX I - TABLES

Table 1 - Groundwater Sampling Results
Former DD Garage, Knoxville, PA

Monitoring Well	Sample Date	Measuring Point Elevation (ft)	Depth to Water (ft)	Groundwater Elevation (ft)	Contaminant Concentrations and PADEP Residential SHS (ug/L)								
					Benzene	Toluene	Ethyl benzene	Xylenes (total)	Cumene	MTBE	Naphthalene	1,2,4-TMB	1,3,5-TMB
				PADEP SHS - Residential	5	1,000	700	10,000	840	20	100	15	13
				PADEP SHS - Non-Residential	5	1,000	700	10,000	3,500	20	100	62	53
MW-1	12/3/2014	98.61	7.98	90.63	**6.40**	**16.3**	**1,590**	**10,500**	**112**	<10.0	**448**	**3,630**	**929**
MW-2	12/3/2014	99.07	8.80	90.27	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
MW-3	12/3/2014	98.36	8.19	90.17	**6.80**	**24.8**	**1,100**	**5,340**	**89.2**	**11.2**	**375**	**2,770**	**731**
MW-4	12/3/2014	99.59	9.12	90.47	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	* <1.00	<1.00	<1.00
MW-5	12/3/2014	98.73	8.39	90.34	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
MW-6	12/3/2014	98.26	8.39	89.87	<1.00	<1.00	**3.59**	**2.48**	<1.00	**108**	**1.20**	**4.40**	<1.00
MW-7	12/3/2014	97.69	8.08	89.61	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
MW-8	12/3/2014	96.98	7.76	89.22	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
MW-X	12/3/2014	Blind Duplicate of MW-1			**6.00**	**16.5**	**1,710**	**11,500**	**109**	<10.0	**450**	**3,940**	**892**
Equip Blank	12/3/2014	Not Appliacable			<1.00	<1.00	**4.04**	**31.8**	<1.00	<1.00	**4.65**	**33.3**	**10.8**
Trip Blank	12/3/2014	Not Appliacable			<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00

Bold cells indicate a contaminant concentration greater than the Laboratory Detection Limit
Shaded cells indicate a contaminant concentration greater than the PADEP SHS - Residential
CNL - Could not locate

1/26/2015 3:27:48 PM

Table 2 - Historic Groundwater Sampling Results
Former DD Garage, Knoxville, PA

Monitoring Well	Sample Date	Measuring Point Elevation (ft)	Depth to Water (ft)	Groundwater Elevation (ft)	Contaminant Concentrations and PADEP Residential SHS (ug/L)								
					Benzene	Toluene	Ethyl benzene	Xylenes (total)	Cumene	MTBE	Naphthalene	1,2,4-TMB	1,3,5-TMB
PADEP SHS - Residential					5	1,000	700	10,000	840	20	100	15	13
PADEP SHS - Non-Residential					5	1,000	700	10,000	3,500	20	100	62	53
MW-1	8/27/2013	98.61	9.09	89.52	14.0	56.2	1,080	7,680	130	268	185	2,160	638
	8/27/2013	Blind Duplicate of MW-1			17.6	73.7	1,780	11,600	175	460	404	3,810	1,160
	10/3/2013	98.61	8.71	89.90	12.6	64.0	901	2,230	120	324	706	1,310	762
	10/3/2013	Blind Duplicate of MW-1			12.2	64.5	824	1,660	114	308	561	724	473
	2/19/2014	98.61	8.08	90.53	25.4	58.9	914	6,070	130	313	520	2,430	752
	2/19/2014	Blind Duplicate of MW-1			21.7	52.0	968	6,450	114	279	480	2,600	802
	5/29/2014	98.61	6.81	91.80	12.0	51.4	954	7,570	146	23.0	530	2,070	718
	5/29/2014	Blind Duplicate of MW-1			8.80	23.3	961	9,460	94.4	20.6	445	3,520	1,010
	8/19/2014	98.61	8.44	90.17	16.0	32.8	1,370	9,550	239	25.2	466	3,350	1,050
	8/19/2014	Blind Duplicate of MW-1			9.35	19.1	1,250	8,240	138	14.2	454	3,070	978
	12/3/2014	98.61	7.98	90.63	6.40	16.3	1,590	10,500	112	<10.0	448	3,630	929
	12/3/2014	Blind Duplicate of MW-1			6.00	16.5	1,710	11,500	109	<10.0	450	3,940	892
MW-2	8/27/2013	99.07	9.29	89.78	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	10/3/2013	99.07	8.75	90.32	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	2/19/2014	99.07	9.00	90.07	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	5/29/2014	99.07	7.02	92.05	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	8/19/2014	99.07	8.75	90.32	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	12/3/2014	99.07	8.80	90.27	<1.00	<1.00	<1.00	<2.01	<1.00	<1.00	<1.00	<1.00	<1.00
MW-3	8/27/2013	98.36	8.96	89.40	4.40	7.55	341	1,440	28.7	530	123	776	278
	10/3/2013	98.36	8.73	89.63	7.72	25.3	450	863	86.4	227	450	658	435
	2/19/2014	98.36	8.52	89.84	14.4	19.9	776	2,060	115	170	477	1,830	608
	5/29/2014	98.36	6.59	91.77	3.30	12.0	518	2,040	88.6	<5.00	327	2,040	651
	8/19/2014	98.36	8.48	89.88	7.08	35.1	1,050	3,850	106	9.56	395	2,120	665
	12/3/2014	98.36	8.19	90.17	6.80	24.8	1,100	5,340	89.2	11.2	375	2,770	731
MW-4	8/27/2013	99.59	9.35	90.24	<1.00	<1.00	<1.00	<2.00	<1.00	2.15	<1.00	<1.00	<1.00
	10/3/2013	99.59	8.90	90.69	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	2/19/2014	99.59	9.20	90.39	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	5/29/2014	99.59	7.05	92.54	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	8/19/2014	99.59	9.08	90.51	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	12/3/2014	99.59	9.12	90.47	<1.00	<1.00	<1.00	<2.01	<1.00	<1.00	<1.00	<1.00	<1.00
MW-5	8/27/2013	98.73	8.61	90.12	<1.00	<1.00	<1.00	<2.00	<1.00	1.83	<1.00	<1.00	<1.00
	10/3/2013	98.73	8.61	90.12	<1.00	<1.00	<1.00	<2.00	<1.00	1.35	<1.00	<1.00	<1.00
	2/19/2014	98.73						CNL					
	5/29/2014	98.73	6.38	92.35	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	8/19/2014	98.73	8.35	90.38	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	12/3/2014	98.73	8.39	90.34	<1.00	<1.00	<1.00	<2.01	<1.00	<1.00	<1.00	<1.00	<1.00
MW-6	2/19/2014	98.26	8.45	89.81	<1.00	<1.00	1.94	7.28	<1.00	82.3	<1.00	13.7	5.40
	5/29/2014	98.26	6.28	91.98	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
	8/19/2014	98.26	8.53	89.73	<1.00	<1.00	<1.00	<2.00	<1.00	106	<1.00	2.10	<1.00
	12/3/2014	98.26	8.39	89.87	<1.00	<1.00	3.59	2.48	<1.00	108	1.20	4.40	<1.00
MW-7	12/3/2014	97.69	8.08	89.61	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00
MW-8	12/3/2014	96.98	7.76	89.22	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00

Bold values indicate a concentration greater than the laboratory detection limit.
Shaded cells indicate values at concentrations greater than the PADEP Residential SHS
CNL - Could not locate

Table 3 - Contaminant Trend Summary
Former DD Garage, Knoxville, PA

Well	Contaminant	August 2014 Concentration (ug/L)	December 2014 Concentration (ug/L)	Most Recent Trend	Two Year Contaminant vs Time			Two Year Contaminant vs GWE		
					Slope	R-Squared	Trend	Slope	R-Squared	Trend
MW-1	Benzene	**16.0**	**6.40**	Decreasing	-0.0117	0.1142	Decreasing	-0.93	0.0136	Decreasing
MW-1	Ethyl-benzene	**1,370**	**1,590**	Increasing	1.1992	0.5896	Increasing	-21.301	0.0035	Decreasing
MW-1	Xylenes (total)	**9,550**	**10,500**	Increasing	12.139	0.5678	Increasing	851.4	0.0526	Decreasing
MW-1	MTBE	**25.2**	**<10.0**	Decreasing	-0.7468	0.7563	Decreasing	-113.6	0.3298	Decreasing
MW-1	Naphthalene	**466**	**448**	Decreasing	0.0898	0.0093	Increasing	70.339	0.1071	Increasing
MW-1	1,2,4-TMB	**3,350**	**3,630**	Increasing	4.0265	0.7175	Increasing	112.38	0.0105	Increasing
MW-1	1,3,5-TMB	**1,050**	**929**	Decreasing	0.6432	0.5899	Increasing	3.6944	0.0004	Increasing
MW-3	Benzene	**7.08**	**6.80**	Decreasing	-0.0007	0.0012	Decreasing	-1.8452	0.1637	Decreasing
MW-3	Ethyl-benzene	**1,050**	**1,100**	Increasing	1.5585	0.7802	Increasing	-1.2226	0.00001	Decreasing
MW-3	MTBE	**9.56**	**11.2**	Increasing	-0.9682	0.7340	Decreasing	-146.2	0.3679	Decreasing
MW-3	Naphthalene	**395**	**375**	Decreasing	0.2255	0.1040	Increasing	8.735	0.0034	Increasing
MW-3	1,2,4-TMB	**2,120**	**2,770**	Increasing	4.4054	0.9430	Increasing	458.27	0.2243	Increasing
MW-3	1,3,5-TMB	**665**	**731**	Increasing	0.8732	0.8598	Increasing	106.2	0.2796	Increasing
MW-6	MTBE	**106**	**108**	Increasing	0.1827	0.1962	Increasing	-44.798	0.9437	Decreasing

Bold values represent a concentration greater than the laboratory detection limit.
Shaded cells represent a concentration greater than the PADEP SHS.

Table 4 - Soil Analytical Results
Former DD Garage, Knoxville, PA

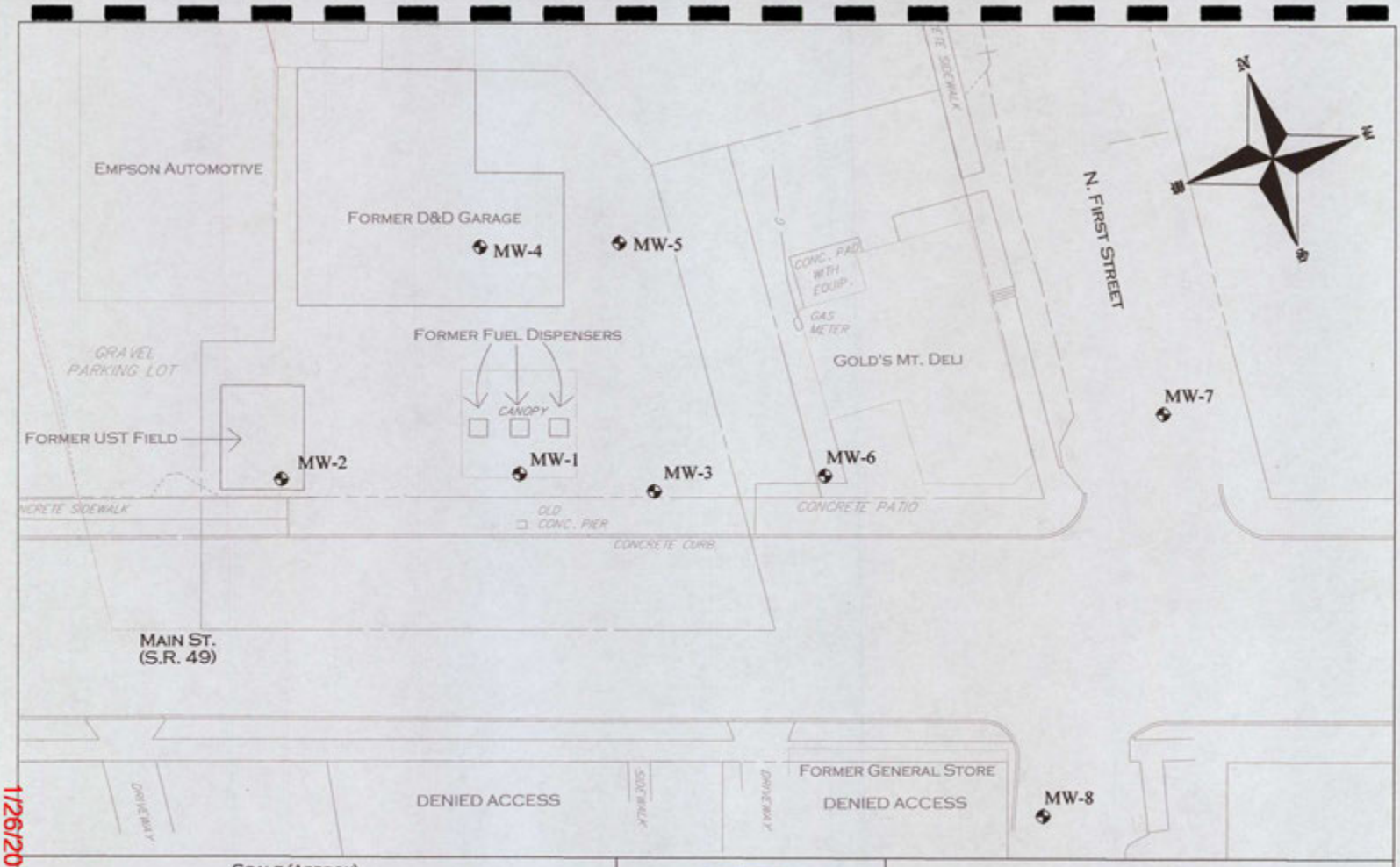
Soil Sample Location	Collection Date	Contaminant Concentrations and PADEP Residential SHS (mg/kg)								
		Benzene	Toluene	Ethyl benzene	Xylenes (total)	Cumene	MTBE	Naphthalene	1,2,4-TMB	1,3,5-TMB
Residential - Unsaturated		**0.5**	**100**	**70**	**1,000**	**600**	**2**	**25**	**8.4**	**2.3**
Non-Residential - Unsaturated		**0.5**	**100**	**70**	**1,000**	**2,500**	**2**	**25**	**35**	**9.3**
MW07-7'	11/18/2014	<0.186	<0.465	<0.465	<0.930	<0.465	<0.465	<0.465	<0.465	<0.465
MW08-7'	11/18/2014	<0.0023	<0.0058	<0.0058	<0.0116	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058
Trip*	11/18/2014	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00

* - analytes reported in µg/l

Bold Value - Concentration is above the laboratory detection limit.

Shaded cells indicate a contaminant concentration greater than the PADEP SHS - Residential

APPENDIX II - FIGURES



SCALE (APPROX)

0' 10' 20' 30' 60'

LEGEND

- MONITORING WELL LOCATION

NOTES

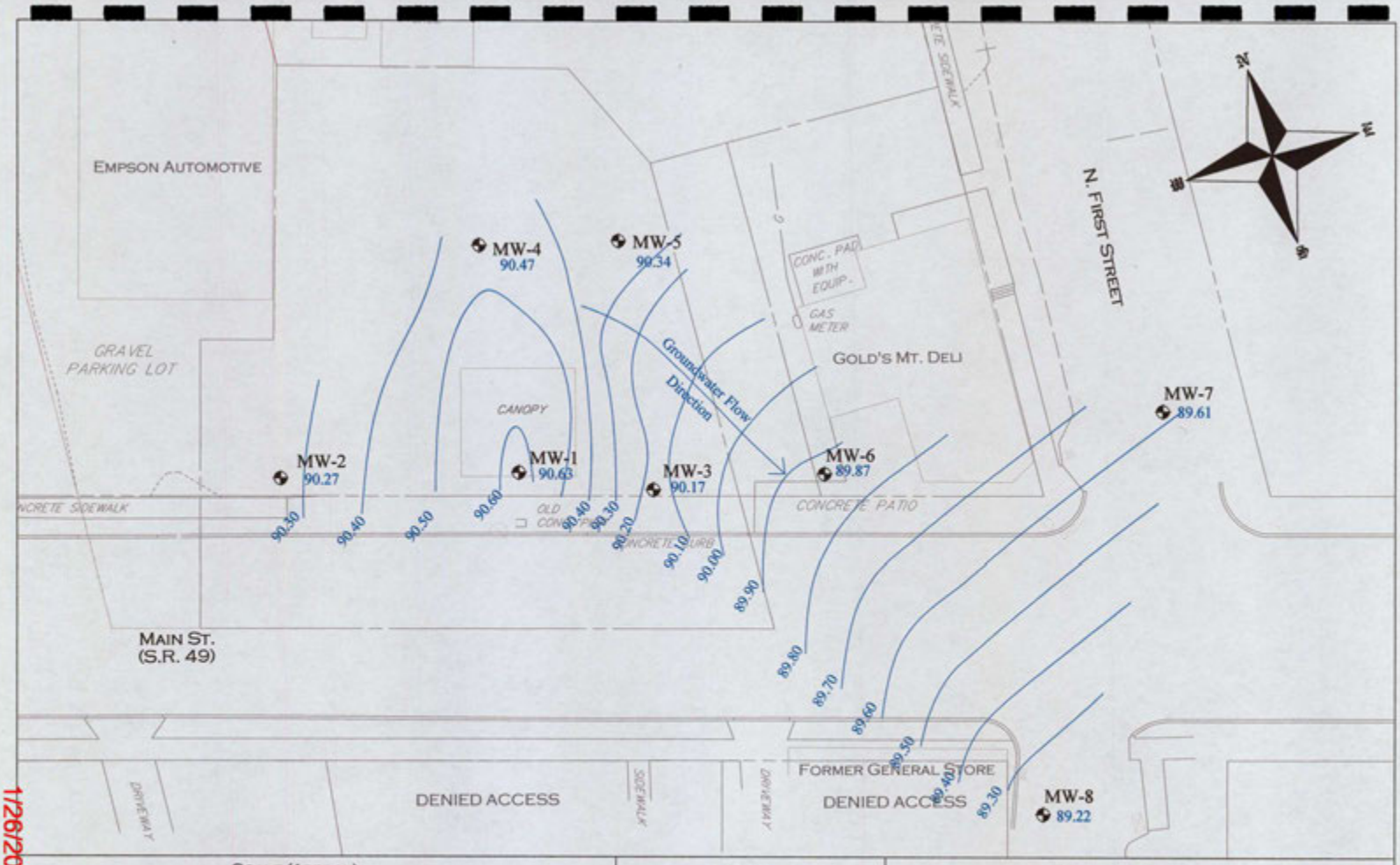
- GAS LINE MARKED BY OTHERS. NOT ALL UTILITY LOCATIONS ARE SHOWN.
- PROPERTY AND RIGHT-OF-WAY LINES ARE BASED ON MAPS AND DEEDS RECORDED AT TIOGA COUNTY RECORDER OF DEEDS OFFICE AND ARE APPROXIMATE AS SHOWN.
- VERTICAL DATUM IS ARBITRARY AND ASSUMED AS SHOWN.
- SOURCE: BASE MAP CREATED BY GEOTEC, INC

JUNIATA GEOSCIENCES, LLC
6872 WILLOW BROOK ROAD
ALEXANDRIA, PA 16611
814.954.0199

Former D D Garage
Main St.
Knoxville, PA

Figure 1 - Site Base Map

PROJECT NUMBER:	REVISION DATE:
1227	1/19/2015



SCALE (APPROX)

0' 10' 20' 30' 60'

LEGEND

- MONITORING WELL LOCATION
- GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION

NOTES

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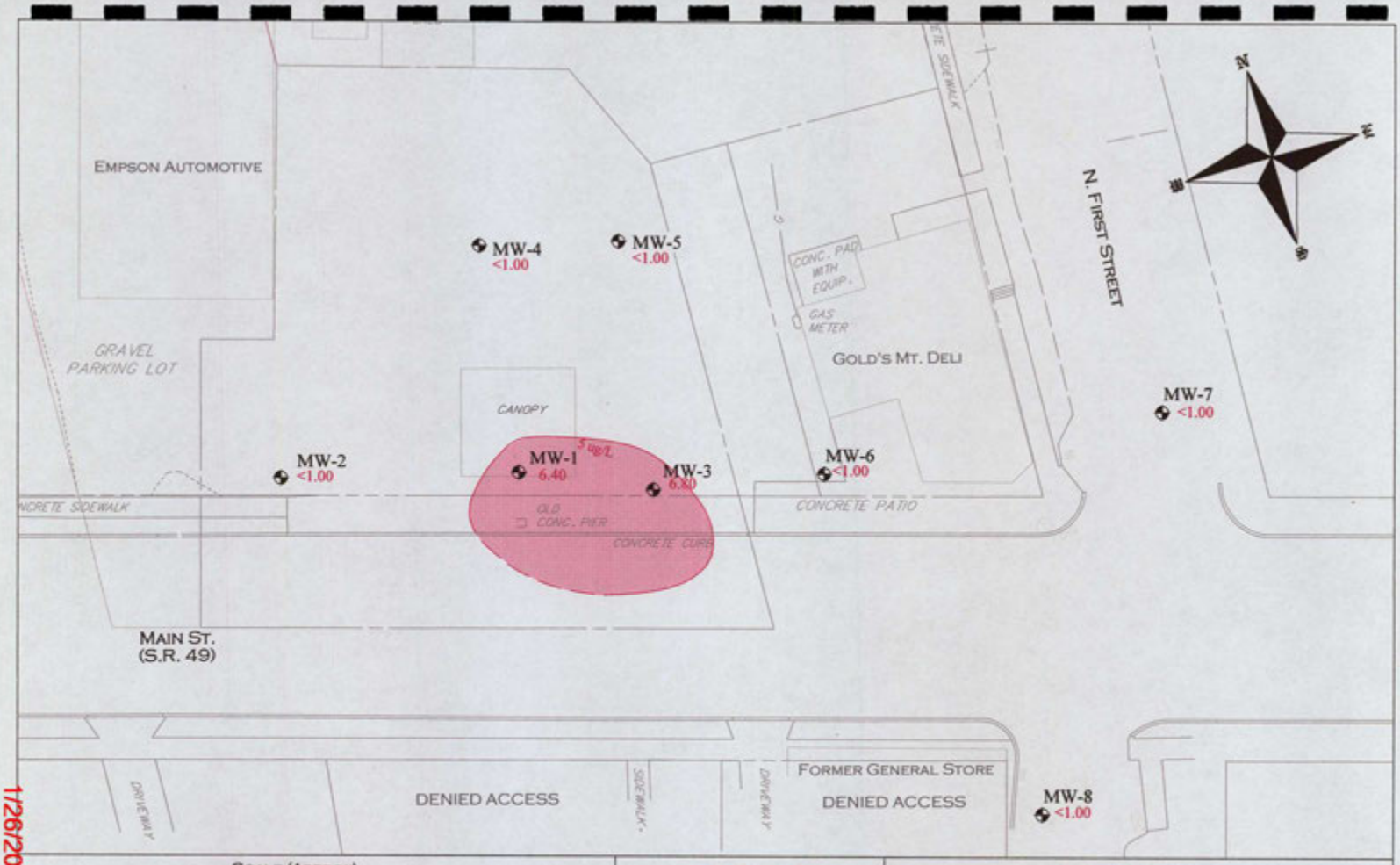
ALEXANDRIA, PA 16611
814.954.0199

Former D D Garage
Main St.
Knoxville, PA

Figure 2 - Groundwater Contour Map
(December 3, 2014)

PROJECT NUMBER:	REVISION DATE:
1227	1/19/2015



SCALE (APPROX)

0' 10' 20' 30' 60'

LEGEND

- MONITORING WELL LOCATION
- BENZENE ISOCONCENTRATION CONTOUR (DASHED WHERE INFERRED)

NOTES

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- VERTICAL DATUM IS ARBITRARY AND ASSUMED AS SHOWN.
- SOURCE: BASE MAP CREATED BY GEOTEC, INC

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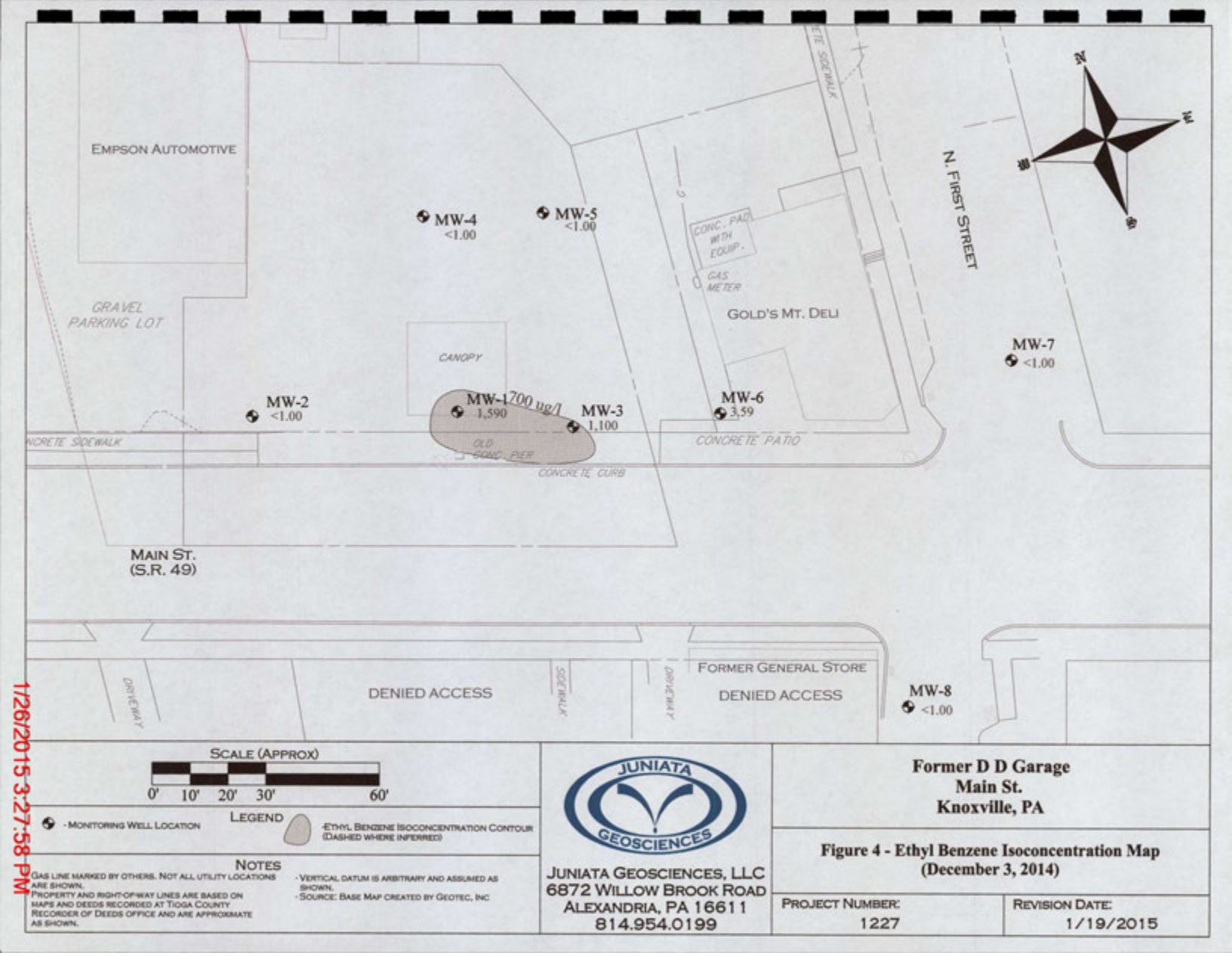
Knoxville, PA

Figure 3 - Benzene Isoconcentration Map
(December 3, 2014)

PROJECT NUMBER:	REVISION DATE:
1227	1/19/2015



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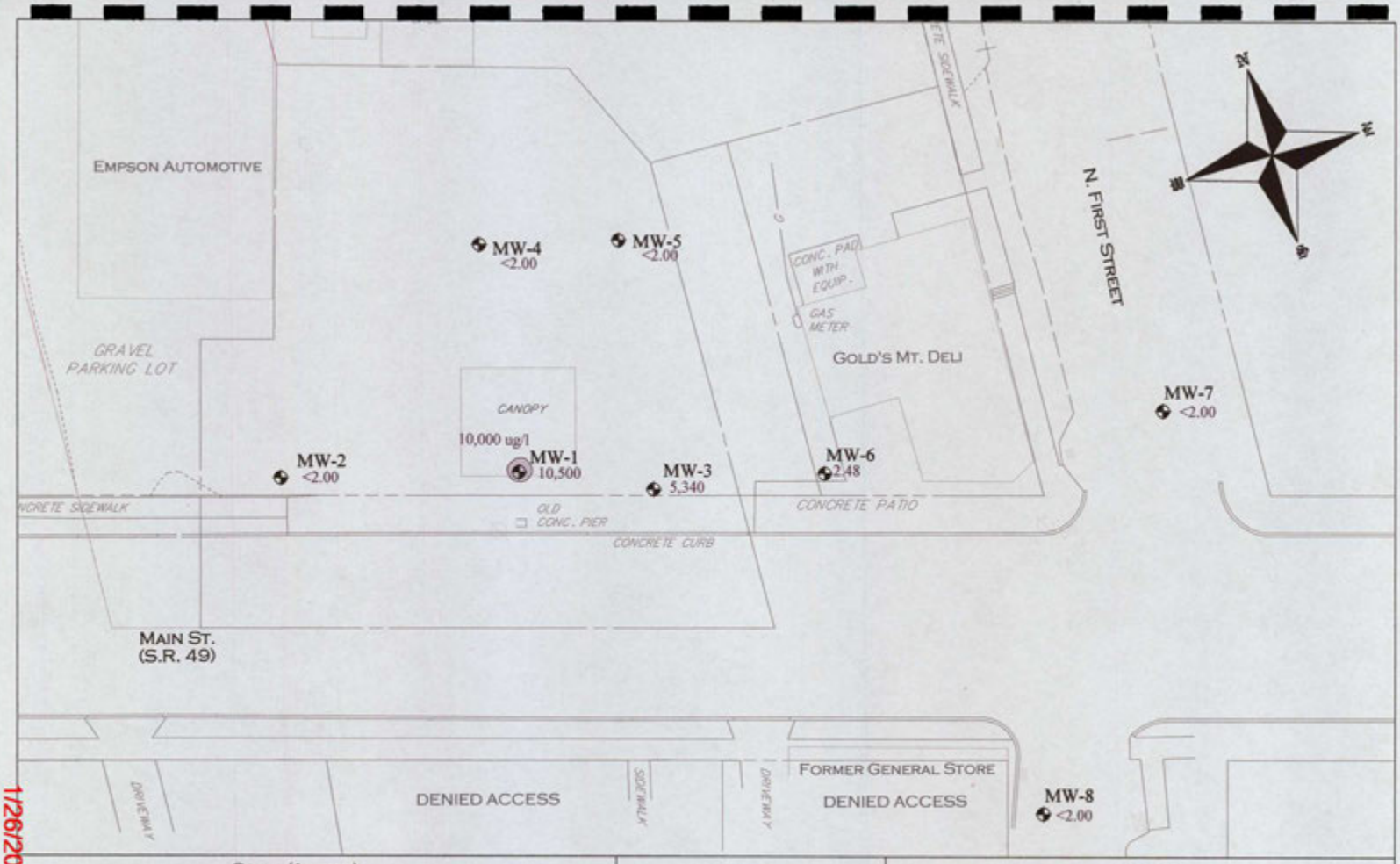
Knoxville, PA

Figure 4 - Ethyl Benzene Isoconcentration Map (December 3, 2014)

PROJECT NUMBER:	REVISION DATE:
1227	1/19/2015



NOTES

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- PROPERTY AND RIGHT-OF-WAY LINES ARE BASED ON MAPS AND DEEDS RECORDED AT TIOGA COUNTY RECORDER OF DEEDS OFFICE AND ARE APPROXIMATE AS SHOWN.
- VERTICAL DATUM IS ARBITRARY AND ASSUMED AS SHOWN.
- SOURCE: BASE MAP CREATED BY GEOTEC, INC

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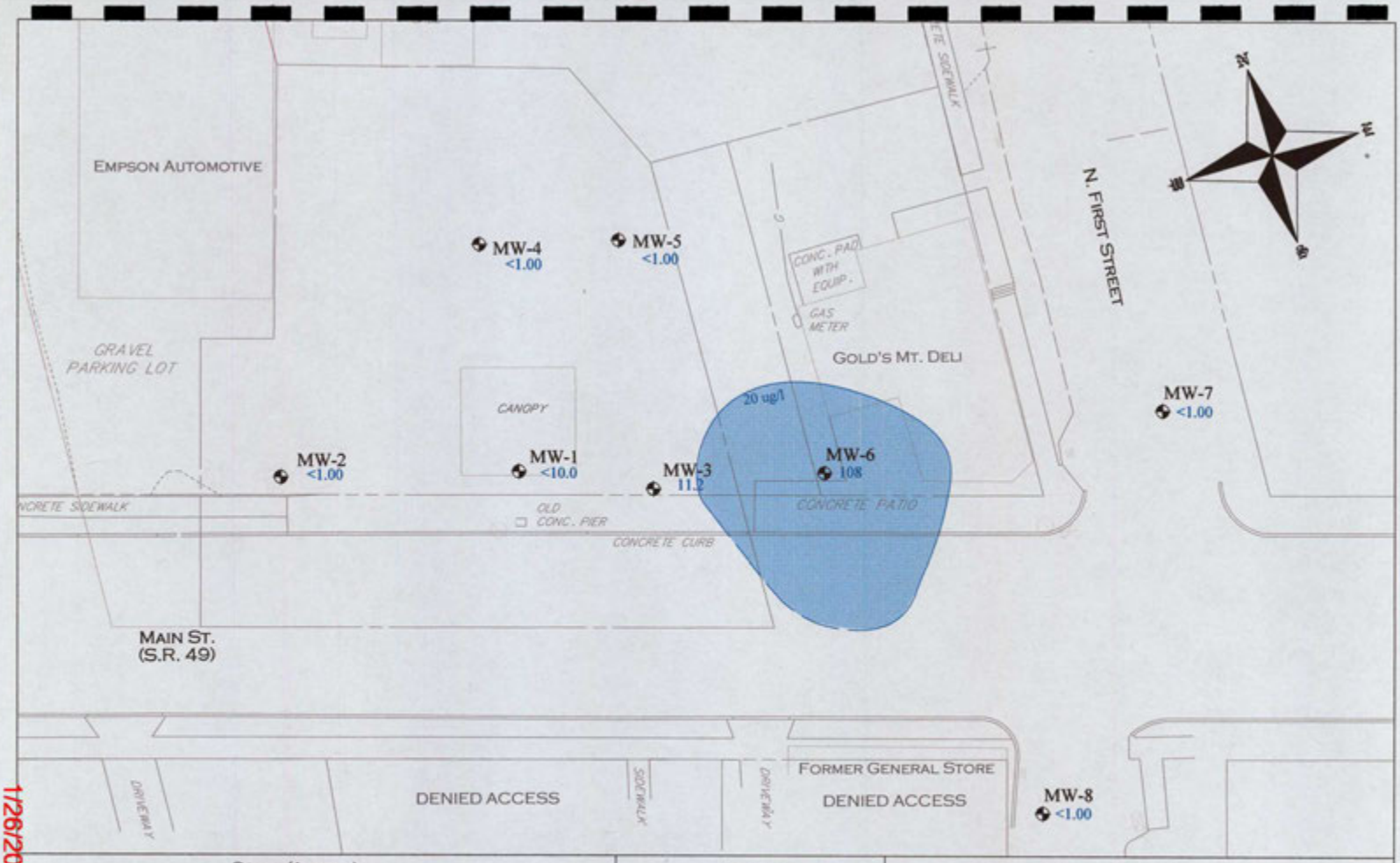
Knoxville, PA

Figure 5 - Xylenes (total) Isoconcentration Map
(December 3, 2014)

PROJECT NUMBER:	REVISION DATE:
1227	1/19/2015



SCALE (APPROX)

0' 10' 20' 30' 60'

LEGEND

- MONITORING WELL LOCATION
- MTBE ISOCONCENTRATION CONTOUR (DASHED WHERE INFERRED)

NOTES

GAS LINE MARKED BY OTHERS. NOT ALL UTILITY LOCATIONS ARE SHOWN.
PROPERTY AND RIGHT-OF-WAY LINES ARE BASED ON MAPS AND DEEDS RECORDED AT TIOGA COUNTY RECORDER OF DEEDS OFFICE AND ARE APPROXIMATE AS SHOWN.
- VERTICAL DATUM IS ARBITRARY AND ASSUMED AS SHOWN.
- SOURCE: BASE MAP CREATED BY GEOTEC, INC

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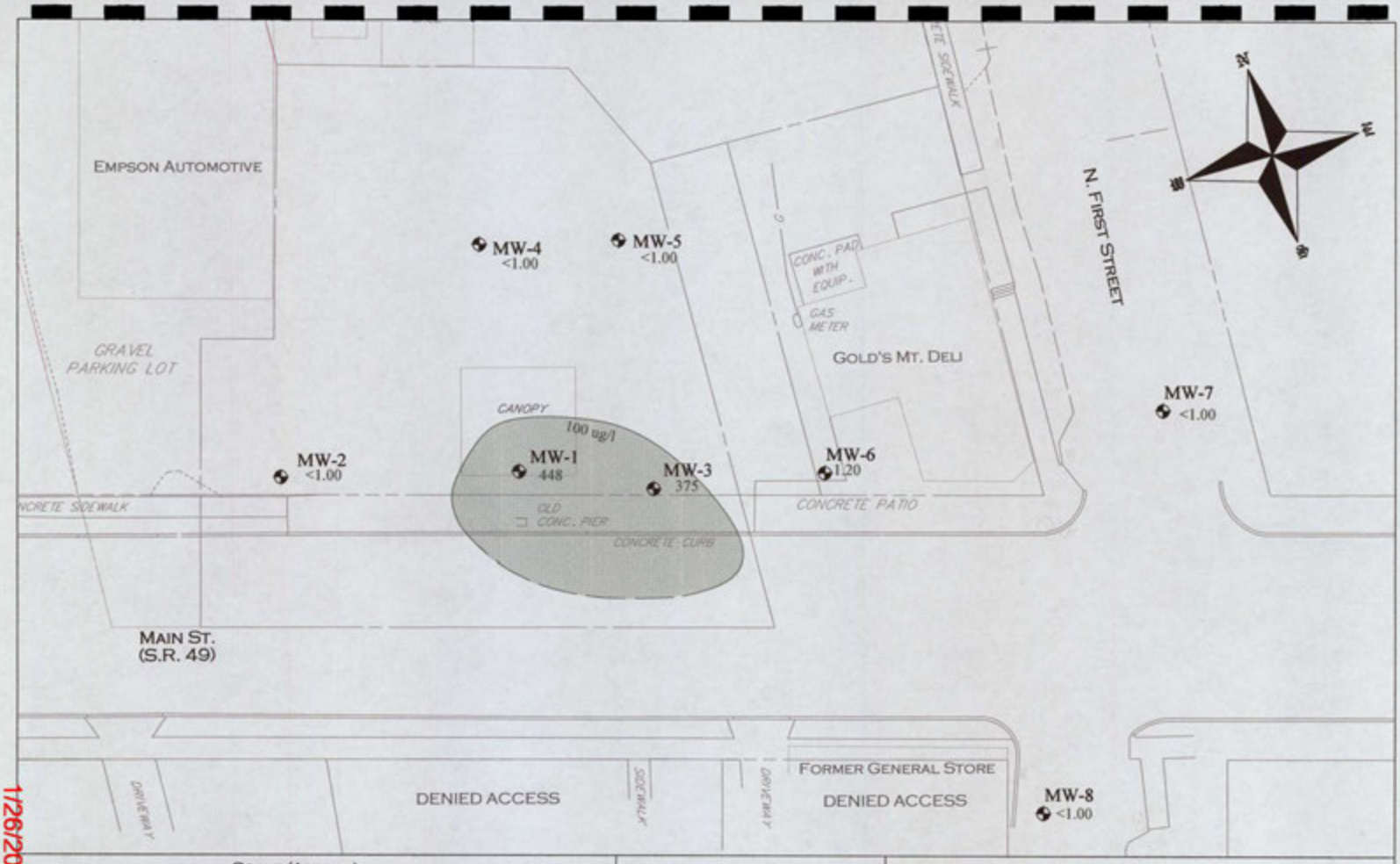
ALEXANDRIA, PA 16611
814.954.0199

Former D D Garage
Main St.
Knoxville, PA

Figure 6 - MTBE Isoconcentration Map
(December 3, 2014)

PROJECT NUMBER:	REVISION DATE:
1227	1/19/2015



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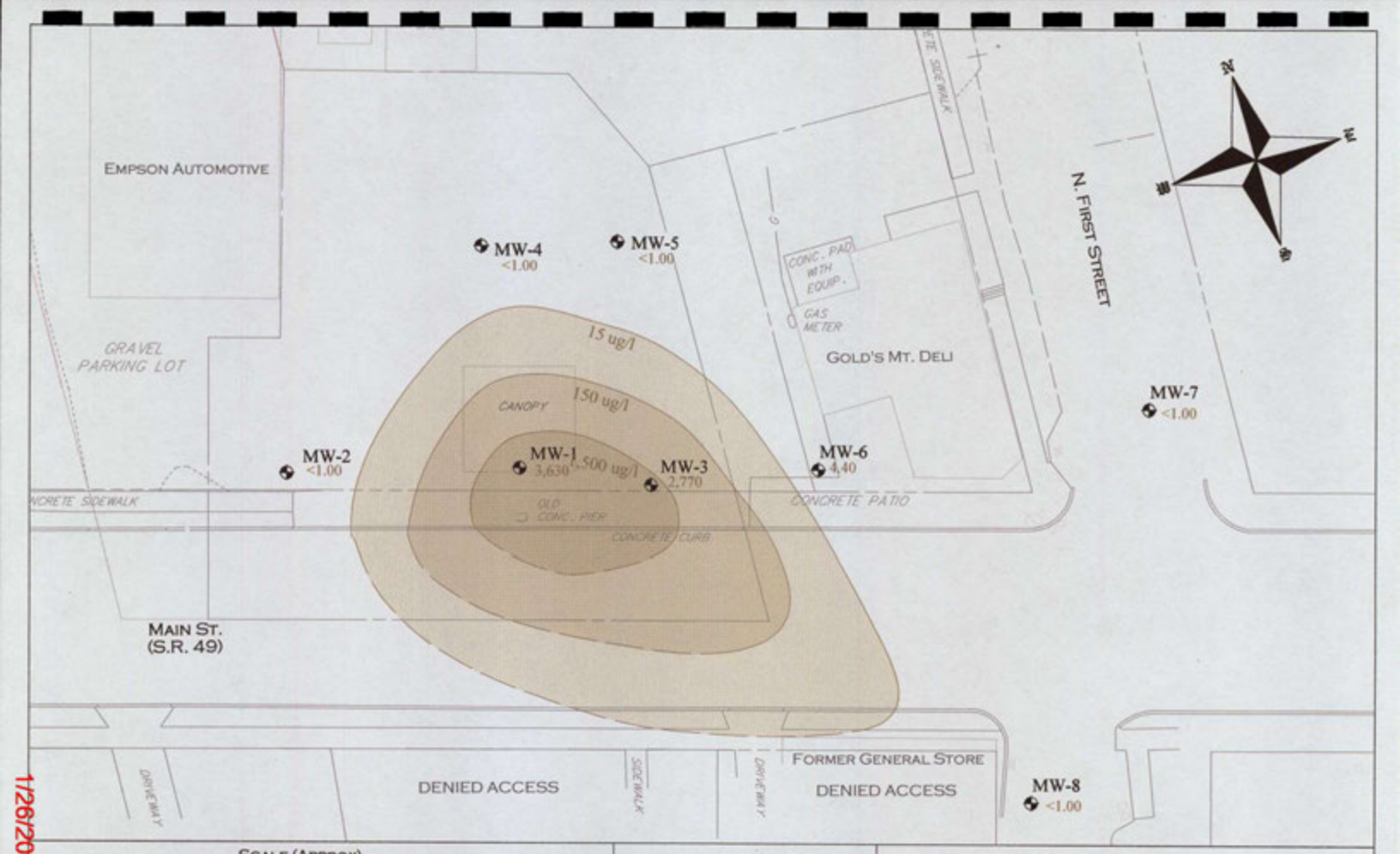
814.954.0199

Former D D Garage
Main St.
Knoxville, PA

Figure 7 - Naphthalene Isoconcentration Map (December 3, 2014)

PROJECT NUMBER:	REVISION DATE:
1227	1/19/2015



SCALE (APPROX)

0' 10' 20' 30' 60'

LEGEND

- MONITORING WELL LOCATION
- 1,2,4-TMB ISOCONCENTRATION CONTOUR (DASHED WHERE INFERRED)

NOTES

- GAS LINE MARKED BY OTHERS. NOT ALL UTILITY LOCATIONS ARE SHOWN.
- PROPERTY AND RIGHT-OF-WAY LINES ARE BASED ON MAPS AND DEEDS RECORDED AT TIOGA COUNTY RECORDER OF DEEDS OFFICE AND ARE APPROXIMATE AS SHOWN.
- VERTICAL DATUM IS ARBITRARY AND ASSUMED AS SHOWN.
- SOURCE: BASE MAP CREATED BY GEOTEC, INC

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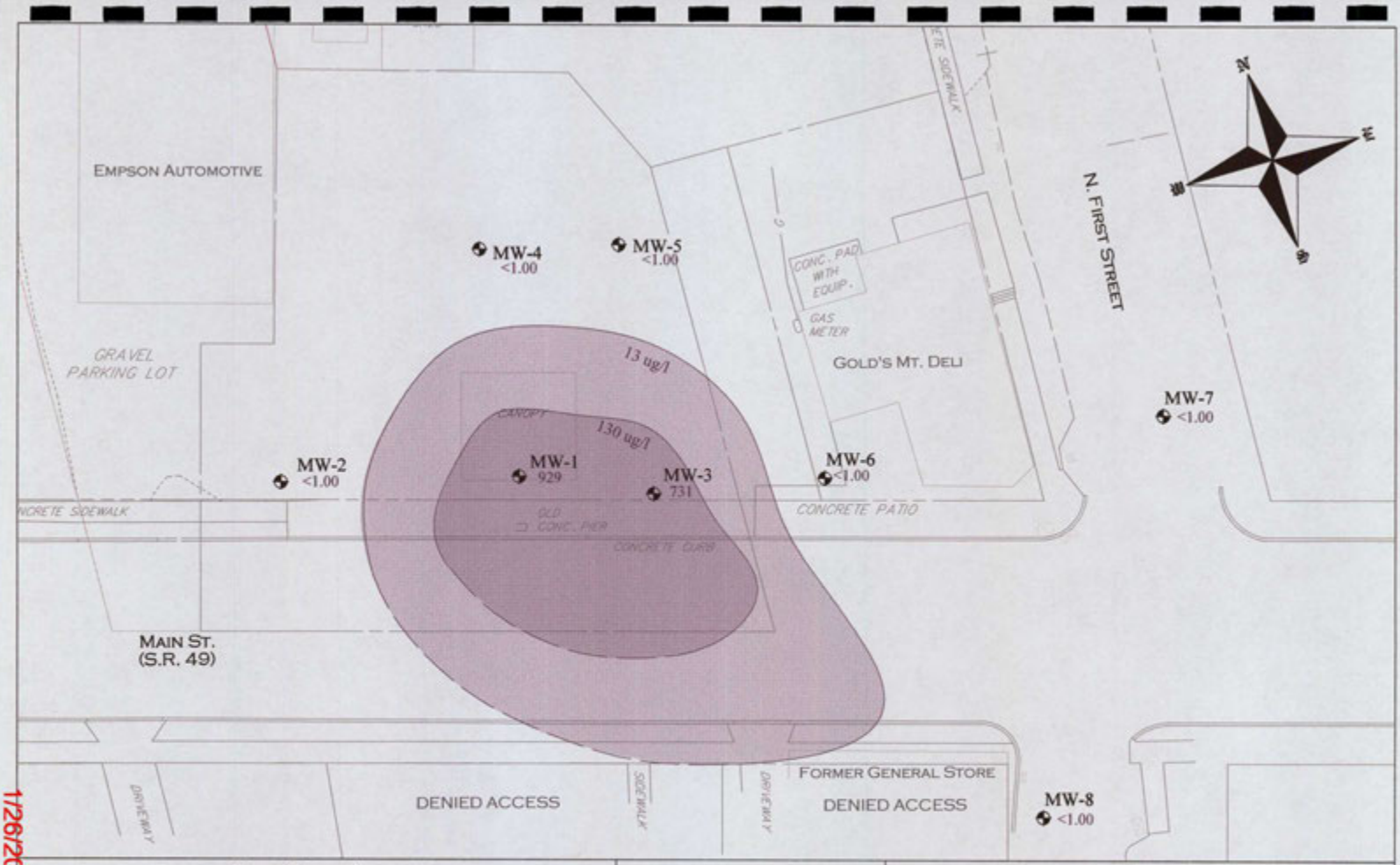
ALEXANDRIA, PA 16611
814.954.0199

Former D D Garage
Main St.
Knoxville, PA

Figure 8 - 1,2,4 - TMB Isoconcentration Map (December 3, 2014)

PROJECT NUMBER:	REVISION DATE:
1227	1/19/2015



SCALE (APPROX)

0' 10' 20' 30' 60'

LEGEND

- MONITORING WELL LOCATION
- 1,3,5-TMB ISOCONCENTRATION CONTOUR (DASHED WHERE INFERRED)

NOTES

GAS LINE MARKED BY OTHERS. NOT ALL UTILITY LOCATIONS ARE SHOWN.
PROPERTY AND RIGHT-OF-WAY LINES ARE BASED ON MAPS AND DEEDS RECORDED AT TIOGA COUNTY RECORDER OF DEEDS OFFICE AND ARE APPROXIMATE AS SHOWN.
- VERTICAL DATUM IS ARBITRARY AND ASSUMED AS SHOWN.
- SOURCE: BASE MAP CREATED BY GEOTEC, INC

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ALEXANDRIA, PA 16611
814.954.0199

Former D D Garage
Main St.
Knoxville, PA

Figure 9 - 1,3,5 - TMB Isoconcentration Map (December 3, 2014)

PROJECT NUMBER:	REVISION DATE:
1227	1/19/2015

APPENDIX III - LABORATORY REPORTS

2019 Ninth Avenue
PO Box 1925
Altoona, PA 16603
(814) 946-4306
NELAP: PA 07-062, VA 460212

89 Kristi Road
Pennsdale, PA 17756
(570) 494-6380
PaDEP: PA 41-04684

FAIRWAY LABORATORIES

State Certifications: MD 275, WV 364

www.fairwaylaboratories.com

Juniata Geosciences	Project:	1227	
6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/18/14 10:53
Project Manager: Aaron D. Hartman	Number of Containers:	21	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
MW-4	4L05012-01	Water	Grab	12/03/14 12:25	12/05/14 11:30
MW-5	4L05012-02	Water	Grab	12/03/14 12:50	12/05/14 11:30
MW-2	4L05012-03	Water	Grab	12/03/14 13:10	12/05/14 11:30
MW-7	4L05012-04	Water	Grab	12/03/14 13:31	12/05/14 11:30
MW-8	4L05012-05	Water	Grab	12/03/14 13:52	12/05/14 11:30
MW-6	4L05012-06	Water	Grab	12/03/14 14:15	12/05/14 11:30
MW-3	4L05012-07	Water	Grab	12/03/14 14:38	12/05/14 11:30
MW-1	4L05012-08	Water	Grab	12/03/14 15:00	12/05/14 11:30
MW-X	4L05012-09	Water	Grab	12/03/14 15:05	12/05/14 11:30
EQUIP.	4L05012-10	Water	Grab	12/03/14 15:10	12/05/14 11:30
TRIP BLANK	4L05012-11	Water	Trip Blank	11/18/14 08:06	12/05/14 11:30

Fairway Laboratories, Inc.

Reviewed and Submitted by:

Michael P. Tyler
Laboratory Director

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FAIRWAY LABORATORIES

State Certifications: MD 275, WV 364

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Juniata Geosciences	Project:	1227	
6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/18/14 10:53
Project Manager: Aaron D. Hartman	Number of Containers:	21	

Client Sample ID: MW-4 **Date/Time Sampled:** 12/03/14 12:25

Laboratory Sample ID: 4L05012-01 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 22:35	EPA 8260B	wlm	
1,2,4-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 22:35	EPA 8260B	wlm	
Benzene	<1.00		1.00	ug/l	12/08/14 22:35	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	12/08/14 22:35	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	12/08/14 22:35	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	12/08/14 22:35	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	12/08/14 22:35	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	12/08/14 22:35	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	12/08/14 22:35	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*93.0 %*	*70-130*		*12/08/14 22:35*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*		*12/08/14 22:35*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*96.3 %*	*70-130*		*12/08/14 22:35*	*EPA 8260B*	wlm	

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Juniata Geosciences
6872 Willow Brook Rd.
Alexandria PA, 16611
Project Manager: Aaron D. Hartman

Project: 1227
Project Number: [none]
Collector: CR
Number of Containers: 21

Reported:
12/18/14 10:53

Client Sample ID: MW-5 **Date/Time Sampled:** 12/03/14 12:50

Laboratory Sample ID: 4L05012-02 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 23:02	EPA 8260B	wlm	
1,2,4-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 23:02	EPA 8260B	wlm	
Benzene	<1.00		1.00	ug/l	12/08/14 23:02	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	12/08/14 23:02	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	12/08/14 23:02	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	12/08/14 23:02	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	12/08/14 23:02	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	12/08/14 23:02	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	12/08/14 23:02	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*92.0 %*	*70-130*		*12/08/14 23:02*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*		*12/08/14 23:02*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*96.2 %*	*70-130*		*12/08/14 23:02*	*EPA 8260B*	wlm	

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Juniata Geosciences
6872 Willow Brook Rd.
Alexandria PA, 16611
Project Manager: Aaron D. Hartman

Project: 1227
Project Number: [none]
Collector: CR
Number of Containers: 21

Reported:
12/18/14 10:53

Client Sample ID: MW-2 **Date/Time Sampled:** 12/03/14 13:10

Laboratory Sample ID: 4L05012-03 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 19:11	EPA 8260B	wlm	
1,2,4-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 19:11	EPA 8260B	wlm	
Benzene	<1.00		1.00	ug/l	12/08/14 19:11	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	12/08/14 19:11	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	12/08/14 19:11	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	12/08/14 19:11	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	12/08/14 19:11	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	12/08/14 19:11	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	12/08/14 19:11	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*102 %*	*70-130*		*12/08/14 19:11*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*117 %*	*70-130*		*12/08/14 19:11*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*110 %*	*70-130*		*12/08/14 19:11*	*EPA 8260B*	wlm	

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Juniata Geosciences	Project:	1227	
6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/18/14 10:53
Project Manager: Aaron D. Hartman	Number of Containers:	21	

Client Sample ID: MW-7 **Date/Time Sampled:** 12/03/14 13:31

Laboratory Sample ID: 4L05012-04 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 20:26	EPA 8260B	wlm	
1,2,4-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 20:26	EPA 8260B	wlm	
Benzene	<1.00		1.00	ug/l	12/08/14 20:26	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	12/08/14 20:26	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	12/08/14 20:26	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	12/08/14 20:26	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	12/08/14 20:26	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	12/08/14 20:26	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	12/08/14 20:26	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*103 %*	*70-130*		*12/08/14 20:26*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*118 %*	*70-130*		*12/08/14 20:26*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*111 %*	*70-130*		*12/08/14 20:26*	*EPA 8260B*	wlm	

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6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/18/14 10:53
Project Manager: Aaron D. Hartman	Number of Containers:	21	

Client Sample ID: MW-8 **Date/Time Sampled:** 12/03/14 13:52

Laboratory Sample ID: 4L05012-05 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 21:05	EPA 8260B	wlm	
1,2,4-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 21:05	EPA 8260B	wlm	
Benzene	<1.00		1.00	ug/l	12/08/14 21:05	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	12/08/14 21:05	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	12/08/14 21:05	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	12/08/14 21:05	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	12/08/14 21:05	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	12/08/14 21:05	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	12/08/14 21:05	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*101 %*	*70-130*		*12/08/14 21:05*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*118 %*	*70-130*		*12/08/14 21:05*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*110 %*	*70-130*		*12/08/14 21:05*	*EPA 8260B*	wlm	

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Juniata Geosciences	Project:	1227	
6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/18/14 10:53
Project Manager: Aaron D. Hartman	Number of Containers:	21	

Client Sample ID: MW-6 **Date/Time Sampled:** 12/03/14 14:15

Laboratory Sample ID: 4L05012-06 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 19:49	EPA 8260B	wlm	
1,2,4-Trimethylbenzene	4.40		1.00	ug/l	12/08/14 19:49	EPA 8260B	wlm	
Benzene	<1.00		1.00	ug/l	12/08/14 19:49	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	12/08/14 19:49	EPA 8260B	wlm	
Ethylbenzene	3.59		1.00	ug/l	12/08/14 19:49	EPA 8260B	wlm	
Xylenes (total)	2.48		2.00	ug/l	12/08/14 19:49	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	12/08/14 19:49	EPA 8260B	wlm	
Methyl tert-butyl ether	108		5.00	ug/l	12/10/14 17:49	EPA 8260B	wlm	
Naphthalene	1.20		1.00	ug/l	12/08/14 19:49	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*101 %*	*70-130*		*12/08/14 19:49*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*115 %*	*70-130*		*12/08/14 19:49*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*111 %*	*70-130*		*12/08/14 19:49*	*EPA 8260B*	wlm	

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Juniata Geosciences	Project:	1227	
6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/18/14 10:53
Project Manager: Aaron D. Hartman	Number of Containers:	21	

Client Sample ID: MW-3 **Date/Time Sampled:** 12/03/14 14:38

Laboratory Sample ID: 4L05012-07 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	731		10.0	ug/l	12/12/14 02:22	EPA 8260B	mtc	
1,2,4-Trimethylbenzene	2770		100	ug/l	12/12/14 19:45	EPA 8260B	mtc	
Benzene	6.80		1.20	ug/l	12/12/14 02:22	EPA 8260B	mtc	2m
Toluene	24.8		10.0	ug/l	12/12/14 02:22	EPA 8260B	mtc	
Ethylbenzene	1100		10.0	ug/l	12/12/14 02:22	EPA 8260B	mtc	
Xylenes (total)	5340		200	ug/l	12/12/14 19:45	EPA 8260B	mtc	
Isopropylbenzene	89.2		10.0	ug/l	12/12/14 02:22	EPA 8260B	mtc	
Methyl tert-butyl ether	11.2		10.0	ug/l	12/12/14 02:22	EPA 8260B	mtc	
Naphthalene	375		10.0	ug/l	12/12/14 02:22	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*105 %*	*70-130*		*12/12/14 02:22*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*		*12/12/14 02:22*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*97.3 %*	*70-130*		*12/12/14 02:22*	*EPA 8260B*	mtc	

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Juniata Geosciences
6872 Willow Brook Rd.
Alexandria PA, 16611
Project Manager: Aaron D. Hartman

Project: 1227
Project Number: [none]
Collector: CR
Number of Containers: 21

Reported:
12/18/14 10:53

Client Sample ID: MW-1

Date/Time Sampled: 12/03/14 15:00

Laboratory Sample ID: 4L05012-08 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	929		10.0	ug/l	12/11/14 20:03	EPA 8260B	mtc	
1,2,4-Trimethylbenzene	3630		100	ug/l	12/12/14 20:49	EPA 8260B	mtc	
Benzene	6.40		1.20	ug/l	12/11/14 20:03	EPA 8260B	mtc	2m
Toluene	16.3		10.0	ug/l	12/11/14 20:03	EPA 8260B	mtc	
Ethylbenzene	1590		100	ug/l	12/12/14 20:49	EPA 8260B	mtc	
Xylenes (total)	10500		200	ug/l	12/12/14 20:49	EPA 8260B	mtc	
Isopropylbenzene	112		10.0	ug/l	12/11/14 20:03	EPA 8260B	mtc	
Methyl tert-butyl ether	<10.0		10.0	ug/l	12/11/14 20:03	EPA 8260B	mtc	
Naphthalene	448		10.0	ug/l	12/11/14 20:03	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*107 %*	*70-130*		*12/11/14 20:03*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*		*12/11/14 20:03*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*98.3 %*	*70-130*		*12/11/14 20:03*	*EPA 8260B*	mtc	

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Juniata Geosciences
6872 Willow Brook Rd.
Alexandria PA, 16611
Project Manager: Aaron D. Hartman

Project: 1227
Project Number: [none]
Collector: CR
Number of Containers: 21

Reported:
12/18/14 10:53

Client Sample ID: MW-X

Date/Time Sampled: 12/03/14 15:05

Laboratory Sample ID: 4L05012-09 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	892		10.0	ug/l	12/12/14 02:59	EPA 8260B	mtc	
1,2,4-Trimethylbenzene	3940		100	ug/l	12/12/14 21:26	EPA 8260B	mtc	
Benzene	6.00		1.20	ug/l	12/12/14 02:59	EPA 8260B	mtc	2m
Toluene	16.5		10.0	ug/l	12/12/14 02:59	EPA 8260B	mtc	
Ethylbenzene	1710		100	ug/l	12/12/14 21:26	EPA 8260B	mtc	
Xylenes (total)	11500		200	ug/l	12/12/14 21:26	EPA 8260B	mtc	
Isopropylbenzene	109		10.0	ug/l	12/12/14 02:59	EPA 8260B	mtc	
Methyl tert-butyl ether	<10.0		10.0	ug/l	12/12/14 02:59	EPA 8260B	mtc	
Naphthalene	450		10.0	ug/l	12/12/14 02:59	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*106 %*	*70-130*		*12/12/14 02:59*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*		*12/12/14 02:59*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*97.2 %*	*70-130*		*12/12/14 02:59*	*EPA 8260B*	mtc	

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Juniata Geosciences
6872 Willow Brook Rd.
Alexandria PA, 16611
Project Manager: Aaron D. Hartman

Project: 1227
Project Number: [none]
Collector: CR
Number of Containers: 21

Reported:
12/18/14 10:53

Client Sample ID: EQUIP.

Date/Time Sampled: 12/03/14 15:10

Laboratory Sample ID: 4L05012-10 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	10.8		1.00	ug/l	12/08/14 21:43	EPA 8260B	wlm	
1,2,4-Trimethylbenzene	33.3		1.00	ug/l	12/08/14 21:43	EPA 8260B	wlm	
Benzene	<1.00		1.00	ug/l	12/08/14 21:43	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	12/08/14 21:43	EPA 8260B	wlm	
Ethylbenzene	4.04		1.00	ug/l	12/08/14 21:43	EPA 8260B	wlm	
Xylenes (total)	31.8		2.00	ug/l	12/08/14 21:43	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	12/08/14 21:43	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	12/08/14 21:43	EPA 8260B	wlm	
Naphthalene	4.65		1.00	ug/l	12/08/14 21:43	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*103 %*	*70-130*		*12/08/14 21:43*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*118 %*	*70-130*		*12/08/14 21:43*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*111 %*	*70-130*		*12/08/14 21:43*	*EPA 8260B*	wlm	

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PaDEP: PA 41-04684

FAIRWAY LABORATORIES

State Certifications: MD 275, WV 364

www.fairwaylaboratories.com

Juniata Geosciences
6872 Willow Brook Rd.
Alexandria PA, 16611
Project Manager: Aaron D. Hartman

Project: 1227
Project Number: [none]
Collector: CR
Number of Containers: 21

Reported:
12/18/14 10:53

Client Sample ID: TRIP BLANK

Date/Time Sampled: 11/18/14 08:06

Laboratory Sample ID: 4L05012-11 (Water/Trip Blank)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 22:21	EPA 8260B	wlm	
1,2,4-Trimethylbenzene	<1.00		1.00	ug/l	12/08/14 22:21	EPA 8260B	wlm	
Benzene	<1.00		1.00	ug/l	12/08/14 22:21	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	12/08/14 22:21	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	12/08/14 22:21	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	12/08/14 22:21	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	12/08/14 22:21	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	12/08/14 22:21	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	12/08/14 22:21	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*102 %*	*70-130*		*12/08/14 22:21*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*116 %*	*70-130*		*12/08/14 22:21*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*111 %*	*70-130*		*12/08/14 22:21*	*EPA 8260B*	wlm	

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Juniata Geosciences	Project:	1227	
6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/18/14 10:53
Project Manager: Aaron D. Hartman	Number of Containers:	21	

Notes

2m This analysis has been reported to the MDL; therefore it is an estimated value.

Definitions

If surrogate values are not within the indicated range, then the results are considered to be estimated.

Reporting limits are adjusted accordingly when samples are analyzed at a dilution due to the matrix.

The following analyses are to be performed immediately upon sampling: pH, sulfite, chlorine residual, dissolved oxygen, filtration for ortho phosphorus, and ferrous iron. The date and time reported reflect the time the samples were analyzed at the laboratory.

MBAS, calculated as LAS, mol wt 348

If the solid sample weight for VOC analysis does not fall within the 3.5-6.5 gram range, the results are considered estimated values.

Samples collected by Fairway Laboratories' personnel are done so in accordance with Standard Operating Procedures established by Fairway Laboratories.

* P indicates analysis performed by Fairway Laboratories, Inc. at the Pennsdale location. This location is PaDEP Chapter 252 certified.

< Represents "less than" - indicates that the result was less than the reporting limit.

MDL Method Detection Limit - is the lowest or minimum level that provides 99% confidence level that the analyte is detected. Any reported result values that are less than the RL are considered estimated values.

RL Reporting Limit - is the lowest or minimum level at which the analyte can be quantified.

[CALC] Indicates a calculated result. Calculations use results from other analyses performed under accredited methods.

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State Certifications: MD 275, WV 364

Juniata Geosciences	Project:	1227	
6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/18/14 10:53
Project Manager: Aaron D. Hartman	Number of Containers:	21	

Terms & Conditions

Services provided by Fairway Laboratories Inc. are limited to the terms and conditions stated herein, unless otherwise agreed to in a formal contract.

CHAIN OF CUSTODY Fairway Laboratories Inc. ("Fairway," "us" or "we") will initiate a chain-of-custody request for analysis upon sample receipt unless the client includes a completed form with the received sample(s). Upon request, Fairway will provide chain-of-custody forms for use.

CONFIDENTIALITY Fairway maintains confidentiality in all of our client interactions. The client's consent will be required before releasing information about the services provided.

CONTRACTS All contracts are subject to review and approval by Fairway's legal council. Each contract must be signed by a corporate officer.

PAYMENT/BILLING Unless otherwise set forth in a signed contract or purchase order, terms of payment are "NET 30 Days." The time allowed for payment shall begin based on the invoice date. A 1.5% per month service charge may be added to all unpaid balances beyond the initial 30 days. In its sole discretion, Fairway reserves the right to request payment before services and hold sample results for payment of due balances. We will not bill a third party without prior agreement among all parties acknowledging and accepting responsibility for payment.

SAMPLE COLLECTION AND SUBMISSION Clients not requesting collection services from Fairway are responsible for proper collection, preservation, packaging, and delivery of samples to the laboratory in accordance with current law and commercial practice. Fairway shall have no responsibility for sample integrity prior to the receipt of the sample(s) and/or for any inaccuracy in test or analyses results as a result of the failure of the client or any third party to maintain the integrity of samples prior to delivery to Fairway. All samples submitted must be accompanied by a completed chain of custody or similar document clearly noting the requested analyses, date/time sampled, client contact information, and trail of custody.

SUBCONTRACTING Some analyses may require subcontracting to another laboratory. Unless the client indicates otherwise, this decision will be made by Fairway. Subcontracted work will be identified on the final report in accordance with NELAC requirements.

RETURN OF RESULTS Fairway routinely provides faxed or verbal results within 10 working days of receipt of sample(s) and a hard copy of the data results is routinely received via US Postal Service within 15 working days. At the request of the client, Fairway may offer expedited return of sample results. Surcharges may apply to rush requests. All rush requests must be pre-approved by Fairway. We reserve the right to charge an archive retrieval fee for results older than one (1) year from the date of the request. All records will be maintained by Fairway for 5 years, after which, they will be destroyed.

SAMPLE DISPOSAL Fairway will maintain samples for four (4) weeks after the sample receipt date. Fairway will dispose of samples which are not and/or do not contain hazardous wastes (as such term is defined by applicable federal or state law), unless prior arrangements have been made for long-term storage. Fairway reserves the right to charge a disposal fee for the proper disposal of samples found or suspected to contain hazardous waste. A return shipping charge will be invoiced for samples returned to the client at their request.

HAZARD COMMUNICATION The client has the responsibility to inform the laboratory of any hazardous characteristics known or suspected about the sample, and to provide information on hazard prevention and personal protection as necessary or otherwise required by applicable law.

WARRANTY AND LIMITATION OF LIABILITY For services rendered, Fairway warrants that it will apply its best scientific knowledge and judgment and to employ its best level of effort consistent with professional standards within the environmental testing industry in performing the analytical services requested by its clients. We disclaim any other warranties, expressed or implied by law. Fairway does not accept any legal responsibility for the purposes for which client uses the test results.

LITIGATION All costs associated with compliance to any subpoena for documents, for testimony in a court of law, or for any other purpose relating to work performed by Fairway Laboratories, Inc. shall be invoiced by Fairway and paid by client. These costs shall include, but are not limited to, hourly charges for the persons involved, travel, mileage, and accommodations and for any and all other expenses associated with said litigation.

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SOP FLI0601-002 Revision 18 Date: August 11, 2014 Page of

Chain of Custody Receiving Document

Page 2 of 2

Receiver: VNS

Date/Time of this check: 12/5/14 11:53 Client: Juniata Geo Lab # 4L05012 #2

Received on ICE? Y ☐ * **Sample Temperature when delivered to the Lab:** 2.8 **Acceptable?** Y ☐ * **or In cool down process?** ☐ *

Custody Seals? N Intact? Y

COC/Labels on bottles agree? Y ☐ * Correct containers for all the analysis requested? Y ☐ * Matrix: Water

COC #	Number and Type of BOTTLES										Comments
	Poly Non-Pres.	Poly H2SO4	Poly HNO3	Amber H2SO4	Amber Non-Pres.	Poly NaOH	VOCS (Head space?) HCL	Other ☐ *	Properly Preserved ☐ *	Bacti	
							2		Y		
↓							↓		↓		
10							2				
11 (TB)							1		Y		

* DEVIATION PRESENT:		CLIENT CALLED:	CLIENT RESPONSE:	
⊗ No Ice	( )	YES ( )	Proceed with analysis; qualify data	( )
⊗ Not at Proper Temperature	( )	By Whom:	Will Resample	( )
⊗ Wrong Container	( )		Provided Information	( )
⊗ Missing Information:	( )	Date:	No Response; Proceed and qualified	( )
			Client Contact: Date:	

* Comments:

This is a date sensitive document and may not be current after December 4, 2014.

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Please print. See back of COC for instructions/terms and conditions.

FAIRWAY LABORATORIES *Environmental Laboratory*

2019 9th Ave.
P.O. Box 1925
Altoona, PA 16602
Phone: (814) 946-4306
Fax: (814) 946-8791

Client Page # 1 of 1

Client Name: Juniata Geo
Address: 6872 Willow Brook Rd
Alexandria PA 16611
Contact: Aaron Hartman
Phone #: 814-954-0199
Fax #:
Project Name: 1227
Quote/PO #:

TAT: Normal ☒ Rush ☐
Rush TAT subject to pre-approval and surcharge.
Date Required: / /

Received on ice? (Y) N
Sample Temp: 2.8

Reportable to PADEP? Yes ☐
PWSID #

Analyses Requested

LAB USE ONLY
Work Order # 4L05012
Attach # 1
FLI Page # 1 of 2
Tracking #

	Sample Description/Location	GRAB	Composite	Composite Start: Start Date	Composite Start: Start Time	GRAB -or- Composite End: End Date	GRAB -or- Composite End: End Time	Matrix: Solid	Matrix: Water	Matrix: Other	# of Containers	GAS BTEX UNLEADED NEW PA	Bottle Type/Comments
1	MW-4	X				12/3/14	1225		X		2	X	2x HCL VOAs
2	MW-5	X				12/3/14	1250		X		2	X	
3	MW-2	X				12/3/14	1340		X		2	X	
4	MW-7	X				12/3/14	1331		X		2	X	
5	MW-8	X				12/3/14	1352		X		2	X	
6	MW-6	X				12/3/14	1415		X		2	X	
7	MW-3	X				12/3/14	1438		X		2	X	
8	MW-1	X				12/3/14	1500		X		2	X	
9	MW-X	X				12/3/14	1515		X		2	X	
10	EQUIP.	X				12/3/14	1540		X		2	X	
11	TRIP BLANK					11/26/14	0800		X		1	X	1x HCL VOA

Sampled by (Signature)			Received by:		Date	Time
Relinquished by:	Date 12/5	Time 11:30	Received by:		Date	Time
Relinquished by:	Date	Time	Received by: Stewart		Date 12/5	Time 1130
Relinquished by:	Date	Time	Received by: CB		Date 12/5	Time 11:30

Remarks

By relinquishing my sample to Fairway Laboratories, Inc., I hereby agree to the terms and conditions printed on the reverse. White Original - FLI File Canary - FLI Copy Pink - Customer Receipt Copy

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State Certifications: MD 275, WV 364

Juniata Geosciences		Project:	1227		
6872 Willow Brook Rd.		Project Number:	[none]	**Reported:**	
Alexandria PA, 16611		Collector:	CR	12/09/14 10:38	
Project Manager:	Aaron D. Hartman	Number of Containers:	9		

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
MW0707	4K19010-01	Solid	Grab	11/18/14 10:35	11/19/14 08:20
MW0807	4K19010-02	Solid	Grab	11/18/14 13:00	11/19/14 08:20
TRIP	4K19010-03	Water	Trip Blank	11/18/14 00:00	11/19/14 08:20

Fairway Laboratories, Inc.

Reviewed and Submitted by:

Michael P. Tyler
Laboratory Director

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Juniata Geosciences		Project:	1227		
6872 Willow Brook Rd.		Project Number:	[none]	**Reported:**	
Alexandria PA, 16611		Collector:	CR	12/09/14 10:38	
Project Manager:	Aaron D. Hartman	Number of Containers:	9		

Client Sample ID: MW0707 **Date/Time Sampled:** 11/18/14 10:35

Laboratory Sample ID: 4K19010-01 (Solid/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	<0.465		0.465	mg/kg dry	11/20/14 20:26	EPA 8260B	bag	
1,2,4-Trimethylbenzene	<0.465		0.465	mg/kg dry	11/20/14 20:26	EPA 8260B	bag	
Benzene	<0.186		0.186	mg/kg dry	11/20/14 20:26	EPA 8260B	bag	
Toluene	<0.465		0.465	mg/kg dry	11/20/14 20:26	EPA 8260B	bag	
Ethylbenzene	<0.465		0.465	mg/kg dry	11/20/14 20:26	EPA 8260B	bag	
Xylenes (total)	<0.930		0.930	mg/kg dry	11/20/14 20:26	EPA 8260B	bag	
Isopropylbenzene	<0.465		0.465	mg/kg dry	11/20/14 20:26	EPA 8260B	bag	
Methyl tert-butyl ether	<0.465		0.465	mg/kg dry	11/20/14 20:26	EPA 8260B	bag	
Naphthalene	<0.465		0.465	mg/kg dry	11/20/14 20:26	EPA 8260B	bag	
Surrogate: 4-Bromofluorobenzene		*100 %*	*70-130*		*11/20/14 20:26*	*EPA 8260B*	bag	
Surrogate: 1,2-Dichloroethane-d4		*118 %*	*70-130*		*11/20/14 20:26*	*EPA 8260B*	bag	
Surrogate: Fluorobenzene		*106 %*	*70-130*		*11/20/14 20:26*	*EPA 8260B*	bag	
Conventional Chemistry Parameters by SM/EPA Methods								
% Solids	88.2		0.100	%	11/20/14 15:24	SM20-2540G	arr	

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FAIRWAY LABORATORIES

State Certifications: MD 275, WV 364

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Juniata Geosciences	Project:	1227	
6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/09/14 10:38
Project Manager: Aaron D. Hartman	Number of Containers:	9	

Client Sample ID: MW0807' **Date/Time Sampled:** 11/18/14 13:00

Laboratory Sample ID: 4K19010-02 (Solid/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	<0.0058		0.0058	mg/kg dry	11/20/14 01:03	EPA 8260B	wlm	
1,2,4-Trimethylbenzene	<0.0058		0.0058	mg/kg dry	11/20/14 01:03	EPA 8260B	wlm	
Benzene	<0.0023		0.0023	mg/kg dry	11/20/14 01:03	EPA 8260B	wlm	
Toluene	<0.0058		0.0058	mg/kg dry	11/20/14 01:03	EPA 8260B	wlm	
Ethylbenzene	<0.0058		0.0058	mg/kg dry	11/20/14 01:03	EPA 8260B	wlm	
Xylenes (total)	<0.0116		0.0116	mg/kg dry	11/20/14 01:03	EPA 8260B	wlm	
Isopropylbenzene	<0.0058		0.0058	mg/kg dry	11/20/14 01:03	EPA 8260B	wlm	
Methyl tert-butyl ether	<0.0058		0.0058	mg/kg dry	11/20/14 01:03	EPA 8260B	wlm	
Naphthalene	<0.0058		0.0058	mg/kg dry	11/20/14 01:03	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene	*101 %*		*70-130*		*11/20/14 01:03*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4	*130 %*		*70-130*		*11/20/14 01:03*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene	*108 %*		*70-130*		*11/20/14 01:03*	*EPA 8260B*	wlm	
Conventional Chemistry Parameters by SM/EPA Methods								
% Solids	89.7		0.100	%	11/20/14 15:24	SM20-2540G	arr	

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FAIRWAY LABORATORIES

State Certifications: MD 275, WV 364

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Juniata Geosciences	Project:	1227	
6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/09/14 10:38
Project Manager: Aaron D. Hartman	Number of Containers:	9	

Client Sample ID: TRIP **Date/Time Sampled:** 11/18/14 00:00

Laboratory Sample ID: 4K19010-03 (Water/Trip Blank)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
1,3,5-Trimethylbenzene	<1.00		1.00	ug/l	11/19/14 22:02	EPA 8260B	mtc	
1,2,4-Trimethylbenzene	<1.00		1.00	ug/l	11/19/14 22:02	EPA 8260B	mtc	
Benzene	<1.00		1.00	ug/l	11/19/14 22:02	EPA 8260B	mtc	
Toluene	<1.00		1.00	ug/l	11/19/14 22:02	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	11/19/14 22:02	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	11/19/14 22:02	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	11/19/14 22:02	EPA 8260B	mtc	
Methyl tert-butyl ether	<1.00		1.00	ug/l	11/19/14 22:02	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	11/19/14 22:02	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*91.0 %*	*70-130*		*11/19/14 22:02*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*89.6 %*	*70-130*		*11/19/14 22:02*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*114 %*	*70-130*		*11/19/14 22:02*	*EPA 8260B*	mtc	

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State Certifications: MD 275, WV 364

Juniata Geosciences	Project:	1227	
6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/09/14 10:38
Project Manager: Aaron D. Hartman	Number of Containers:	9	

Definitions

If surrogate values are not within the indicated range, then the results are considered to be estimated.

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The following analyses are to be performed immediately upon sampling: pH, sulfite, chlorine residual, dissolved oxygen, filtration for ortho phosphorus, and ferrous iron. The date and time reported reflect the time the samples were analyzed at the laboratory.

MBAS, calculated as LAS, mol wt 348

If the solid sample weight for VOC analysis does not fall within the 3.5-6.5 gram range, the results are considered estimated values.

Samples collected by Fairway Laboratories' personnel are done so in accordance with Standard Operating Procedures established by Fairway Laboratories.

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< Represents "less than" - indicates that the result was less than the reporting limit.

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RL Reporting Limit - is the lowest or minimum level at which the analyte can be quantified.

[CALC] Indicates a calculated result. Calculations use results from other analyses performed under accredited methods.

Fairway Labs in Altoona, PA is a NELAP (National Environmental Laboratory Accreditation Program) accredited lab, and as such, certifies that all applicable test results meet the requirements of NELAP, unless otherwise stated on the analytical report.

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

2019 Ninth Avenue
PO Box 1925
Altoona, PA 16603
(814) 946-4306
NELAP: PA 07-062, VA 460212

89 Kristi Road
Pennsdale, PA 17756
(570) 494-6380
PaDEP: PA 41-04684

FAIRWAY LABORATORIES
www.fairwaylaboratories.com

State Certifications: MD 275, WV 364

Juniata Geosciences	Project:	1227	
6872 Willow Brook Rd.	Project Number:	[none]	**Reported:**
Alexandria PA, 16611	Collector:	CR	12/09/14 10:38
Project Manager: Aaron D. Hartman	Number of Containers:	9	

Terms & Conditions

Services provided by Fairway Laboratories Inc. are limited to the terms and conditions stated herein, unless otherwise agreed to in a formal contract.

CHAIN OF CUSTODY Fairway Laboratories Inc. ("Fairway," "us" or "we") will initiate a chain-of-custody/request for analysis upon sample receipt unless the client includes a completed form with the received sample(s). Upon request, Fairway will provide chain-of-custody forms for use.

CONFIDENTIALITY Fairway maintains confidentiality in all of our client interactions. The client's consent will be required before releasing information about the services provided.

CONTRACTS All contracts are subject to review and approval by Fairway's legal counsel. Each contract must be signed by a corporate officer.

PAYMENT/BILLING Unless otherwise set forth in a signed contract or purchase order, terms of payment are "NET 30 Days." The time allowed for payment shall begin based on the invoice date. A 1.5% per month service charge may be added to all unpaid balances beyond the initial 30 days. In its sole discretion, Fairway reserves the right to request payment before services and hold sample results for payment of due balances. We will not bill a third party without prior agreement among all parties acknowledging and accepting responsibility for payment.

SAMPLE COLLECTION AND SUBMISSION Clients not requesting collection services from Fairway are responsible for proper collection, preservation, packaging, and delivery of samples to the laboratory in accordance with current law and commercial practice. Fairway shall have no responsibility for sample integrity prior to the receipt of the sample(s) and/or for any inaccuracy in test or analyses results as a result of the failure of the client or any third party to maintain the integrity of samples prior to delivery to Fairway. All samples submitted must be accompanied by a completed chain of custody or similar document clearly noting the requested analyses, dates/time sampled, client contact information, and trail of custody.

SUBCONTRACTING Some analyses may require subcontracting to another laboratory. Unless the client indicates otherwise, this decision will be made by Fairway. Subcontracted work will be identified on the final report in accordance with NELAC requirements.

RETURN OF RESULTS Fairway routinely provides faxed or verbal results within 10 working days of receipt of sample(s) and a hard copy of the data results is routinely received via US Postal Service within 15 working days. At the request of the client, Fairway may offer expedited return of sample results. Surcharges may apply to rush requests. All rush requests must be pre-approved by Fairway. We reserve the right to charge an archive retrieval fee for results older than one (1) year from the date of the request. All records will be maintained by Fairway for 5 years, after which, they will be destroyed.

SAMPLE DISPOSAL Fairway will maintain samples for four (4) weeks after the sample receipt date. Fairway will dispose of samples which are not and/or do not contain hazardous wastes (as such term is defined by applicable federal or state law), unless prior arrangements have been made for long-term storage. Fairway reserves the right to charge a disposal fee for the proper disposal of samples found or suspected to contain hazardous waste. A return shipping charge will be invoiced for samples returned to the client at their request.

HAZARD COMMUNICATION The client has the responsibility to inform the laboratory of any hazardous characteristics known or suspected about the sample, and to provide information on hazard prevention and personal protection as necessary or otherwise required by applicable law.

WARRANTY AND LIMITATION OF LIABILITY For services rendered, Fairway warrants that it will apply its best scientific knowledge and judgment and or employ its best level of effort consistent with professional standards within the environmental testing industry in performing the analytical services requested by its clients. We disclaim any other warranties, expressed or implied by law. Fairway does not accept any legal responsibility for the purposes for which client uses the test results.

LITIGATION All costs associated with compliance to any subpoena for documents, for testimony in a court of law, or for any other purpose relating to work performed by Fairway Laboratories, Inc. shall be invoiced by Fairway and paid by client. These costs shall include, but are not limited to, hourly charges for the persons involved, travel, mileage, and accommodations and for any and all other expenses associated with said litigation.

Fairway Labs in Altoona, PA is a NELAP (National Environmental Laboratory Accreditation Program) accredited lab, and as such, certifies that all applicable test results meet the requirements of NELAP, unless otherwise stated on the analytical report.

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SOP FLI0601-002 Revision 18 Date: August 11, 2014 Page of #2

Chain of Custody Receiving Document

Page 2 of 2

Receiver: YAS

Date/Time of this check: 11/19/14 8:29 Client: Juniata Geoscience Lab # 4K19010

Received on ICE? Y ☐ * **Sample Temperature when delivered to the Lab:** 2.4 **Acceptable?** Y ☐ * **or In cool down process?** ☐ *

Custody Seals? N Intact? Y

COC/Labels on bottles agree? Y ☐* Correct containers for all the analysis requested? Y ☐* Matrix: Soil

COC #	Number and Type of BOTTLES										Comments
	Poly Non-Pres.	Poly H2SO4	Poly HNO3	Amber H2SO4	~~Amber~~ Non-Pres. 40z jar	Poly NaOH HCL	VOCs (Head space?) HCl	Other Sodium bisulfate ☐*	Properly Preserved ☐*	Bacti	
1					1		1	2	Y		
2					1		1	2	Y		
3 (GB)						1			NRS		

* DEVIATION PRESENT:		CLIENT CALLED:	CLIENT RESPONSE:	
⊗ No Ice	( )	YES ( )	Proceed with analysis; qualify data	( )
⊗ Not at Proper Temperature	( )	By Whom:	Will Resample	( )
⊗ Wrong Container	( )		Provided Information	( )
⊗ Missing Information:	( )	Date:	No Response; Proceed and qualified	( )
			Client Contact: Date:	

* Comments:

This is a date sensitive document and may not be current after November 17, 2014.

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Please print. See back of COC for instructions/terms and conditions.

2019 9th Ave.
P.O. Box 1925
Altoona, PA 16602
Phone: (814) 946-4306
Fax: (814) 946-8791

FAIRWAY LABORATORIES
Environmental Laboratory

89 Kristi Rd
Pennsdale, PA 17756
Phone: (570) 494-6380

4K19010 #1
COC # 2
Page 1 of 1

Client Name: Juniata Geosciences, LLC
Address: 6672 Willow Brook Rd
Alexandria PA 16611
Contact: Aaron Hartman
Phone #: 814 954 4999
Fax #:
Project Name: 1227
Quote/PO #: 1227

Received on ice? (Y) N
Sample Temp: 2.4

Reportable to PADEP? Yes ☐
PWSID #

TAT: Normal ☒ Rush ☐
(Rush TAT subject to pre-approval and surcharge)
Date Required: / /

Sample Description/Location	GRAB	Composite	Composite Start Date	Composite Start Date	GRAB -or- Composite End Date	GRAB -or- Composite End Date	Matrix: Solid	Matrix: Water	Matrix: Other	# of Containers	Analyses Requested: New PA unleaded Gas	Bottle Type/Comments
MW0707	G				11/18/14	1035	/			4	/	
MW0801	G				11/18/14	1300	/			4	/	
TRIP	-				—	—		/		1	/	

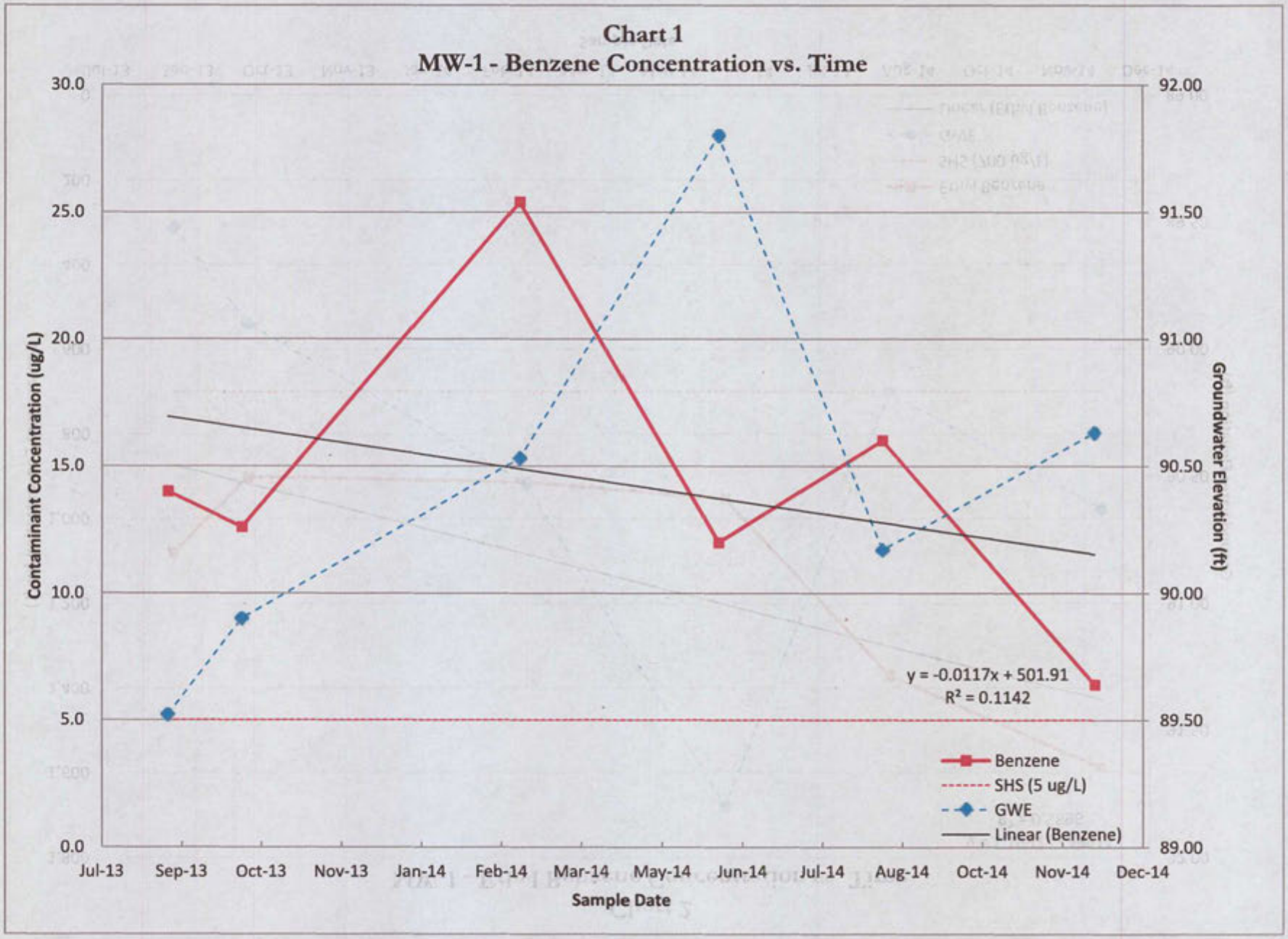
LAB USE ONLY
FedEx USPS
UPS Other
Tracking #

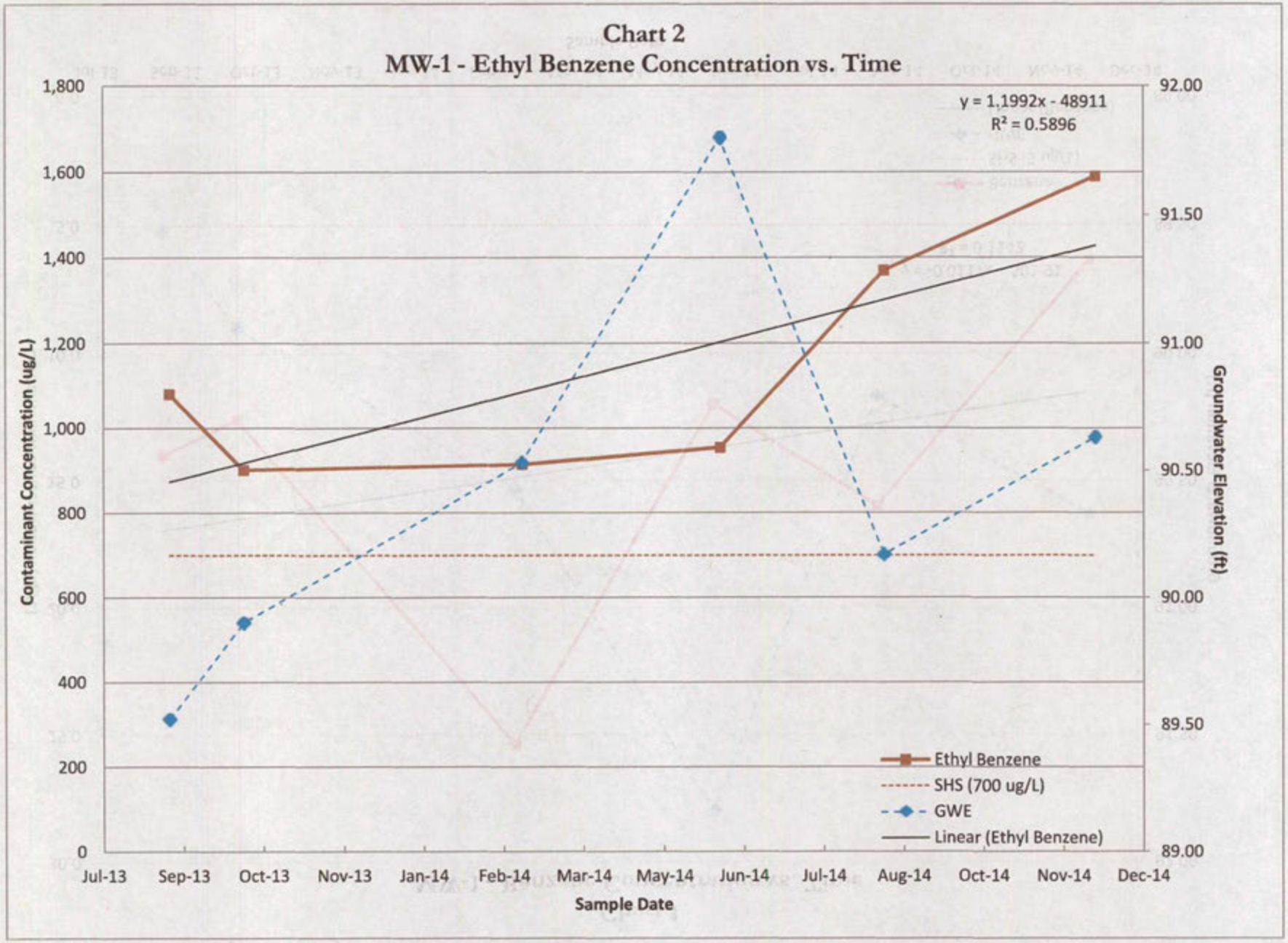
	Date	Time		Date	Time	Remarks
Sampled by: Cory M	11/18/14	1500	Received by:			
Relinquished by:	11/19/14	0820	Received by:			
Relinquished by:			Received by: Nicole Stewart	11/19/14	8:30	
Relinquished by:			Received by:	11/19	8:20	

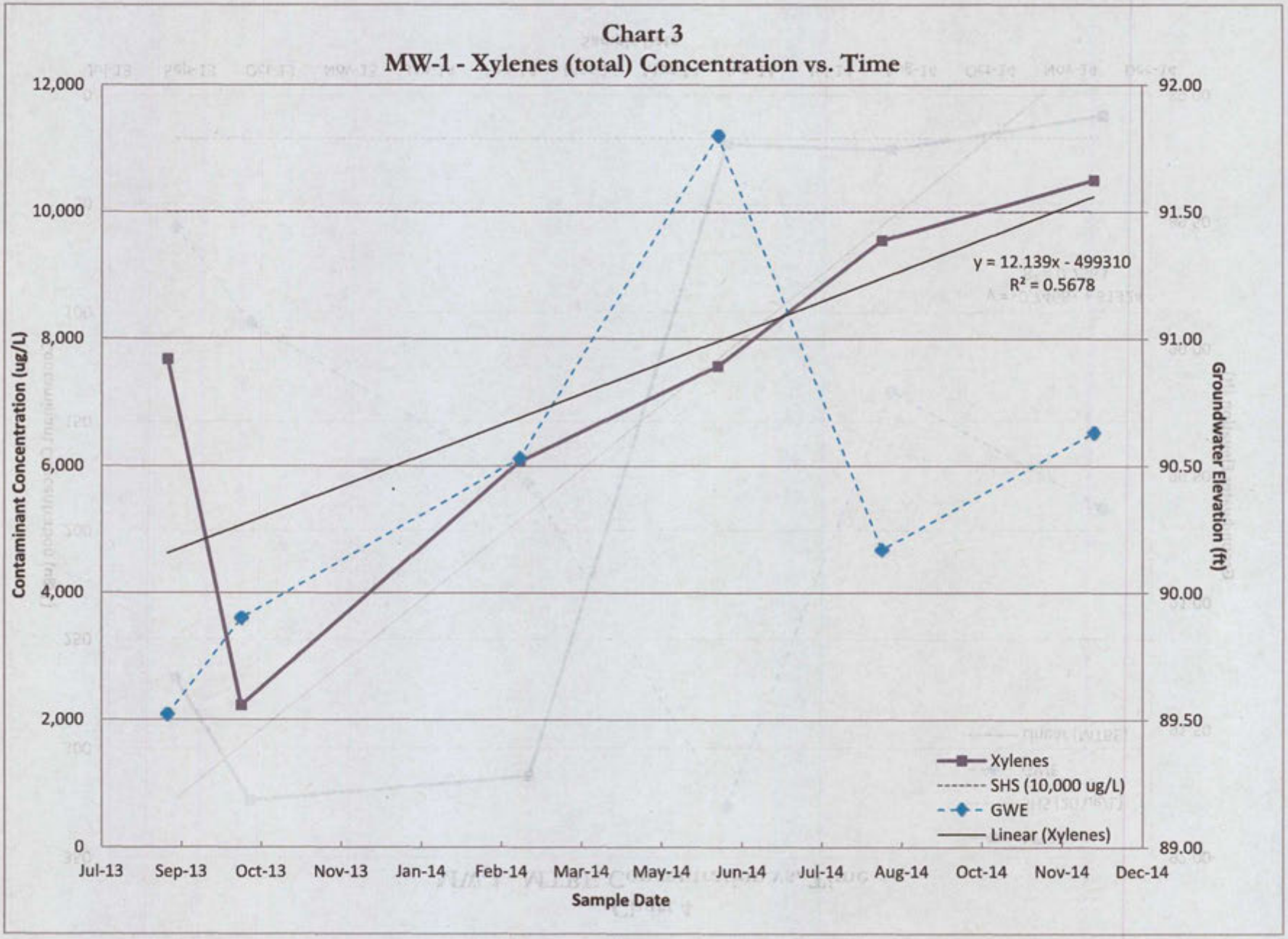
By relinquishing my sample to Fairway Laboratories, Inc., I hereby agree to the terms and conditions printed on the reverse.

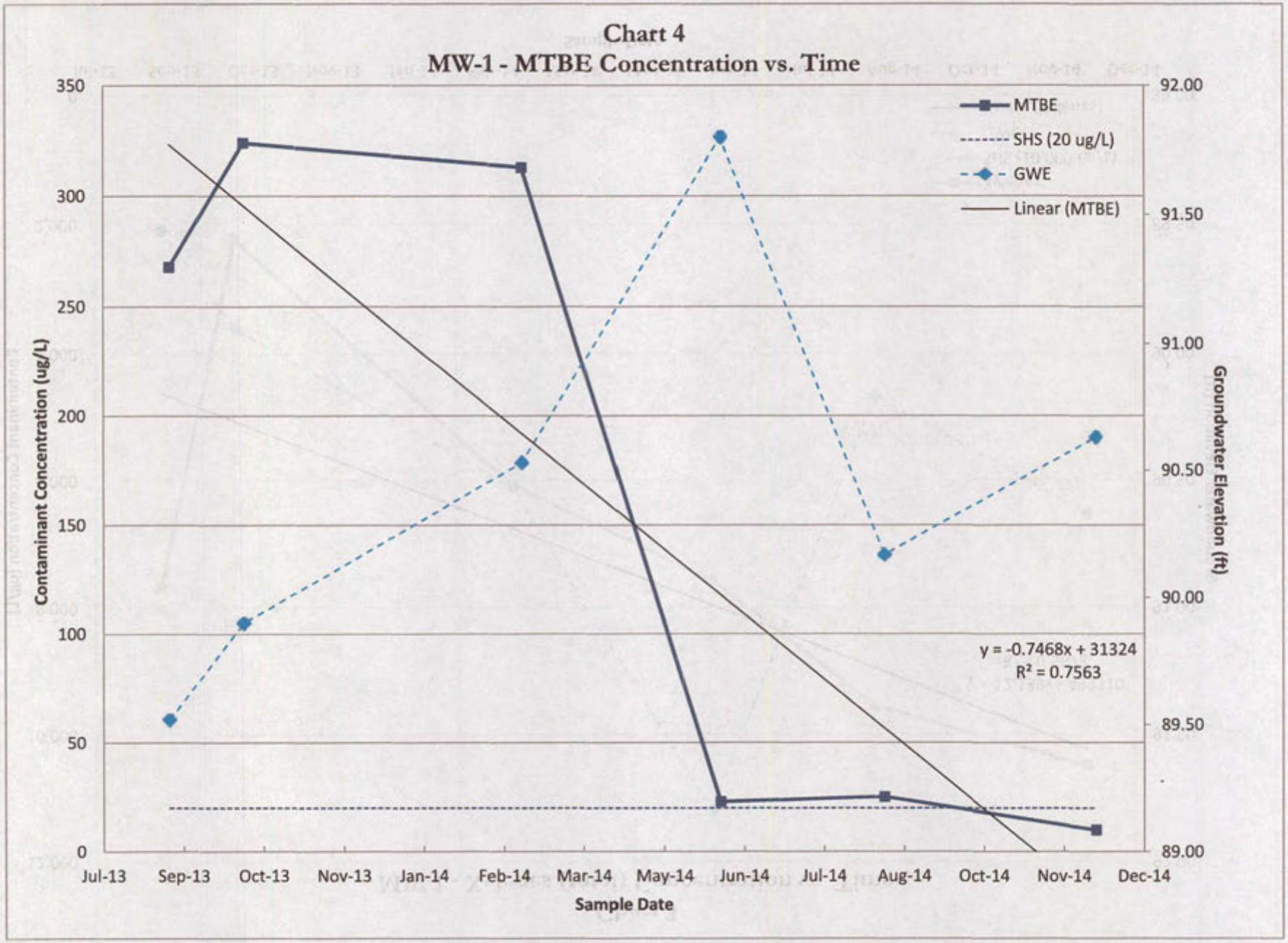
White Original - FLI File Canary - FLI Copy Pink - Customer Receipt Copy

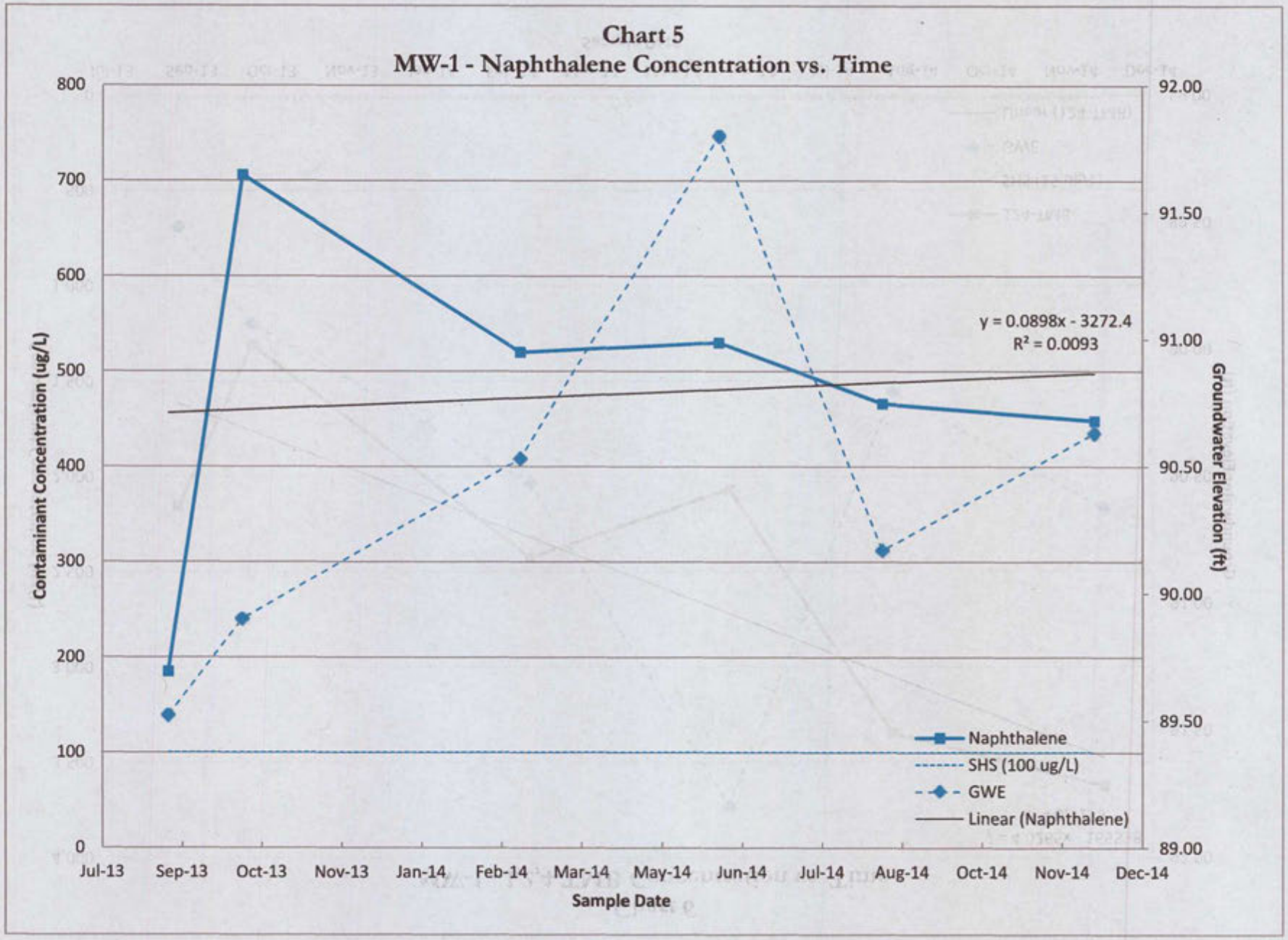
APPENDIX IV – CHARTS

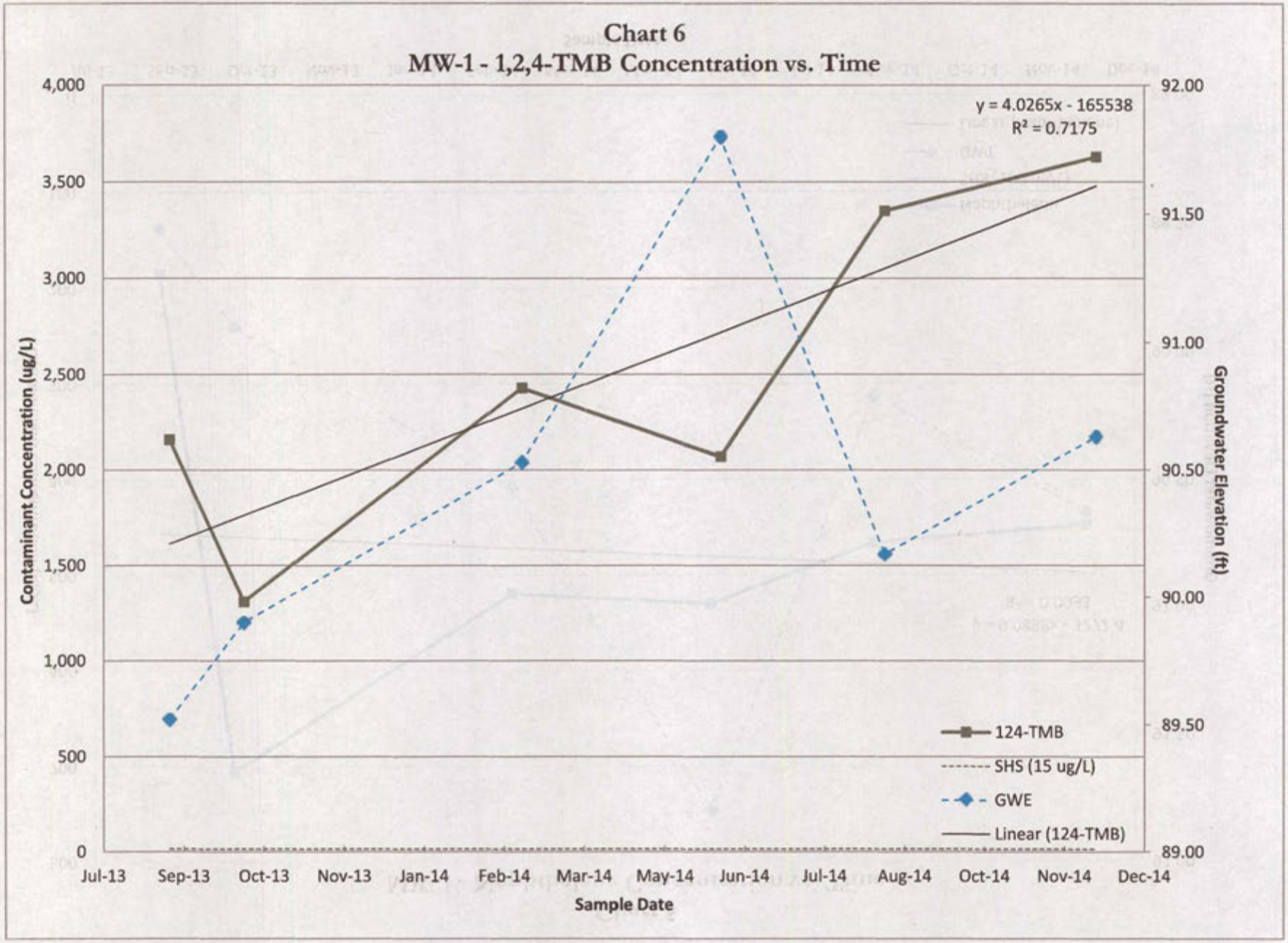


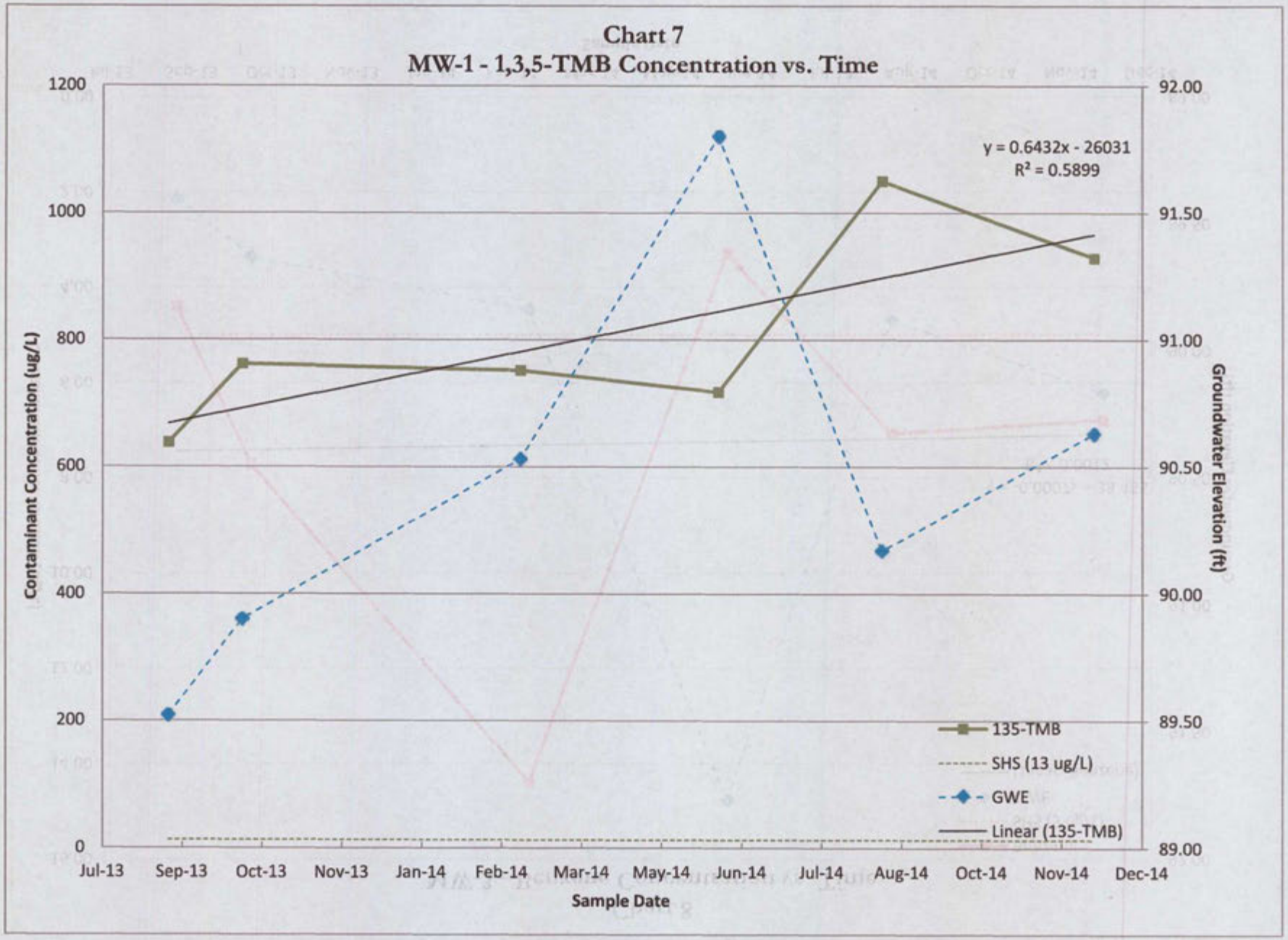


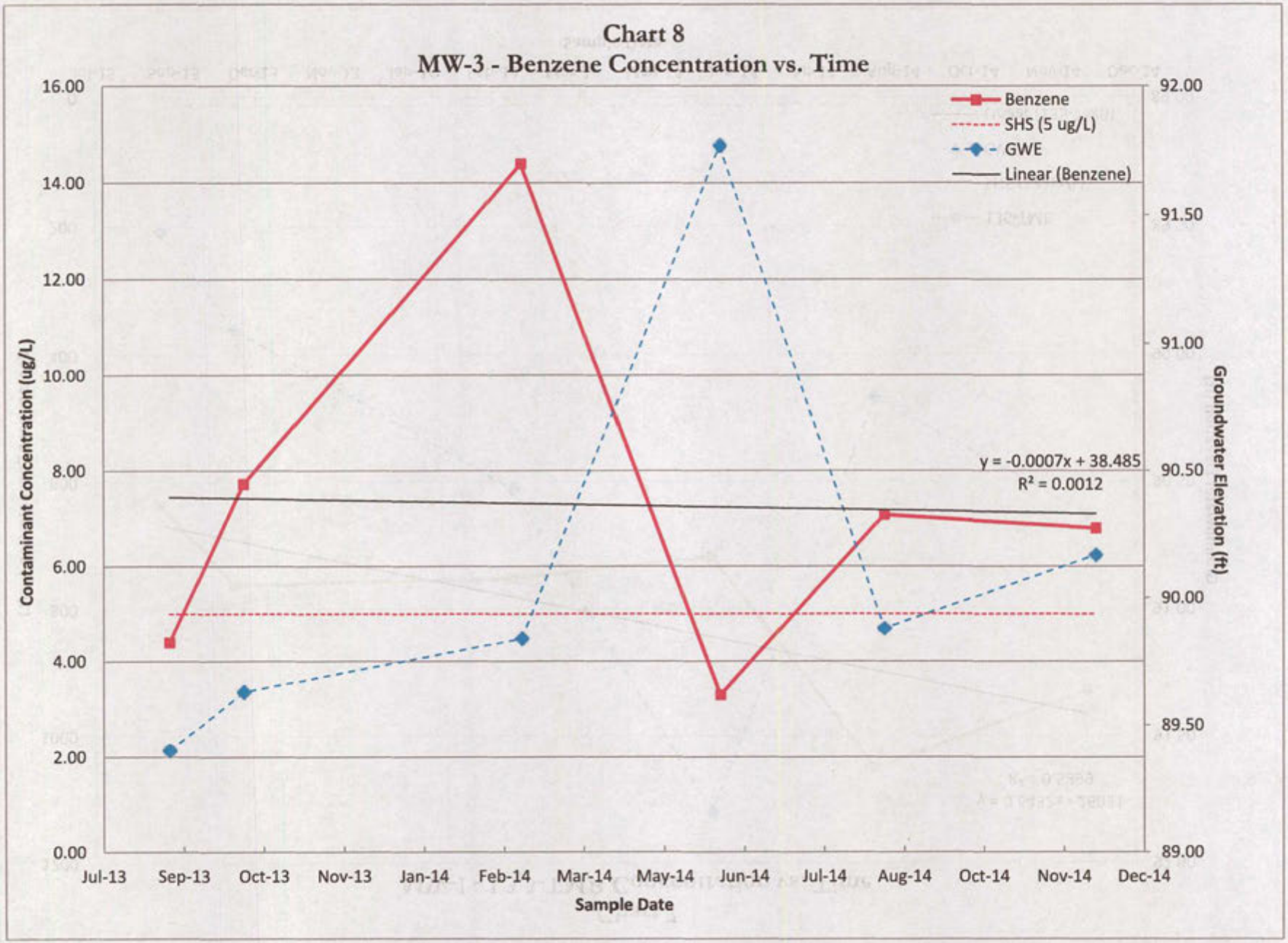


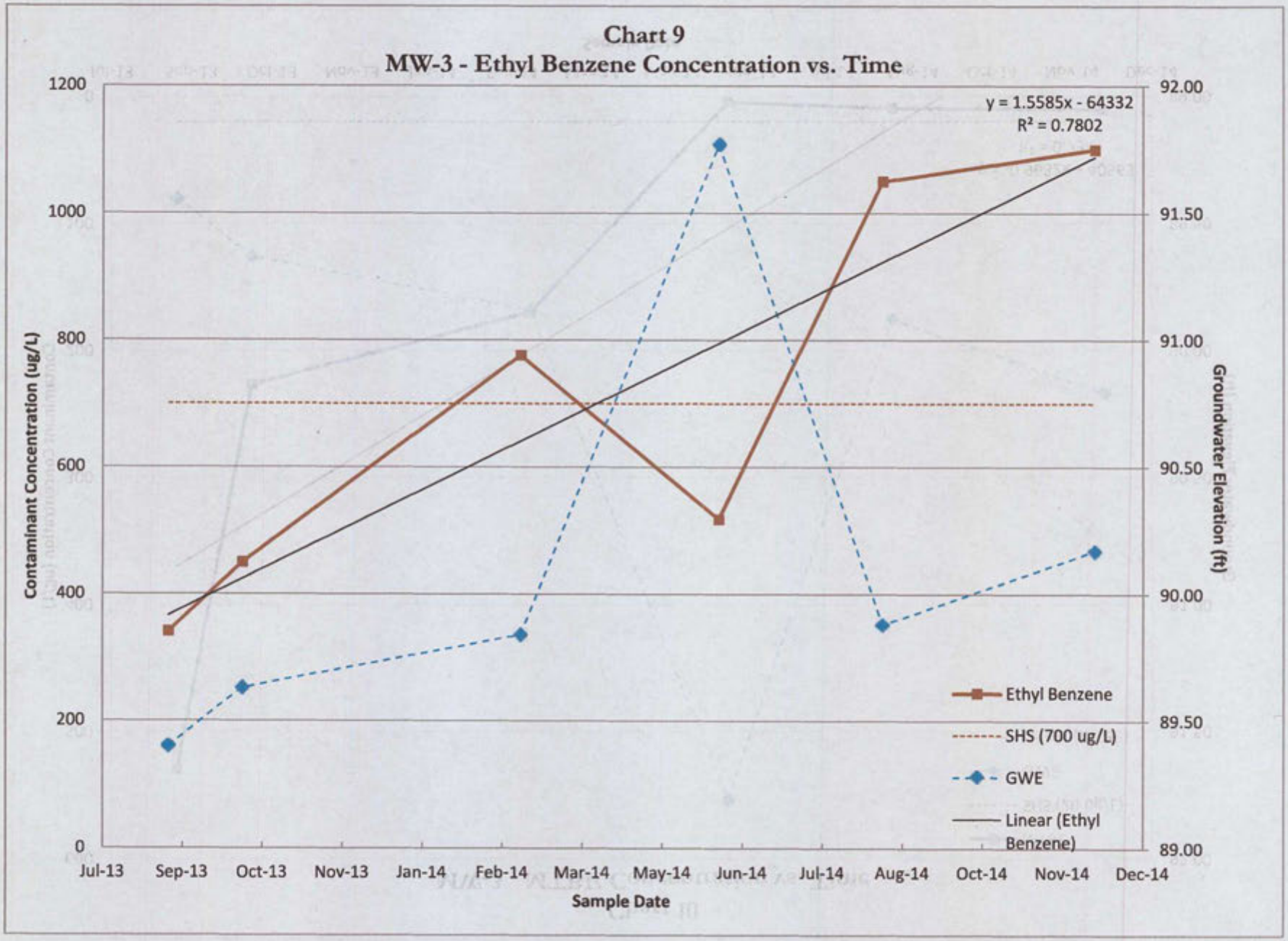


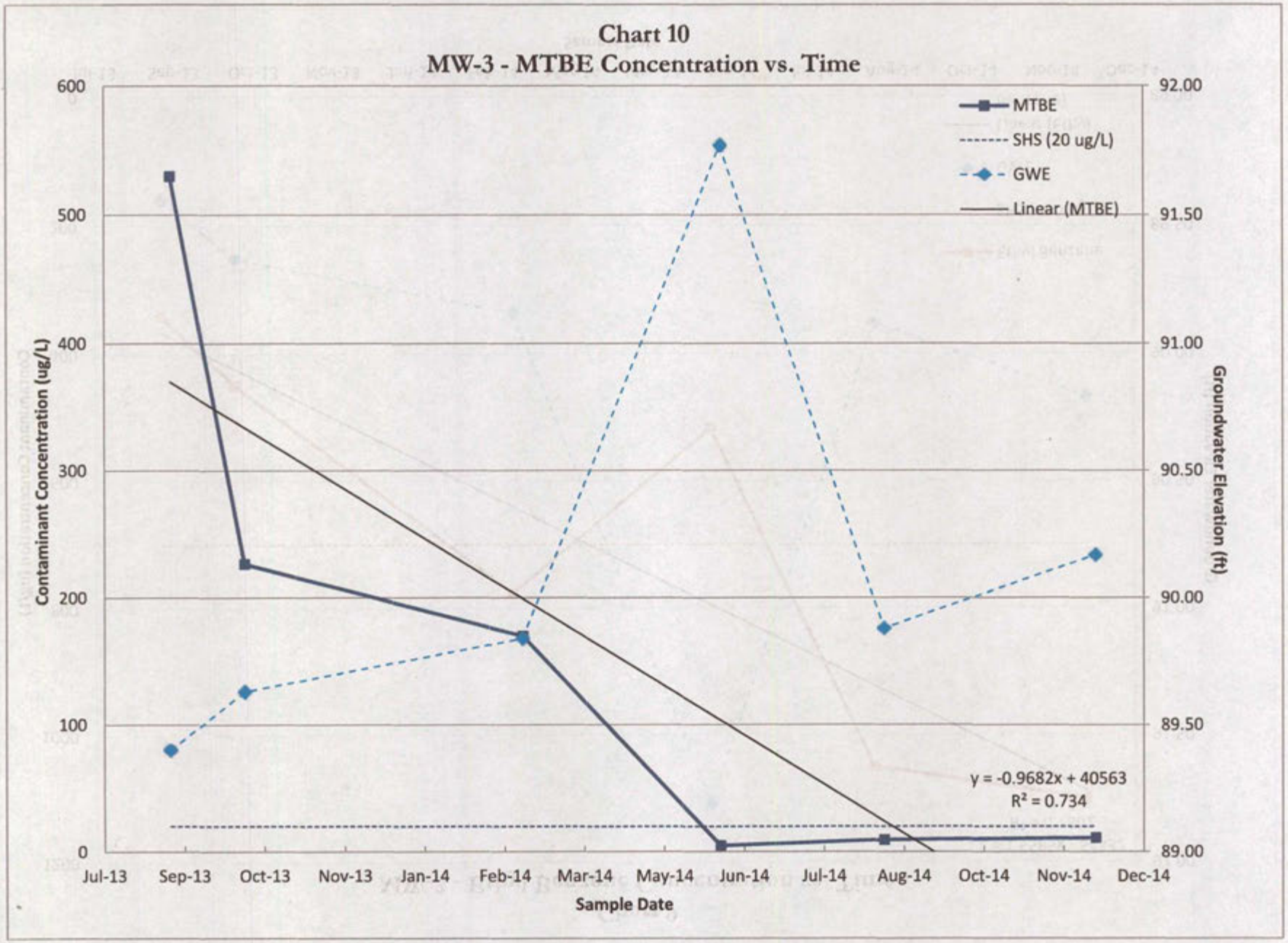


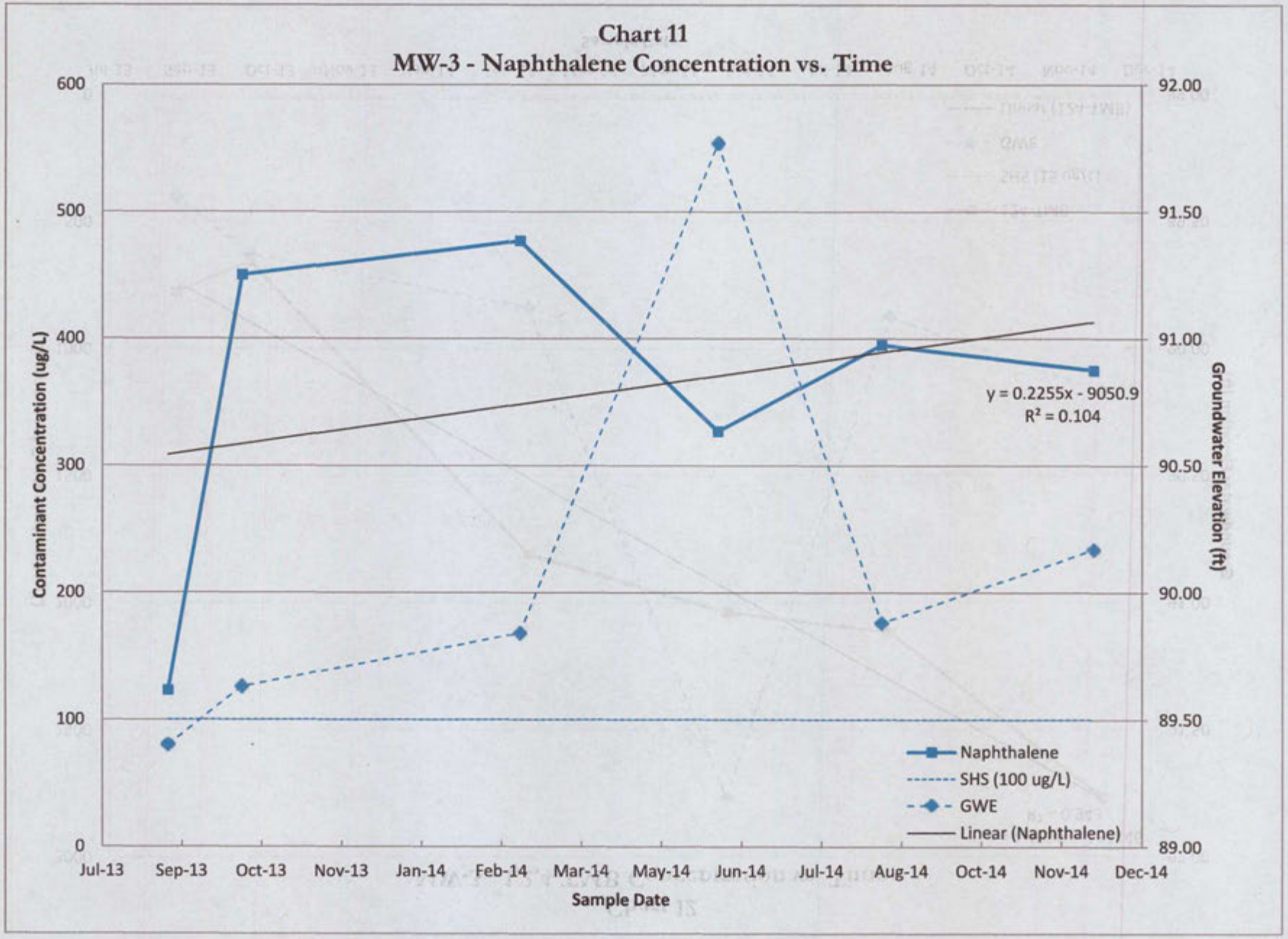


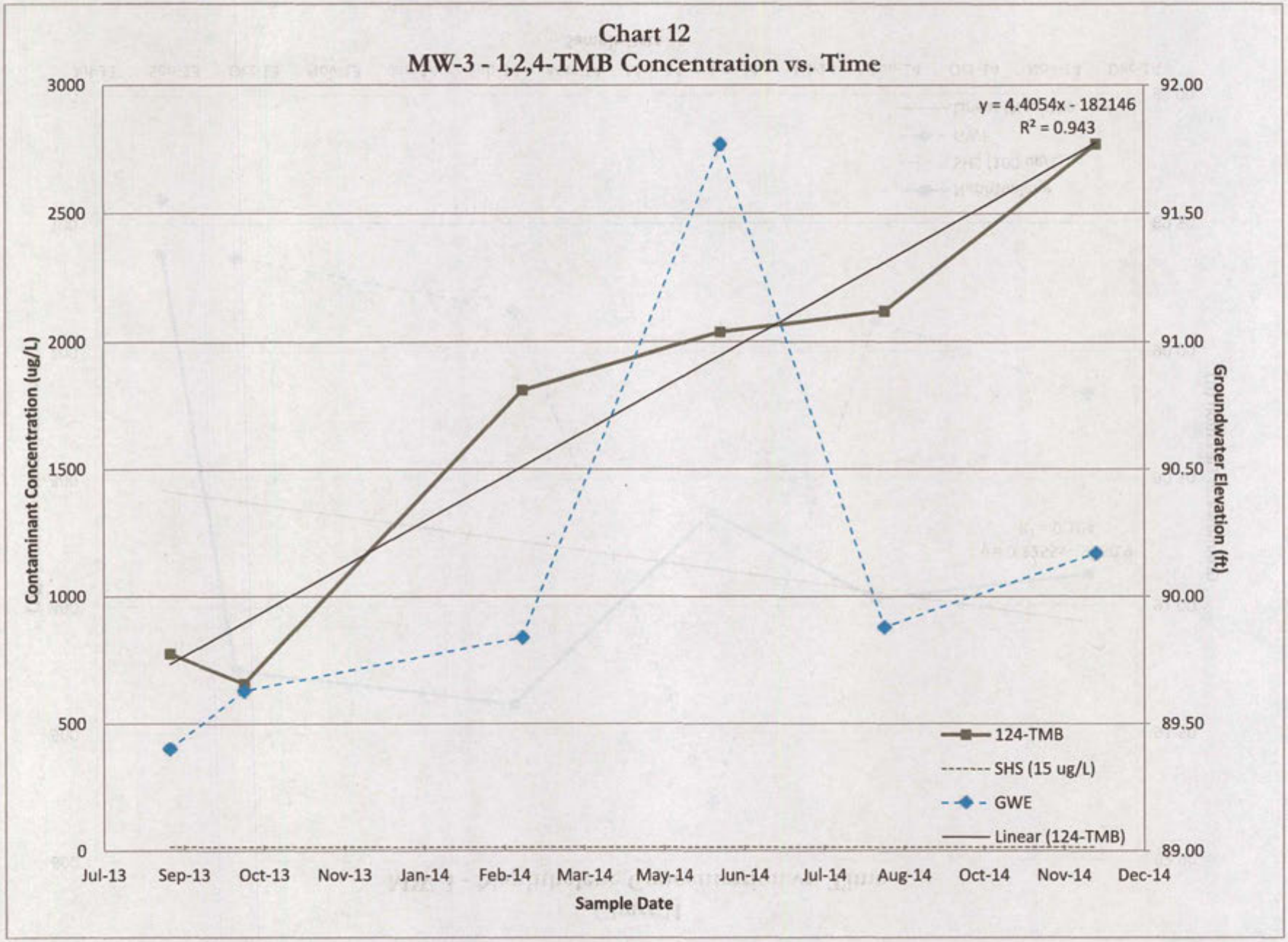


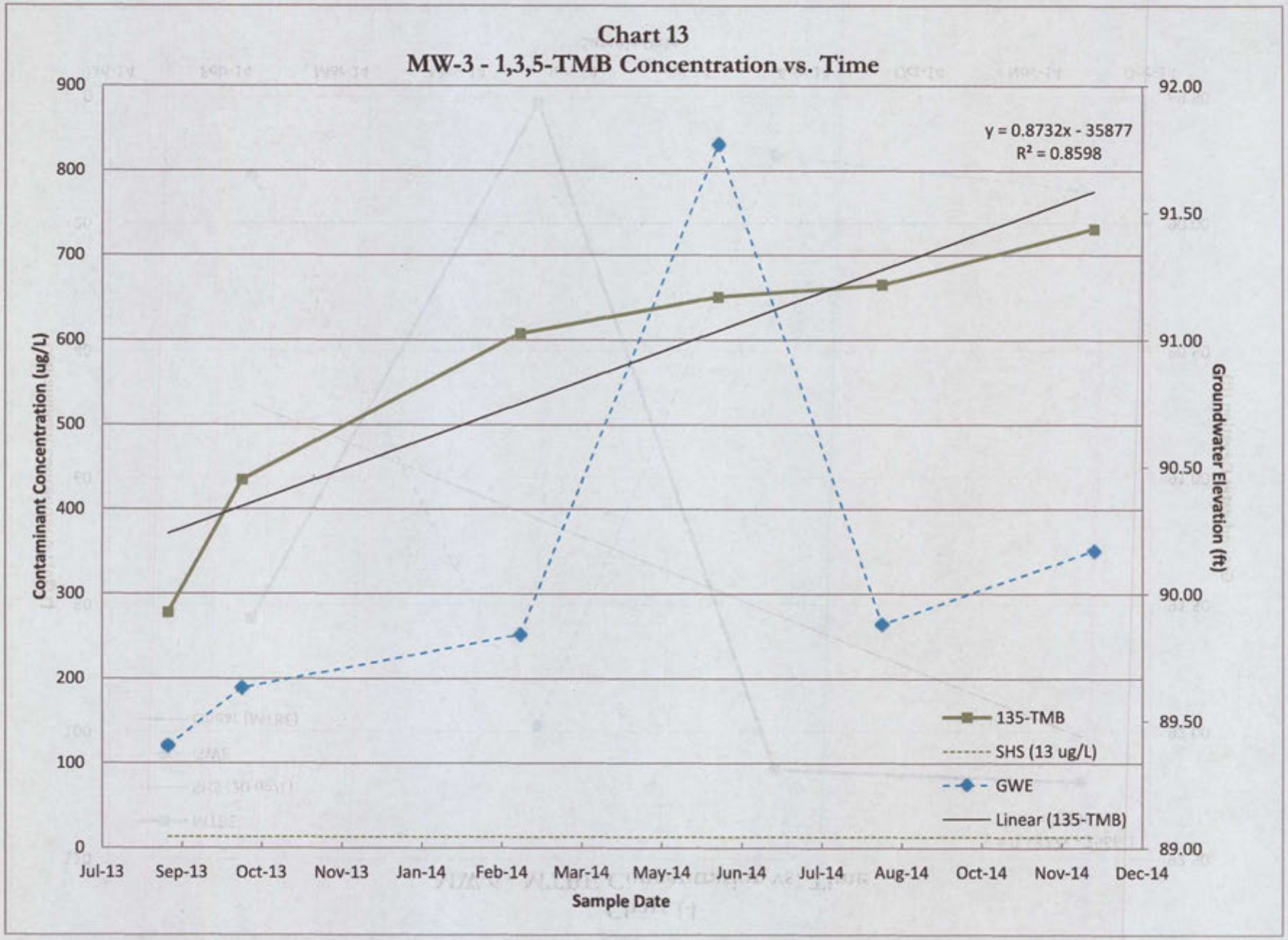


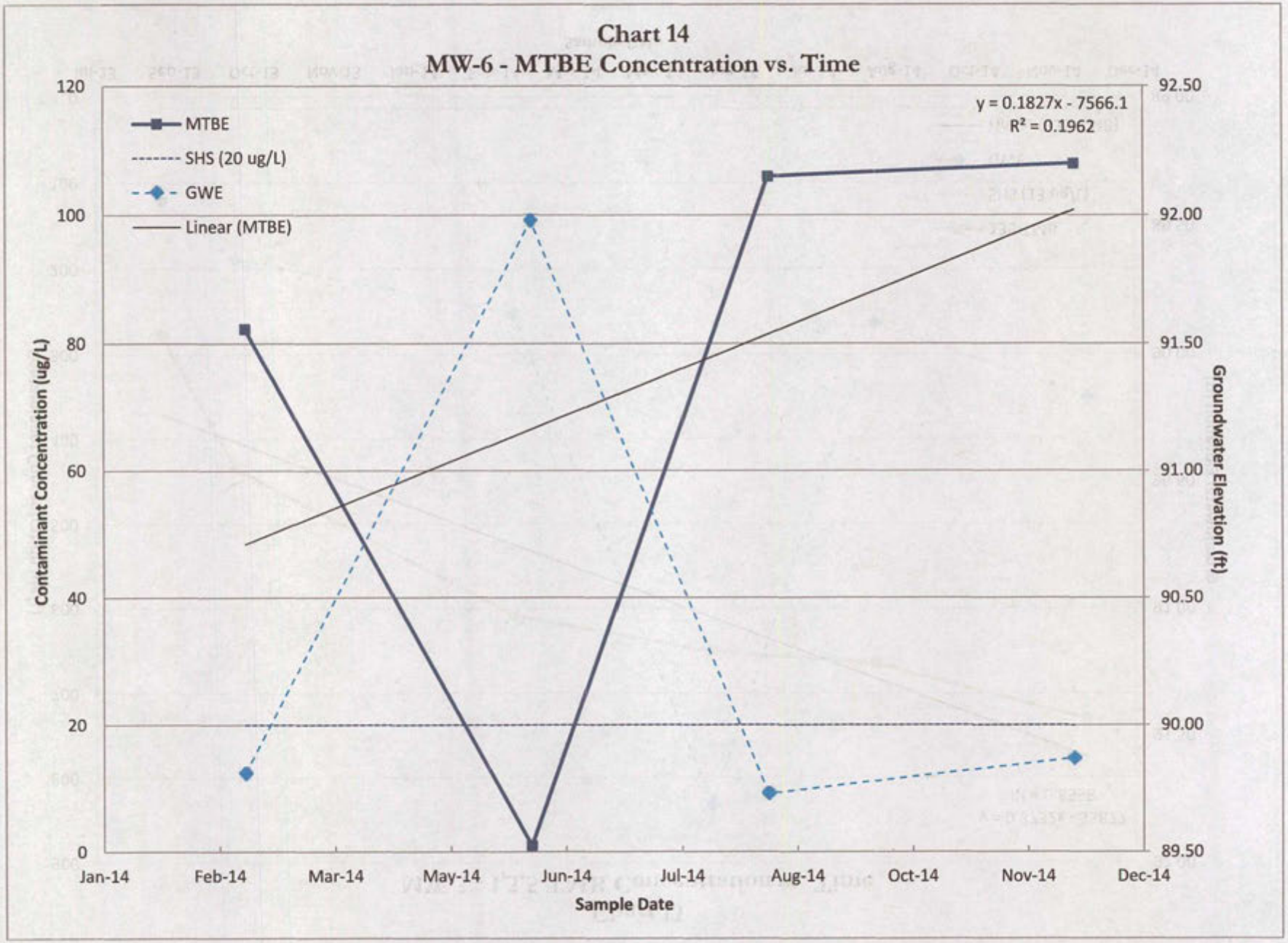












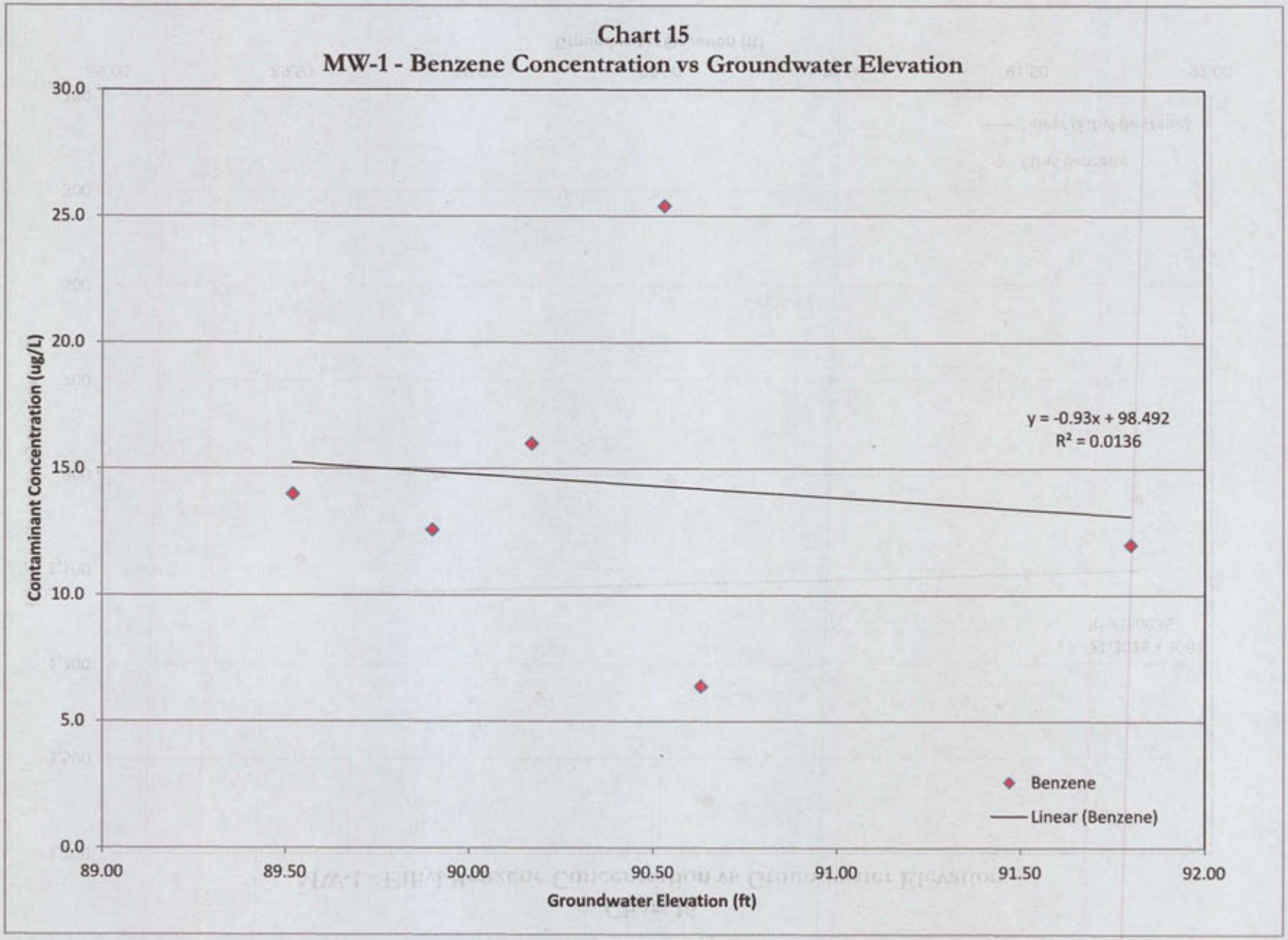
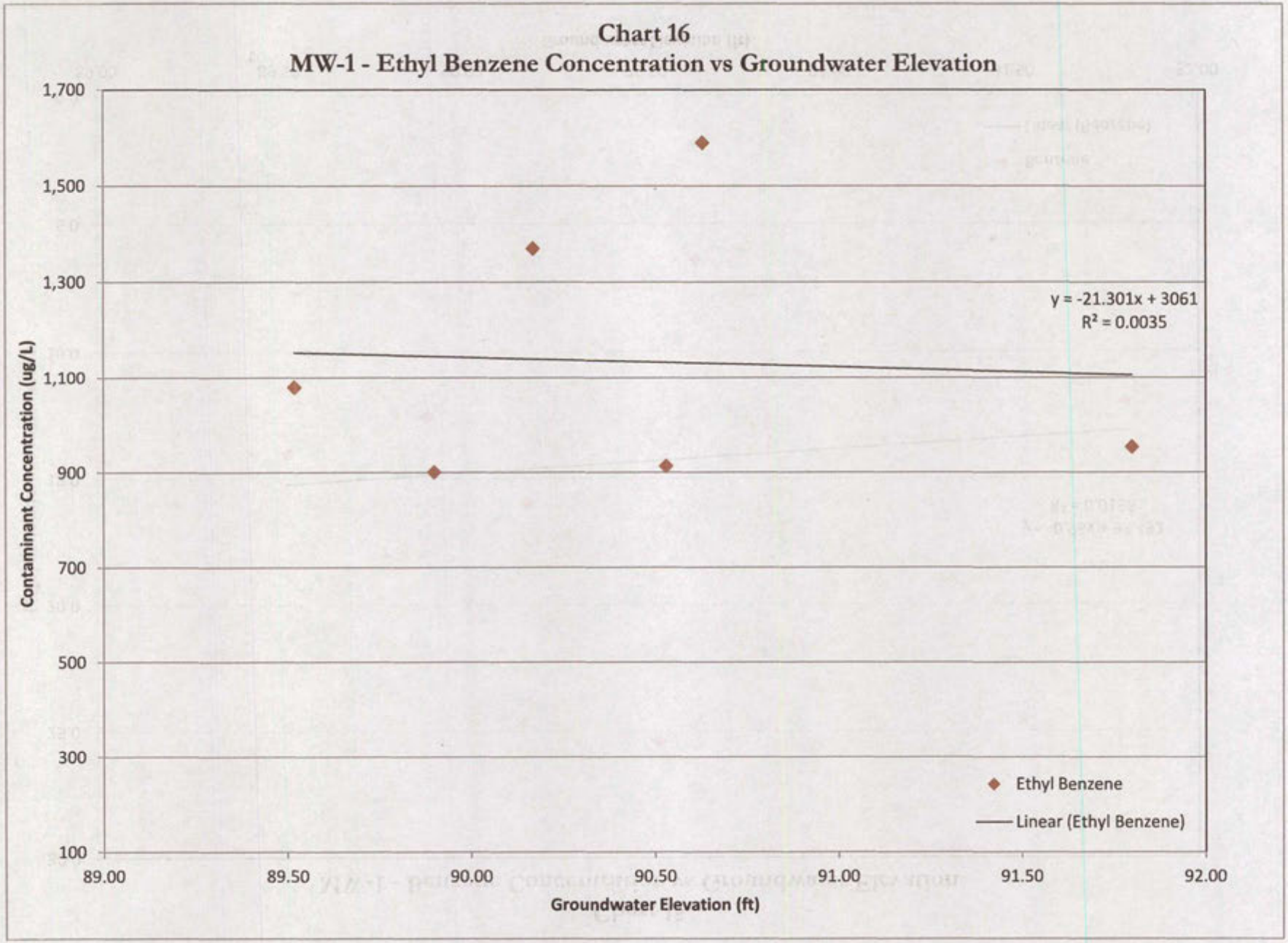


Chart 16
MW-1 - Ethyl Benzene Concentration vs Groundwater Elevation



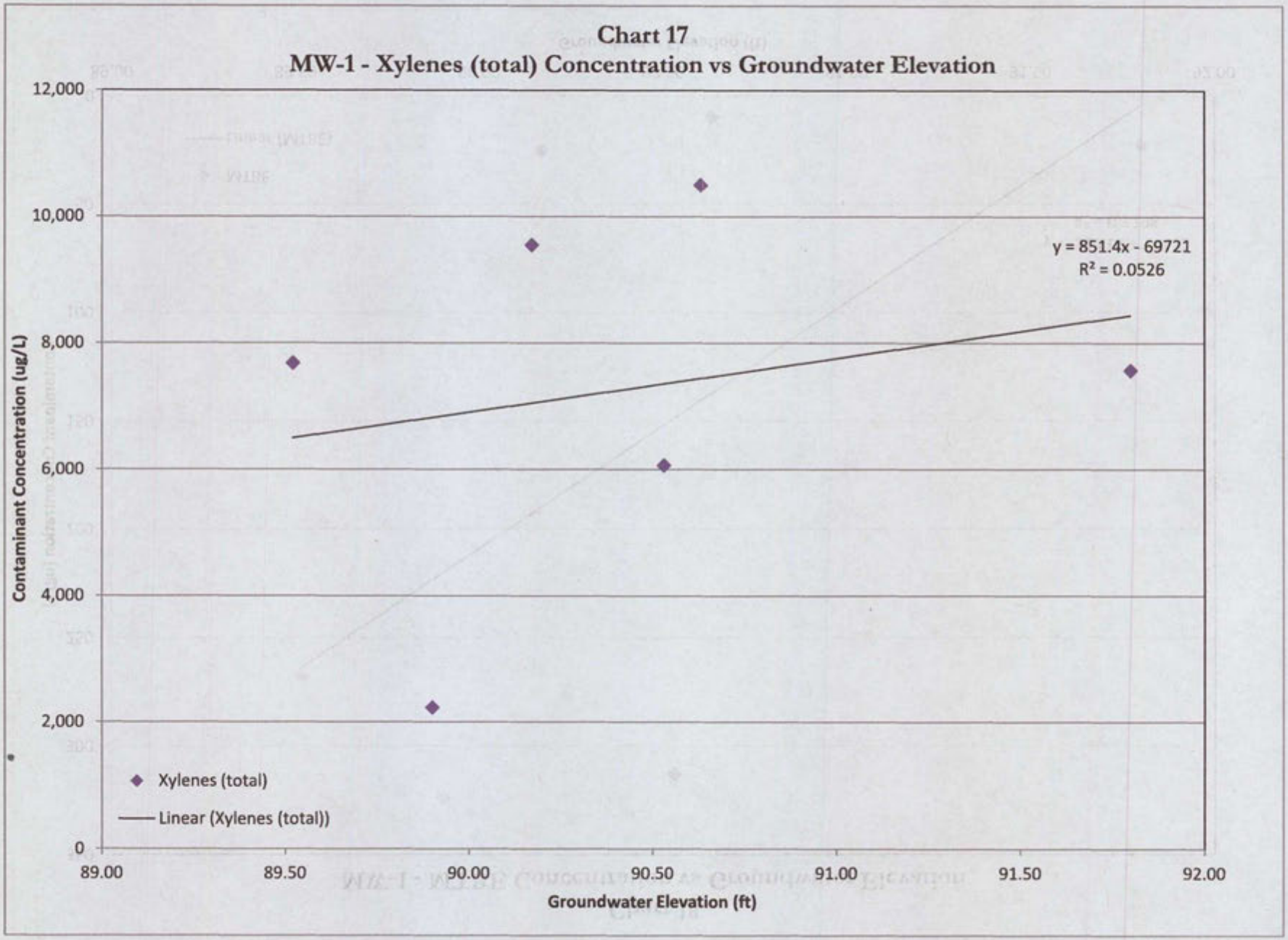
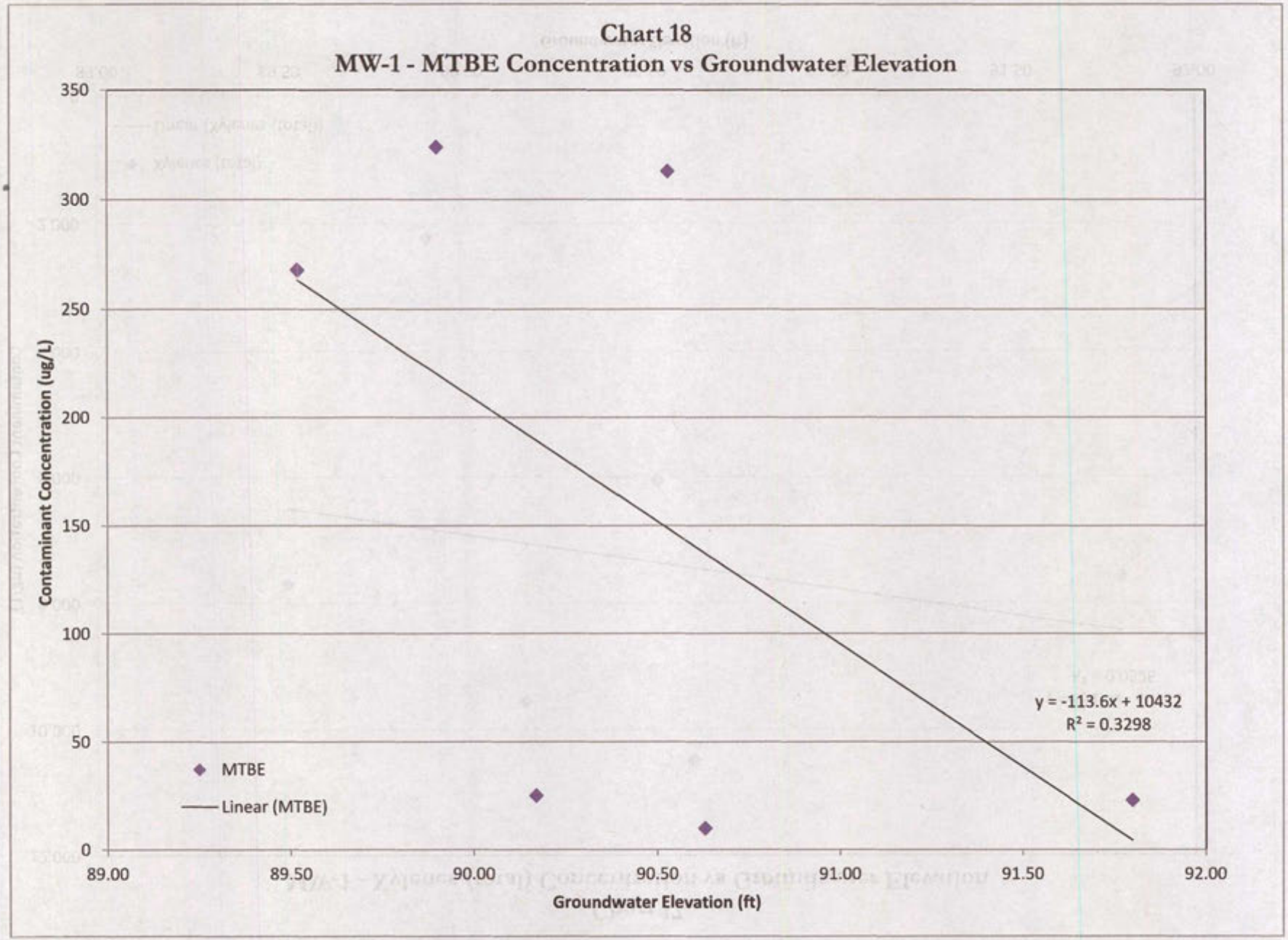


Chart 18
MW-1 - MTBE Concentration vs Groundwater Elevation



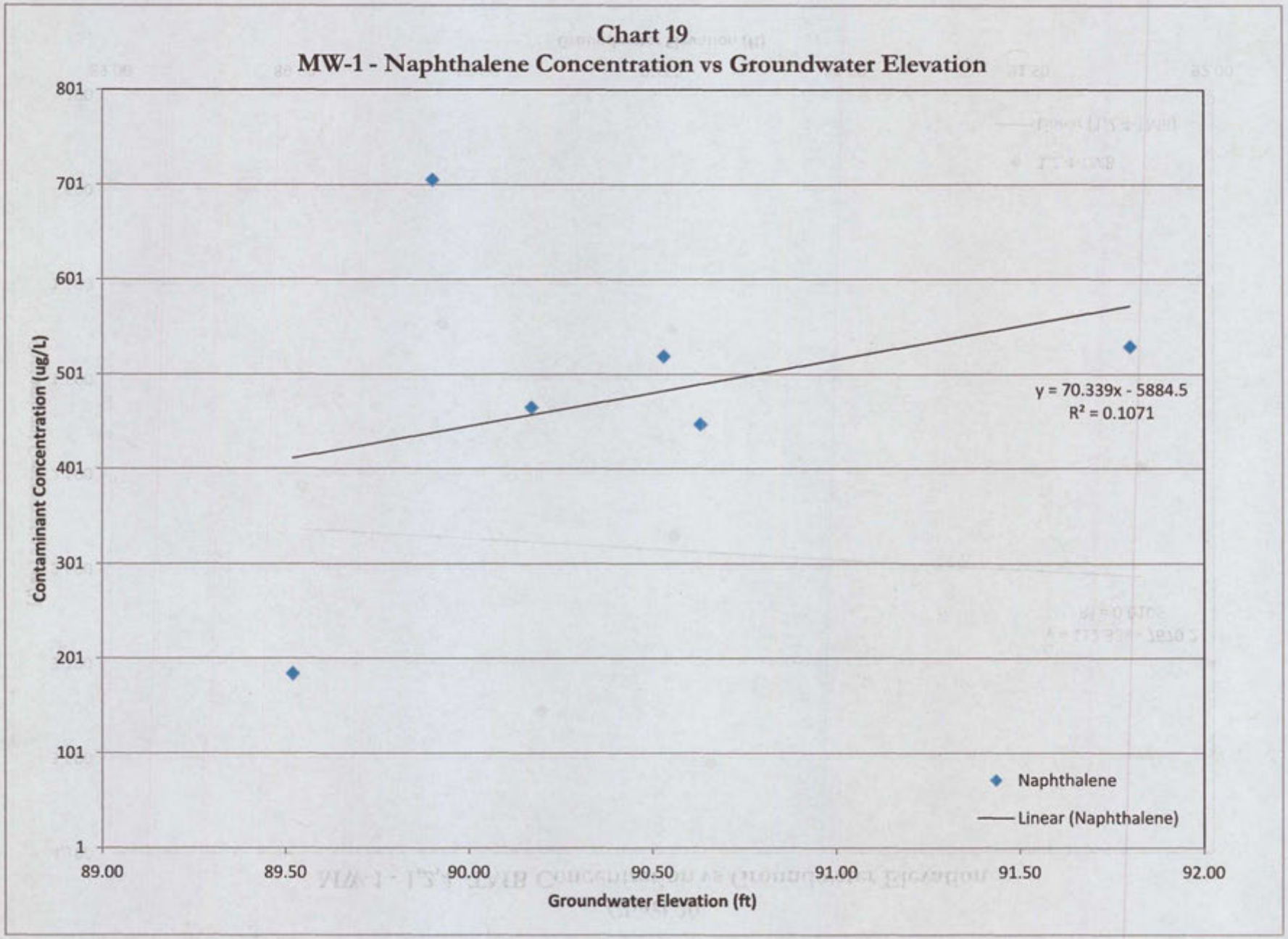


Chart 20
MW-1 - 1,2,4,-TMB Concentration vs Groundwater Elevation

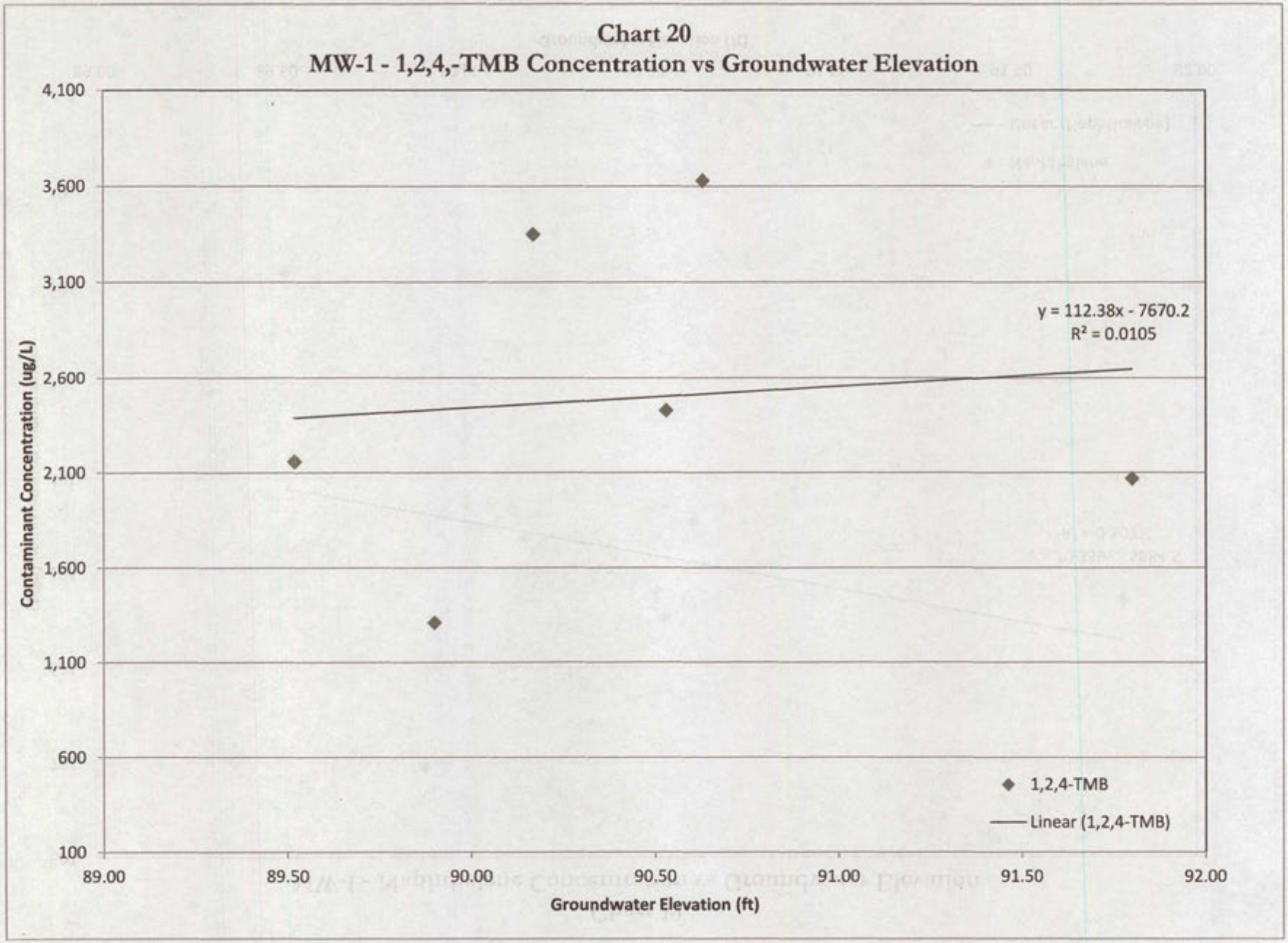


Chart 21

MW-1 - 1,3,5-TMB Concentration vs Groundwater Elevation

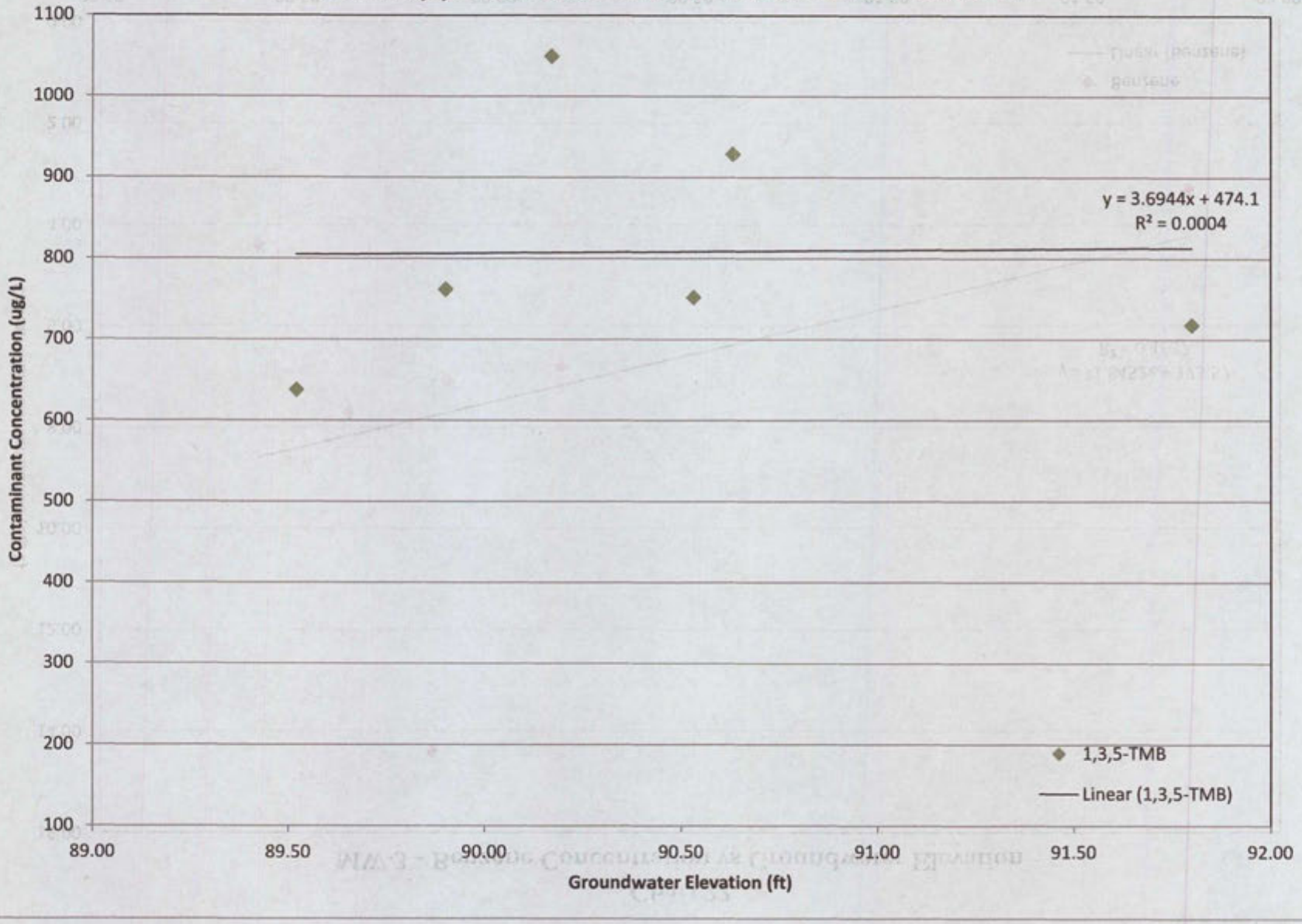
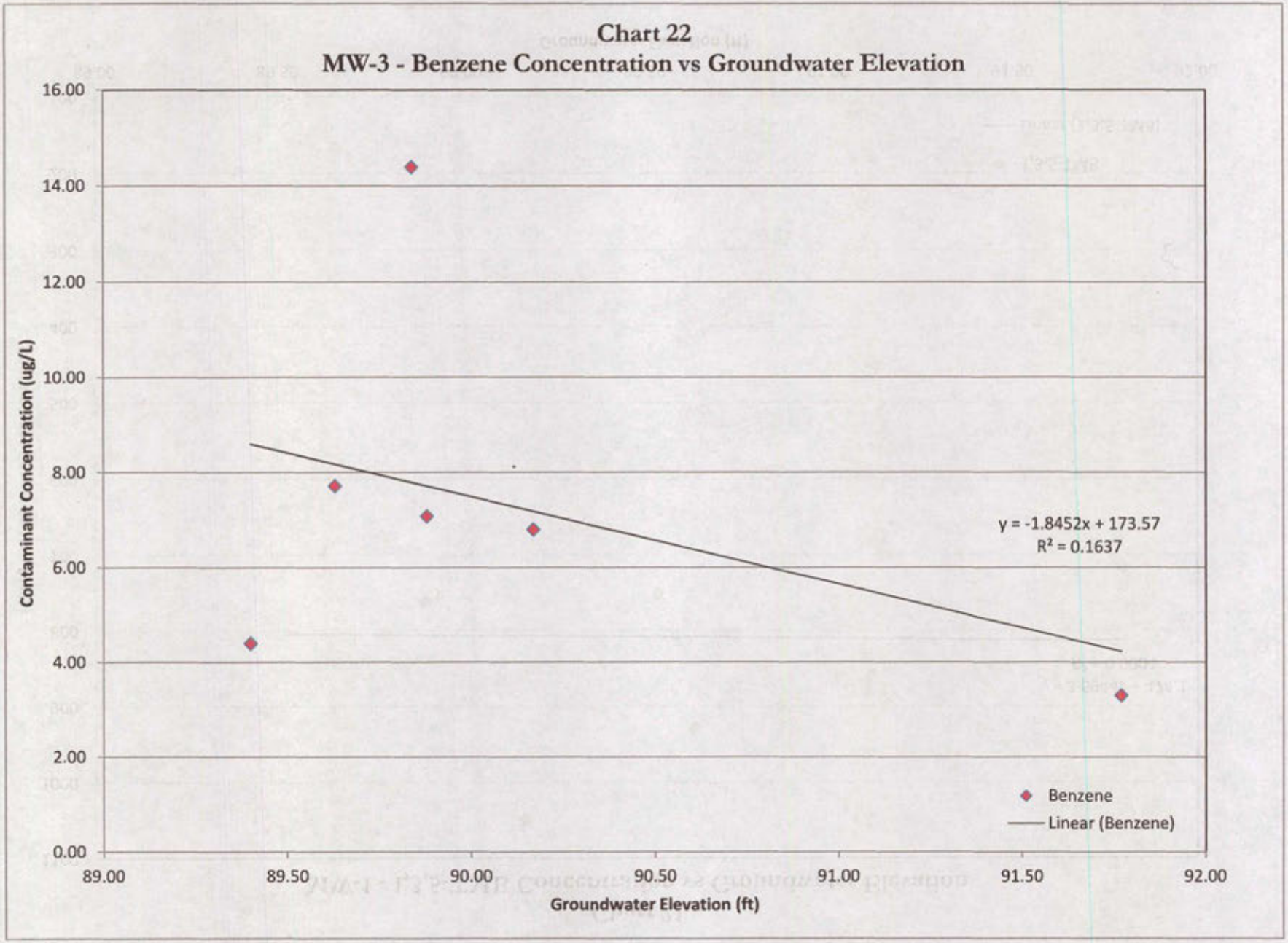


Chart 22
MW-3 - Benzene Concentration vs Groundwater Elevation



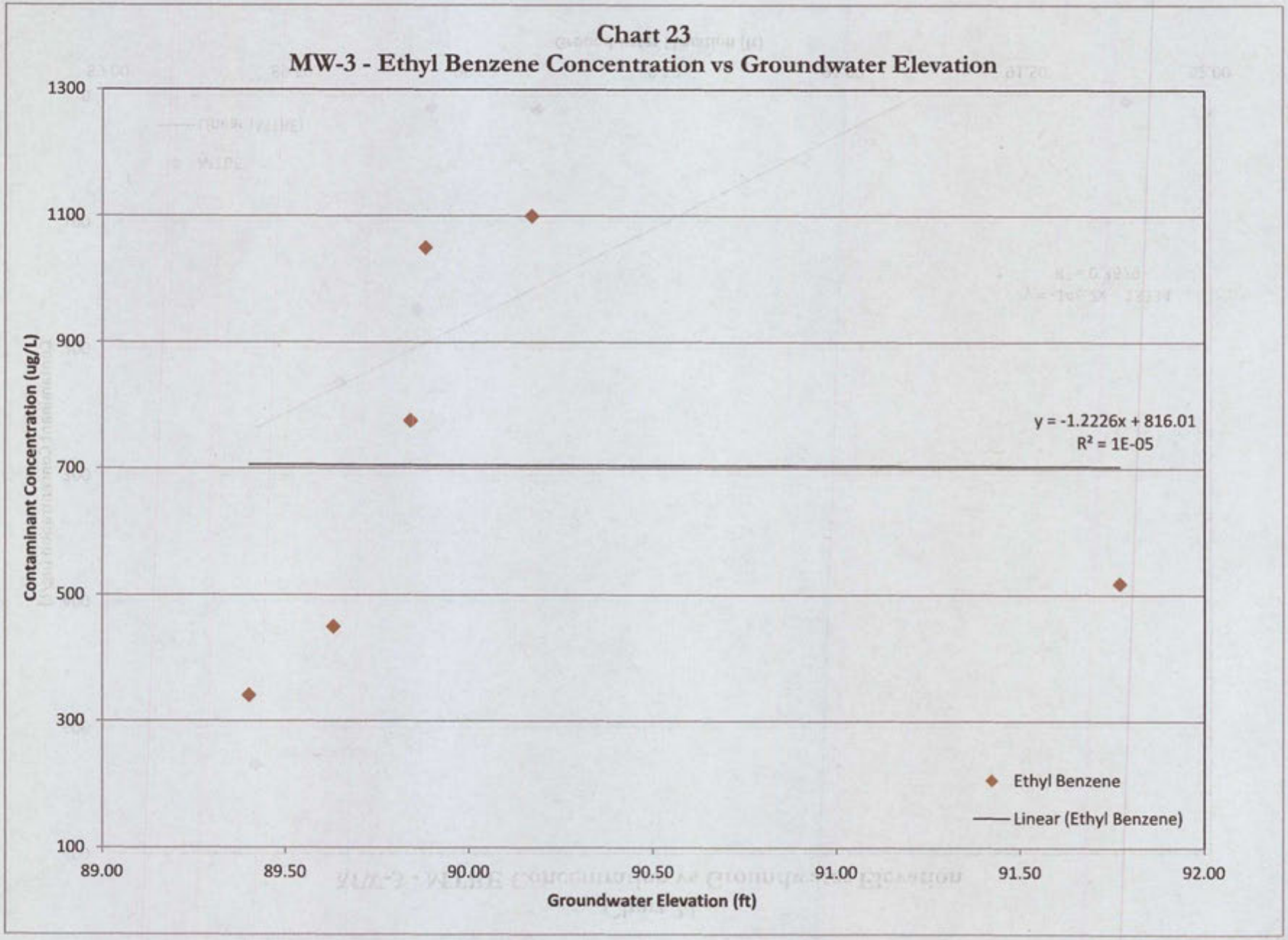


Chart 24
MW-3 - MTBE Concentration vs Groundwater Elevation

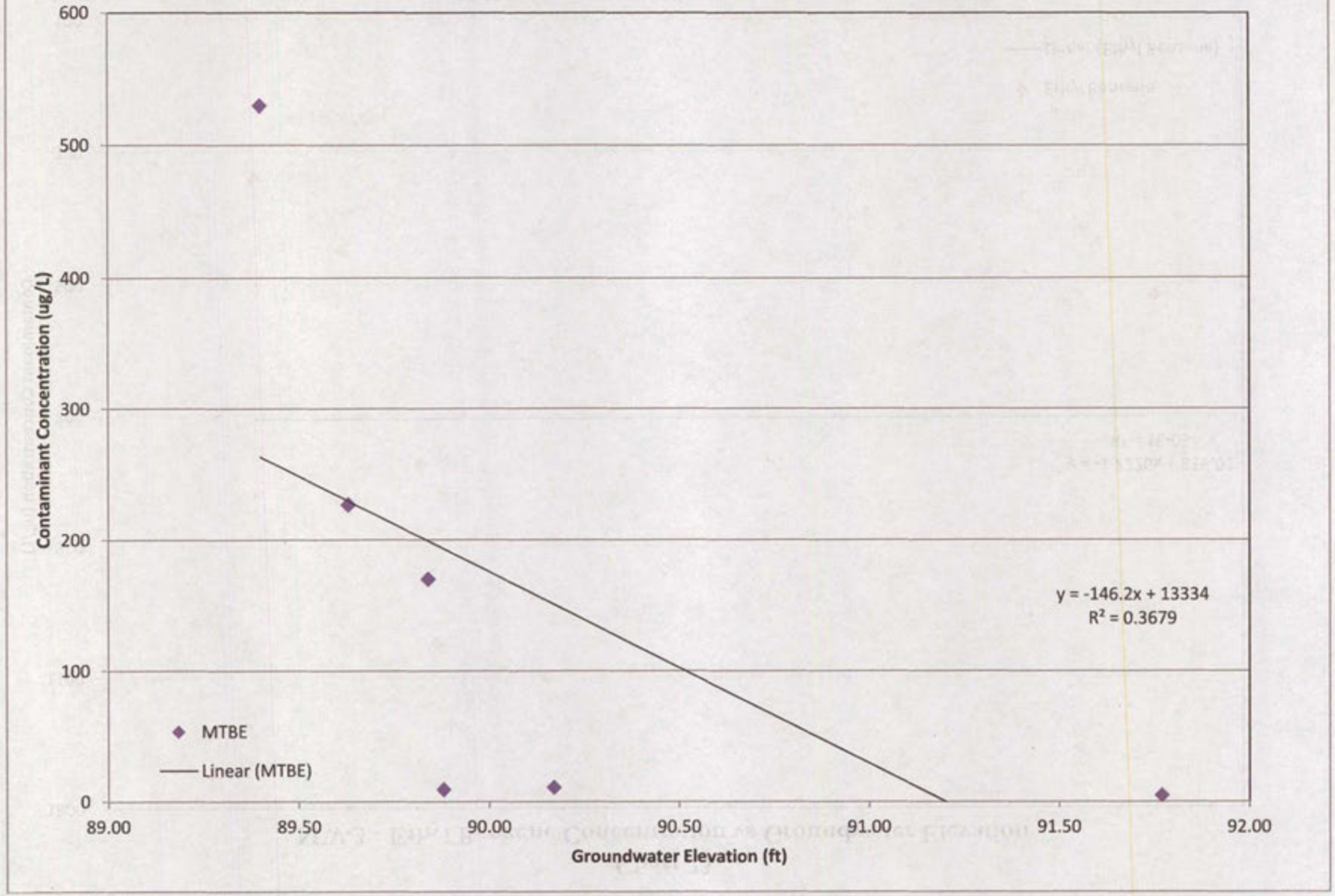


Chart 25
MW-3 - Naphthalene Concentration vs Groundwater Elevation

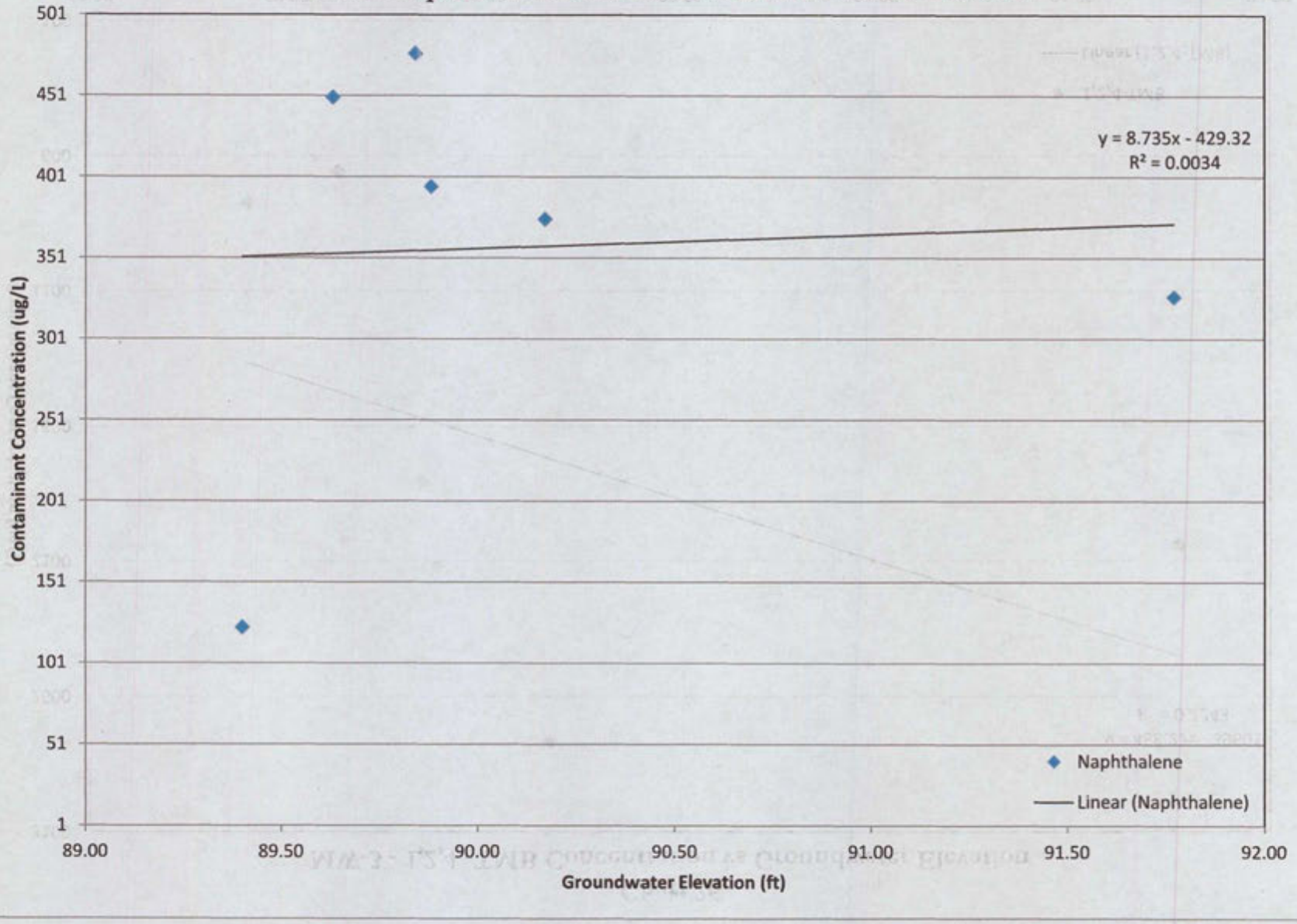
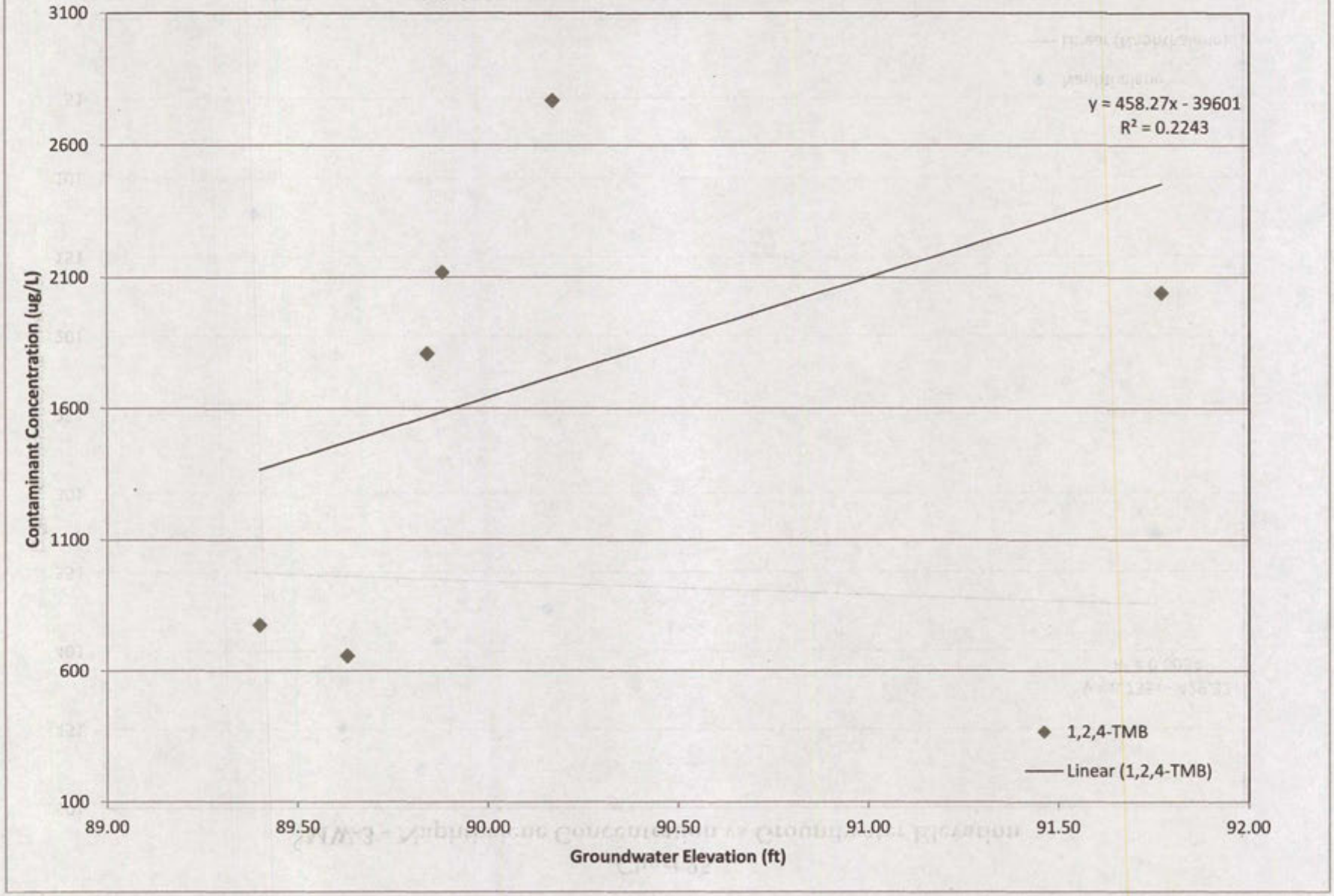


Chart 26
MW-3 - 1,2,4,-TMB Concentration vs Groundwater Elevation



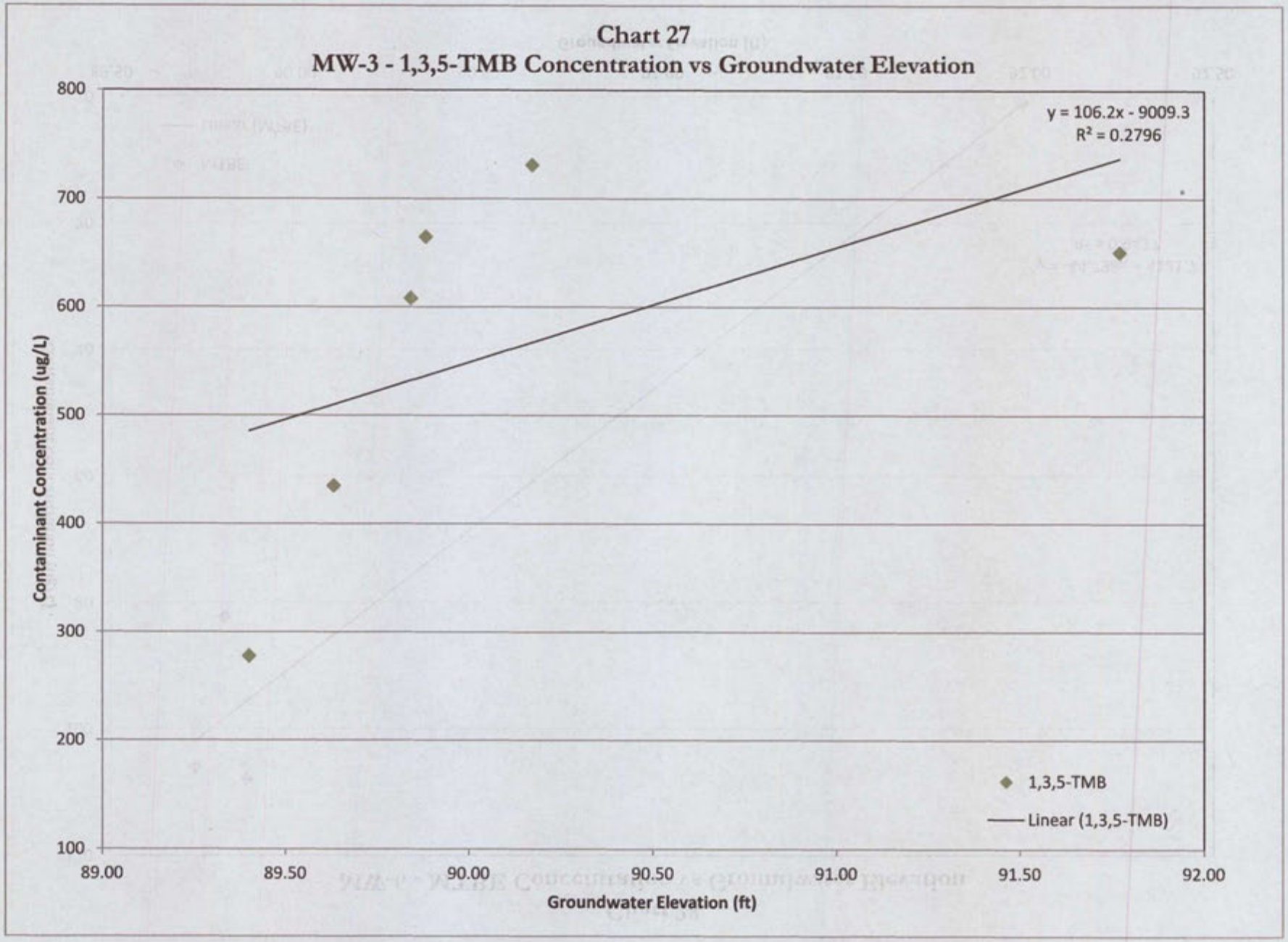
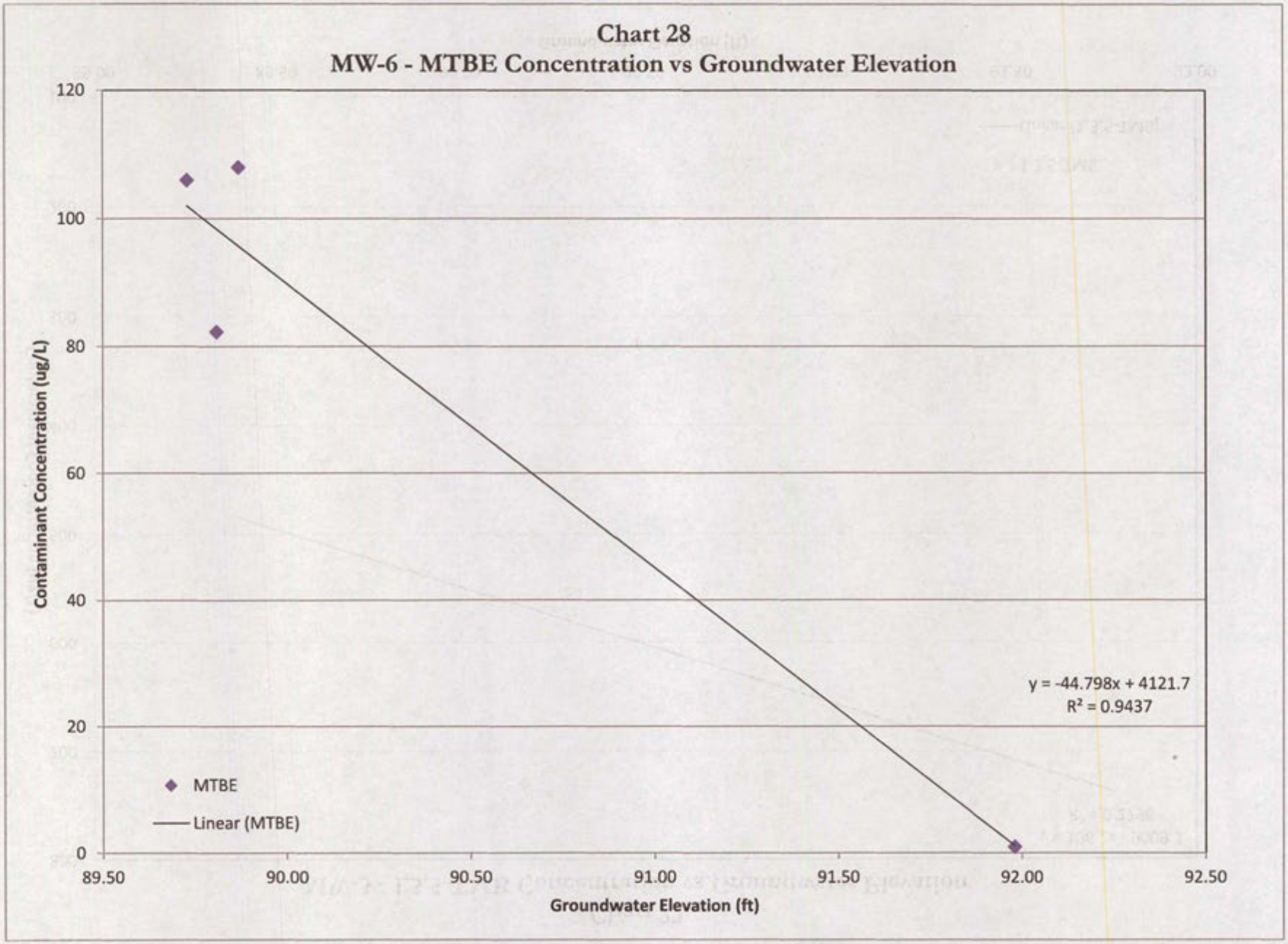


Chart 28
MW-6 - MTBE Concentration vs Groundwater Elevation



APPENDIX V – WASTE MANIFEST

Non Hazardous Manifest/Bill Of Lading (825)

All Correspondence and Invoices to:
Environmental Waste Minimization, Inc.
& Rapid Response, Inc.
14 Brick Kiln Court
Northampton, PA 18067
Phone 484-275-6900
Fax 484-275-6970

Document # 57267

Job/Project # 108972

THIS SECTION TO BE COMPLETED BY GENERATOR:

COMPANY NAME/ADDRESS

Former Root Oil Facility
6872 Willow Brook Rd
Alexandria, PA 16901

Site:
201 West Main Street
Knoxville, PA 16928

IN CASE OF EMERGENCY OR SPILL CONTACT
Rapid Response Inc.

24 HOUR EMERGENCY PHONE #
877-460-1038

QUANTITY	SIZE/TYPE	DESCRIPTION	APPROVAL CODE	WEIGHT/VOLUME
203	55/DM	Non-RCRA Regulated, Non-DOT Regulated Material (IDW Drill Cuttings)	1412-05026-SPT	02100 P
		PO # 01-108972		

I Hereby certify that the above named waste(s) are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the DOT and the EPA.

GENERATOR'S SIGNATURE: Brian Haydt (Agent for Generator)
PRINT NAME: Brian Haydt
DATE: 1/14/15

THIS SECTION TO BE COMPLETED BY HAULER / TRANSPORTER:

COMPANY NAME	ADDRESS	PHONE NO.
Environmental Waste Minimization, INC	14 Brick Kiln Ct, Northampton, PA. 18067	(484) 275-4900

VEHICLE I.D. NO.	STATE	BOX NUMBER-IN	BOX NUMBER-OUT	COMMENTS
T-154	PA			

I Hereby certify that the above described waste(s) were accepted for transportation at the producer's site for delivery to the waste facility. Both as listed hereupon.

DRIVER'S SIGNATURE: Brian Haydt
PRINT DRIVER'S NAME: Brian Haydt
DATE: 1/14/15

THIS SECTION TO BE COMPLETED BY RECEIVER AT DISPOSAL FACILITY: (ONCE SIGNED, A COPY MUST BE FORWARDED TO EWMI AND GENERATOR)

FACILITY NAME	ADDRESS	PHONE NO.
Environmental Recovery Corp.	1076 Old Manheim Pike, Lancaster PA 17601	717-393-2627

COMMENTS

I Hereby certify that the above described wastes were delivered to this Facility, that the Facility is authorized and permitted to receive such wastes.

AUTHORIZED SIGNATURE
PRINT NAME
DATE

1/26/2015 3:28:32 PM

APPENDIX VI – SOIL BORING AND MONITORING WELL CONSTRUCTION LOGS

SOIL BORING LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

Boring / Well Number:	Facility Name:	Facility Address:
MW-7	**Former Root Oil**	**Knoxville, PA**

PADEP Facility ID: **#59-11706**	Date(s) Drilled: **November 18, 2014**	Page **1** of **1**

Soil Boring Depth (ft) X Diameter (in): **20' X 2"**	Soil Boring / Drilling Method: **Geoprobe**
Monitoring Well Depth (ft) X Diameter (in): **NA**	
Drilling Contractor Name: **Odysessy Environmental Services**	Logged By: **Corey Rilk (Juniata Geosciences)**
Ground Surface Elevation (ASL or Relative): **NA**	Top of Casing Elevation (ASL or Relative): **NA**

Depth (feet)	Soil Description				Sample(s)			Well Construction Details
	USCS	Symbol	Color/Grain Size	PID (ppm)	Depth	Time / Date	Label	
			0-6" Asphalt / subbase					Flushmount and Locking Pressure Cap
	GM		6"-5.0' Handcleared, fill mixed with brick and stone.	0.0				6"-3' - Bentonite
5	GM		5' - 10' (3' recovery) Brown sandy silty gravel (moist at 8')	0.0	MW-7 Sampled at 7' at 1035			0-4.15 ft - 2-Inch schedule 40 PVC riser
10	GM		10'-15' (1' recovery) Wet SAA	0.0				3.15 - 19.15 ft - #1 Well Grade Sand
15	SC		15'-20' (5' Recovery) Wet Gray sandy silty clay	0.0				4.15 -19.15 ft - 2-Inch 20 Slot schedule 40 PVC screen
20								Total Depth = 19.15 ft

SOIL BORING LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

Boring / Well Number:	Facility Name:	Facility Address:
MW-8	**Former Root Oil**	**Knoxville, PA**

PADEP Facility ID: **#59-11706**	Date(s) Drilled: **November 18, 2014**	Page **1** of **1**

Soil Boring Depth (ft) X Diameter (in): **20' X 2"**	Soil Boring / Drilling Method: **Geoprobe**
Monitoring Well Depth (ft) X Diameter (in): **NA**	
Drilling Contractor Name: **Odysessy Environmental Services**	Logged By: **Corey Rilk (Juniata Geosciences)**
Ground Surface Elevation (ASL or Relative): **NA**	Top of Casing Elevation (ASL or Relative): **NA**

Depth (feet)	Soil Description				Sample(s)			Well Construction Details
	USCS	Symbol	Color/Grain Size	PID (ppm)	Depth	Time / Date	Label	
			0-6" Asphalt / subbase					Flushmount and Locking Pressure Cap
	GM		6"-5.0' Handcleared, fill mixed with brick and stone.	0.0				6"-3' - Bentonite
5	GM		5' - 10' (3' recovery) Brown silty gravel (moist at 8')	0.0	MW-8 Sampled at 7' at 1300			0-4.85 ft - 2-Inch schedule 40 PVC riser
10	GM		10'-15' (4' recovery) Wet SAA	0.0				3.85 - 19.85 ft - #1 Well Grade Sand
15	SC		15'-20' (5' Recovery) Wet Brown sandy silty clay	0.0				4.85 -19.85 ft - 2-Inch 20 Slot schedule 40 PVC screen
20								Total Depth = 19.85 ft