SITE CHARACTERIZATION REPORT

Newtown Square BP/Former Amoco
3608 West Chester Pike
Newtown Square, PA 19073
Facility ID #: 23-09154

PREPARED FOR:

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April 2016

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EXECUTIVE SUMMARY

Newtown Square BP (former Amoco) retained MIG Consulting LLC (MIG) in October 2015 to conduct site characterization for their active petroleum retail facility located at 3608 West Chester Pike, Newtown Square, Delaware County, Pennsylvania (PaDEP ID#23-09154). Based on the results of the site characterization activities conducted to date, MIG has prepared this Site Characterization Report (SCR) for the PaDEP review.

Background

The site is currently owned by 3608 Newtown Square, Inc and it has been operated as a retail gasoline service station since the 1956's. The facility occupies an irregular shaped parcel that is approximately 0.4 acres, as shown in **Figure 2**.

This SCR has been prepared to document the findings of site characterization activities completed by MIG to date, in response to a confirmed gasoline release reported to the Pennsylvania Department of Environmental Protection (PaDEP) via Notification of Reportable Release (NORR) in November 12, 2013. The site characterization activities were conducted in accordance with the *Administration of the Storage Tank and Spill Prevention Program*, PA Code Title 25, Chapter 245, Section 245.309. The SCR was prepared in accordance with the Section 245.310, and the PaDEP Notice of Violation (NOV) letter dated October 23, 2013.

Reportedly, three (3) 10,000-gallon gasoline USTs (installed in 1974), located on the northwestern portion of the site and one (1) 10,000-gallon diesel UST (installed in 1981) located on the western portion of the site.

Based on the findings of the investigations, which demonstrate elimination of pathways to sensitive receptors, MIG selected **Site-Specific Standards (SSS)** for this site, in accordance with the PaDEP Title 25, chapter 250, Subchapter D, sections 250.401 through 250.411. The City of Newtown Square has a requirement that any new development (residential or commercial) must connect to the public water supply.

The following PaDEP requirements are met, allowing utilization of SSS as summarized below.

- Soil sample results did not indicate contaminant concentrations above PaDEP SHS.
- Only Benzene and MTBE are detected in groundwater at the site above the PaDEP SHS;
- Benzene was detected in only 3 wells (MW-1, MW-2 & MW-5) out of 10 wells sampled at the site at concentrations above the PaDEP SHS. Benzene concentration in these wells is generally steady although occasionally fluctuating with seasonal water table elevations at the site.

- MTBE was detected in 5 wells (MW-1, MW-6, MW-7, MW-8 & MW-10) out of 10 wells sampled at the site at concentrations above PaDEP SHS. MTBE concentration in these wells is generally fluctuating with seasonal water table elevations at the site.

- As indicated by fate and transport analyses, the modeled extend of the plume is not expected to impact sensitive receptors as contaminants will naturally attenuate and over time as the initial source of contamination is depleting and no additional source(s) is contributing to the existing contamination. Vapor screening analysis indicates that soil and ground water contaminants volatilization are not a concern for this site. Additionally, exposure pathways relevant for this site are incomplete or none existing.

- Considering the site conditions, SSS are selected as most applicable cleanup standards. Based on the determination that no known exposure pathway is of concern, a risk assessment and a numerical set of site specific standards is not warranted.

- Upon the PaDEP approval, the process checklist as indicated in Section II-C (Remediation Standards-Site Specific Standard) of the Pennsylvania's Land Recycling Program: Technical Guidance Manual will be followed.

Potential Source Area

- MIG reviewed the historic reports (KEM Reports 2007 & 2013) & RTKL records in search for source area. However, the reports did not specify the source area and emphasized only Groundwater contamination.

- MIGs recent soil sampling as shown in Table 2, also did not indicate soil contamination or source area.

- MIGs groundwater sampling indicates the most elevated concentrations are located at MW-1, which is located at immediately down-gradient of dispenser area, making it suspected source area. Additional elevated Benzene concentrations were identified near the gasoline UST field in MW-2 & MW-5, which makes the Gasoline UST field as secondary potential source area.

Recommendations

- To complete the horizontal delineation, down-gradient of MW-8 and MW-10, two (2) monitoring wells are proposed to be installed on the adjacent southern property; Neimeyer Corp. Property- as shown in **Figure 4**. Please note that B&B, a third party reviewer for USTIF, also suggested delineation on the Neimeyer Corp.

- To complete the horizontal delineation onsite, one (1) monitoring well is proposed to be installed, west of Gasoline UST field; since MW-2 & MW-5 identified Benzene concentrations above the PaDEP Standards.

- For vertical delineation within the suspected source area, in the same mobilization, MIG proposes to install one (1) deep well in the vicinity of MW-1, to approximately 45 feet (5-feet screen), within the saprolite zone (weathered bedrock) to be terminated at the top of the competent bedrock – as shown in **Figure 4.**

- The Remedial Action Plan (RAP) will be submitted to the PaDEP, along with the revised SCR within 90 days of the date of this SCR. In the RAP, to demonstrate attainment of groundwater remediation via natural attenuation and biodegradation, MIG proposes 8 rounds of quarterly groundwater sampling events. Each event will be reported to PaDEP in a Remedial Action Progress Reports (RAPR).

1.0 INTRODUCTION

On behalf of Mr. Harbir Singh, owner and responsible party of 3608 Newtown Square, Inc., MIG Consulting, LLC (MIG) has prepared this Site Characterization Report (SCR) for the active gasoline fueling service station located at 3608 West Chester Pike, Newtown Square, Pennsylvania (ID #: 23-09154). The site location is depicted on **Figures 1 and 2**.

This SCR has been prepared to document the findings of site characterization activities completed by MIG to date, in response to a confirmed gasoline release reported to the Pennsylvania Department of Environmental Protection (PaDEP) via Notification of Reportable Release (NORR) in November 12, 2013. The site characterization activities were conducted in accordance with the *Administration of the Storage Tank and Spill Prevention Program*, PA Code Title 25, Chapter 245, Section 245.309. The SCR was prepared in accordance with the Section 245.310, and the PaDEP Notice of Violation (NOV) letter dated October 23, 2013.

Analytical results for the site-specific media collected during the on-site activities have been compared to current Pennsylvania Act 2 Clean-up Standards. Specifically, analytical results have been compared to the medium specific concentrations for the Statewide Health Standards (SHS) with respect to the facility being classified as a non-residential property. Summaries of the standards chosen for comparison purposes are provided on each table containing analytical data.

All field related activities were conducted in accordance with a site specific Health and Safety Plan (HASP) prepared in compliance with applicable Occupational Safety and Health Administration (OSHA) health and safety practices, and United States Environmental Protection Agency (EPA) Standard Operating Guidelines (40CFER 1910.120). Samples of environmental media collected for laboratory analyses were managed in accordance with a standardized Sampling and Analysis Plan. Specific sample handling protocol, sampling rationale, details of waste management and disposal activities are addressed in subsequent report sections.

Reportedly, three (3) 10,000-gallon gasoline USTs (installed in 1974), located on the northwestern portion of the site and one (1) 10,000-gallon diesel UST (installed in 1981) located on the western portion of the site. The UST locations are shown on **Figures 3 and 9**.

1.1 Location

The site is located at 3608 West Chester Pike, Newtown Square, Delaware County, Pennsylvania as illustrated in **Figure 1**, a United States Geological Survey (USGS) 7.5-Minute topographic map. The site topography, which is detailed in Section 2.4, gently slopes to the south-southeast towards, the nearest water body, Hunter Run. The site is situated at an approximate elevation of 413 feet above mean sea level (msl).

As illustrated in **Figure 2**, the site is located in a mixed commercial/residential facilities, bordered to the east and the west by commercial businesses along the West Chester Pike and Newtown Street Road. The site is bordered by Benari Jewelers to the east, Niemeyer Property to the south, West Chester Pike to the north and Newtown Street Road to the west. The surrounding properties are predominantly paved and/or covered by buildings.

1.2 Facility Description

The site is currently owned by 3608 Newtown Square, Inc and it has been operated as a retail gasoline service station since the 1956's. The facility occupies an irregular shaped parcel that is approximately 0.4 acres, as shown in **Figure 2**.

The site is approximately 0.4-acres, and is currently improved with one structure, asphalt parking areas, dispenser area with two pump islands under a canopy. The structure is a one (1)-story approximately 500 square foot frame and panel building on a concrete slab, located on the eastern portion of the property. Currently, the site structure is utilized as a convenient store. Three (3) 10,000-gallon gasoline USTs (installed in 1974), located on the northwestern portion and one (1) 10,000-gallon diesel UST (installed in 1981) located on the western portion of the site. Four (4) dispensers are located under a canopy along the centerline of the site as shown in **Figure 3.**

According to a geophysical report (Ground Penetration Radar-GPR) of July 10, 2015, the USTs are located at the property boundary along Newtown Street Road and could be partially under the 4-5 feet wide sidewalk. The GPR report also indicated a sanitary sewer line that runs from the southern portion of the site building is connected to the main public sewer along Newtown Street Road. The main electric and telephone services are located overhead. Area electric consists of lighting, service station sign and dispenser electric with all the lines originating from the main building. A copy of the Geophysical report is included in **Appendix G**.

2.0 ENVIRONMENTAL SETTING

2.1 Physical Setting

2.1.1 Topography and Drainage

According to the USGS 7.5-minute topographic map (**Figure 1**), the site is located at approximately 413 feet above msl at the coordinates 39° 59' 11.10"N, 75° 23' 58.41"W. The site's topography gently slopes to the south-southeast towards the stream/water body, Hunter Run.

According to the Pennsylvania Geologic and Topographic Survey, the site is located in the Atlantic Coastal Plain Province. This section is characterized as part of the Delaware River floodplain with unconsolidated silt, sand and gravel (Trenton gravel), underlain by schist, gneiss and other metamorphic rocks.

Information obtained from the United States Department of Agriculture (USDA) website indicated that the subject property is located within Made Land, schists and gneiss materials. This type of soil has a typical profile of:

- 0 to 3-inches: silt loam, 3 to 40-inches: gravelly silt loam, 40 to 60-inches: Gravelly silt loam, which is more or less consistent with field observations as discussed below.

2.1.2 Site Geology

During the advancement of soil borings and well installations, the following lithology was encountered at the indicated approximate depths:

- 0 – 0.5': Asphalt fill, silt
- 0.5' – 4.0' till, slight brown to tan clay
- 4.0' – 12.0' slight brown to tan silty clay with white gravel
- 12.0'- 20.0' same as above, but micacious silt
- 20.0'-24.0' light brown to tan micacious clay, with little moist.
- Bedrock was not encountered.

The encountered lithology is illustrated on the soil boring and monitoring well logs in **Appendix A** and **Appendix B**, respectively, and the Geologic Cross-Sections in **Figure 6**. Monitoring well information, including total depths of the wells, depth to water table and water table elevations for all sampling events are listed in **Appendix C** presents Well Sampling Data Forms. Well construction notes, diagrams, and sampling logs compiled during the installation of the six (6) wells are included as **Appendix B**.

Regionally, as shown in the "*Geologic Map of the Pennsylvania (prepared for the Commonwealth of Pennsylvania; Department of Environmental Resources – Bureau of Topographic and Geologic Survey, 1980; Arthur A. Socolow, State Geologist)*". Soil and Ground water investigations conducted at the site indicated that the soils beneath the site generally consist of silty sand with some weathered schist to the completion depth of each boring. Evidence of water was generally encountered throughout each boring at a depth of between 18 feet to 24 feet bgs.

Reportedly bedrock at the Newtown Square area contains Felsic Gneiss Hornblende bearing geologic unit which contains light to medium gray, medium-grained gneiss; finely to coarsely layered; contains potassium feldspar, hornblende and garnet.

2.1.3 Structural Geology - Stratigraphy

Generally, rocks in the northwest Camden topographical quadrangle area near the site are characterized by shallow north dipping foliation and multiple generations of folds. Although these rocks are highly tectonized, no significant faults are present. The dominant foliation is parallel to the axial planes of isoclinal folds.

2.1.4 Hydrogeology and Ground Water Flow

According to drilling logs, groundwater was initially encountered at depths ranging from approximately 18 to 24 ft bgs onsite and offsite within the unconsolidated material (Trenton gravels). The historic and current ground water flow direction, although almost perpendicular on the apparent topographic slope, is predominantly in a southerly, southeasterly direction towards the stream/water body, Hunter Run.

The average horizontal groundwater gradient across the site and surrounding area is 0.00236 (ft/ft). Groundwater contour maps depicting ground water elevations data are presented in **Figures 7A-7B** and ground water analytical laboratory reports obtained from the groundwater sampling events are included in **CD/Appendix D**.

The ground water table elevations at the subject site ranges from approximately 393.28 above msl in MW-1 (with 20.82' depth to water) to 393.30' above msl in MW-10 (with 20.11' depth to water).

Based on the Pennsylvania Bureau of Topographic and Geologic Survey-Department of Conservation and Natural Resources (PATGS-DCNR), average rainfall in Delaware County, Pennsylvania is between 40 to 44-inches per year.

According to the Geo-hydrology of Southeastern Pennsylvania, 2002 (by Dennis J. Low, Daniel J. Hippe, and Dawna Yannacci in cooperation with the PATGS-DCNR), two types of water systems (sand & gravel and crystalline rock aquifers) are found in the region. Sand and gravel aquifers contain large quantities of water, which can be eaily withdrawn; well yields of 1,000 gallons per minute (gal/min) are common. The naural quality of the water is good to excellent. Crystalline rock aquifer has very small fractures so storage capacity and yield are relatively low. Water is generally soft. Yields are commonly 5 to 25 gal/min.

2. 2 Sensitive Receptor Evaluation

2. 2.1 Water Supply & Well Search

MIG conducted 0.5-mile radius well search using the PaDEP Conservation and Natural Resources (PaDEP CNR) and PaDEP Ground water Information System (PaGWIS) to identify potable and withdrawal wells around the site. The PaGWIS identified twenty-eight (28) well locations within 0.5-mile radius of the site. *The data collected through the system shows that the wells are either abandoned or destroyed.* A tabulated data and a map showing the well locations are presented in **Table 6** and **Figure 4**.

2.2.2 Potential Sensitive Receptors

A general receptor evaluation was conducted for the site, including a review of the National Wetlands Inventory Map, which is illustrated in **Figure 5**. Commercial properties and a large shopping center located southeast of the site are hydraulically

downgradient of the site (approximately 370 feet). There is also a school located downgradient of the site in the south-west direction at approximately 400 ft. The site is believed to be located at an elevation of about 413 ft above msl.

Down gradient monitoring well MW-10, which was installed offsite on the eastern adjacent property and onsite MW-7 indicated MTBE marginally above the most stringent PaDEP applicable standards. However, according to fate and transport calculations conducted for the site, MTBE concentration could be assumed to meet the PaDEP standard in 859 day approximately around 60 feet downgradient of MW-10 and MW-7.

The nearest water body is the Hunter Run stream, which is approximately 0.44 mile south-east (down gradient) of the site. Also, there is another water body, Foxes Run stream, which is approximately 0.43 mile north-east (up gradient) of the site. There is a small freshwater emergent wetland located 0.47 mile south-east (down gradient) of the site. No measurable vapor impacts above the background were identified within utility manholes near the site and vapor investigation did not indicate vapor contamination above PaDEP standards.

2.2.3 Potential Ecological Receptors

There are three (3) national wetlands inventory sites within the 1-mile radius of the site. One freshwater emergent wetland (PEM1C) is located 0.47 mile south-east (down gradient) of the site. Two freshwater forested/shrub wetland (PSS1/EM5A) are located approximately 0.9 mile south (down gradient) of the site.

Potential impacts to surface water are expected to be minimal, if any, based on the normal city environmental setting and the majority of ground surface is covered by buildings and pavement and based upon fate and transport study conducted for the site. Additional receptor evaluation consisting of a survey of underground utilities for petroleum vapors is discussed below. No endangered, phona or biota species were identified in this search.

Therefore, it is expected that the impacts to ecological receptors from the site to be minimal to none.

2.2.4 Potential Migration Pathways

Although the underground utilities, which are located at or immediately adjacent to the site, may serve as potential migration pathways, the average depth to ground water observed at the site to date (18-22 ft bgs) is well below the expected depth of underground utilities, which is typically at 2-7 ft bgs. As such, it is unlikely that underground utilities at the site served as conduits and contaminant migration pathways.

MIG investigated the potential for vapors migrating through subsurface preferential pathways onsite and offsite, e.g. underground utility lines, which may impact the indoor air quality of buildings near the site. Manholes and access points of the underground

utilities near the site were inspected with Photo-Ionization Detector (PID) and no volatile compound readings were recorded above the background readings. Soil vapor samples and indoor air quality samples were collected from the site for laboratory analysis as discussed in Section 5.4.1. The laboratory analytical results did not indicate exceedences of vapor contamination above the Indoor-Air Criteria for Non-Residential PaDEP MSC_{IAQ} Standards.

2.2.5 Current and Future Land Use

The facility is currently an active retail gasoline service station. There are no plans for sale or redevelopment of the site for another use at this time.

3.0 PREVIOUS SITE ACTIVITIES

The following prior reports were provided to MIG by the client. Below is the summary of prior investigations.

- According to the prior Phase I ESA performed by KEM, in November 2007, the site has been historically used as a retail gas station since 1956.

- According to the Phase I report, the previous facility that occupied the site (Newtown Square Amoco) is listed as a Leaking Underground Storage Tank (LUST) site with Cleanup completed status.

- According to the prior Phase I ESA, four (4) groundwater monitoring wells (MW-1, MW-2, MW-3 & MW-4) were present on the site.

- On September 24, 2013, four (4) groundwater samples were collected from the four (4) on-site monitoring wells for laboratory analysis by KEM.

- Reportedly, Benzene and Methylene Tert Butyl Ether (MTBE) were detected above the Statewide Health Standards (SHS) in the groundwater sample collected from MW-1.

- A Ground Water Evaluation Report was prepared by KEM, dated October 23, 2013.

- According to KEM report, MW-1 is located immediately down gradient of the UST fields. Depth to groundwater is in the range of 18-20 feet below grade surface (bgs) and groundwater flow direction is towards southeast.

- On November 12, 2013, PaDEP received notification of a reportable release of a regulated substance at the subject site. The release was confirmed on October 23, 2013. This release is violation of Section 1310 of the Pennsylvania Storage Tank and Spill Prevention Act.

The following are the correspondences received from PaDEP:

- PaDEP received a written Notice of Contamination, regarding soil contamination encountered on October 29, 1990;
- PaDEP received a verbal Notice of Notice of Violation (NOV), regarding groundwater contamination encountered on October 23, 2013;
- PaDEP letter, sent to Mr. Harbir Singh, regarding the groundwater contamination confirmed on October 23, 2013;
- A NOV, sent to Mr. Pali Singh, regarding the failure to submit a SCR within 180 days of the contamination confirmed on October 23, 2013; and
- PaDEP Administrative Order issued to Mr. Harbir Singh, dated October 27, 2015.

4.0 SITE CHARACTERIZATION ACTIVITIES

On October 2015 through February 2016, MIG conducted soil and groundwater investigation within the source area and offsite to characterize site contamination. The intent was to identify the source area on the site and delineate soil/groundwater impacts on site and off site in response to the release that was confirmed in November 2013. As such, in separate events, MIG advanced thirteen (13) soil borings, two (2) temporary well points, six (6) monitoring wells and three (3) temporary soil vapor implants were performed at the site. Soil, groundwater and vapor samples were collected throughout the characterization process for laboratory analyses and results are discussed in this SCR. A description of the sequence and methods used to complete the site characterization is described further below.

The following are the activities performed by MIG:

- October 2014- Retention of MIG on the case
- November 2014- Initial Groundwater Sampling from existing wells (MW-1 through MW-4)
- January 2015- Preparation and Submission of Initial Site Characterization Work Plan to PaDEP and USTIF/ICF
- March 2015- Preparation and Submission of Proposal to USTIF/ICF
- July 2015- Performance of Ground Penetrating Radar (GPR) survey.
- July 2015- Advancement of several soil borings/soil sampling, soil-vapor sampling and temporary groundwater sampling on and offsite via temporary well points.

- September 2015- Groundwater sampling from existing onsite wells in response to PaDEP telephonic conversation:

  On September 10, 2015, Mr. Richard Staron, of PaDEP, directed MIG to sample the existing wells (MW-1 thru MW-4), stating that township noticed gasoline odors in a manhole out front of Gentiles market on Route 252.

  Following Mr. Staron directives, on September 10, 2015, MIG sampled onsite existing wells (MW-1 through MW-4) for laboratory analyses. MW-1 (identified as source area well) showed results higher than the PaMSCs for Benzene and MTBE. MW-2 (identified as side-gradient well) showed results above the PaMSCs for only Benzene. MW-3 and MW-4 (both identified as up-gradient wells) showed results below standards.

  Please find attached **Table 2** for Summary of Groundwater Results.

- October 2015- Installation of six (6) monitoring wells onsite (MW-5 through MW-8) and offsite on Benari Jewelers property (MW-9 and MW-10), located immediately east (downgradient) of the site.

- November 2015- Well Development & Well Survey; Groundwater Sampling onsite and offsite for existing and new wells.

- October-November 2015- Response to PaDEP Administrative Order.

4.1 Soil Characterization

Soil characterization and delineation was conducted in July 2015 as summarized below.

4.1.1 Geophysical Survey

Prior to drilling onsite, a Ground-Penetrating Radar (GPR) survey was conducted to determine the location, orientation of USTs and underground utilities at the Site. On July 10, 2015, MIG contracted Enviro-probe Service, Inc. of 221 Haddon Avenue, Westmont, New Jersey to conduct a GPR to locate the underground utilities and ensure the absence of additional USTs at the site. No other USTs were identified on the site during the GPR survey.

4.1.2 Summary of Soil and Vapor Characterization

On July 12, 23 & 24, 2015, thirteen (13) soil borings (SB-1 thru SB-13) were performed on and offsite, out of which two (2) borings (SB-9 and SB-10) were performed on the adjacent Benari Jewelers Property (3606 West Chester Pike). The soil borings were advanced using Geoprobe® drill rig. The borings were advanced in accordance with the boring location map proposed by MIG and reviewed/approved by B&B Diversified Inc.

(Please see **Figure 3**) which covers the UST area, dispenser/pump islands and in the general areas of concern.

Two (2) soil samples were collected from each soil boring location at a depth ranging from 7.5 to 28 feet below ground surface, and analyzed for PA Shortlist Compounds (for Unleaded Gasoline and Diesel). As summarized in Table the compounds detected were either non-detected or detected below Pa MSCs for soil.

Please see below table showing number of soil borings, monitoring wells, year of the event, drilling and sampling methods.

Event	October 2015	Drilling Method	Sampling Method	Boring Area	Notes
Soil Borings	SB-1 to SB-13	Geoprobe	4-foot long plastic sleeve samplers.	UST locations, Dispenser Islands, Adjacent property & general areas of concern.	No PID readings were observed. No free-phase product was identified.
Temporary Well Points/Monitoring Wells	TWP-1& TWP-2 MW-6 thru MW-10	Geoprobe/Hollow Stem Auger	Hydropunch® in-situ sampling device for temp well points & Hollow Stem Auger for monitoring wells	SB-6 & SB-10. MW-6 thru MW-10	No free product identified in any of the wells.

The soil samples were also field screened using a photo-ionization detector (PID) for the presence of volatile organic compounds (VOCs). Upon completion of each soil boring, the borehole was backfilled with soil cuttings and sealed with hydrated bentonite and topped off with asphalt patches.

Based on the information recorded during the installation/sampling of soil borings, the soils beneath the site generally consist of silty clay with some weathered schist to the completion depth of each boring. Evidence of groundwater was generally encountered at a depth of between 18 feet and 24 feet bgs.

The analytical data were compared to non-residential soil-to-ground water (NRSG) and non-residential direct contact (NRDC) Medium Specific Concentrations (MSCs) developed pursuant to Pennsylvania's Land Recycling and Environmental Remediation Standards Act (Act 2).

The soil boring logs are included as **Appendix A**. Analytical Results/Lab Reports were included on a **CD/Appendix D, E & F.** The underground utilities were marked out as depicted on **Figure 3**. The geophysical investigation report is provided in **Appendix G**.

Please refer boring locations as depicted on **Figure 9**. The soil boring logs are included as **Appendix A**.

Four (4) soil vapor samples (three (3) soil vapor points and one (1) background) samples were collected and analyzed for TO-15 Analysis.

Please find attached **Tables 1, 2 & 4** for Summary of Soil, Groundwater & Vapor Results and **Appendix A** for Boring Logs.

4.1.3 Conclusion of Soil Characterization

The compounds detected in all the soil samples analyzed were either non detected or detected below the Act 2 Residential Direct Contact MSCs and/or the applicable Act 2 used aquifer residential (U/R) Soil to Groundwater MSCs. As such, the soil characterization at the site is considered complete.

4.2 Ground Water Characterization

This section summarizes monitoring well installations and construction specifications, well development and survey, and ground water sampling and analytical results.

On July 12 & 23, 2015, two (2) groundwater samples were collected from SB-6 and SB-10 locations (TWP-1 @SB-10 & TWP-2 @SB-6) via temporary well points (installed in borings SB-10 & SB-6)

Several attempts were made to obtain offsite access from the immediately adjacent property (Benari Jewelers). Finally in September 2015, MIG obtained access and in October 8, 9 & 10, 2015, 2015, six (6) monitoring wells (MW-6 through MW-10) were installed to assess the magnitude and configuration of contaminant plumes and soil impact zones. Because groundwater impacts were identified in existing wells (MW-1 through MW-4), offsite wells MW-9 & MW-10 were installed on Benari Jewelers.

The collected groundwater samples were analyzed for PA Shortlist Compounds (for Unleaded Gasoline and Diesel). See below sections for summary of groundwater analytical results.

4.2.1 Summary of Ground Water Characterization

Monitoring Well Installations (October 2015)

- In July 2015, 2015, MIG installed two (2) temporary well points (TWP) (TWP-1 & TWP-2) as shown on **Figure 10.** The purpose of the temporary well points was to characterize the ground water and properly identify permanent locations for offsite monitoring wells MW-9 and MW-10.

- On October 8, 9 & 10, 2015, four (4) onsite wells: MW-5, MW-6, MW-7 and MW-8 and two (2) offsite wells on Benari Jewelers/east of the site: MW-9 & MW-10 were installed to approximately 30 feet bgs. The monitoring well locations are illustrated in **Figure 1A**.

- The ground water monitoring wells were installed in the area of UST farm, side/downgradient (offsite) and upgradient of the source area for contaminants horizontal characterization. The monitoring well locations are presented in **Figure 1A.** A summary of ground water monitoring well installations is discussed below:

4.2.2 Monitoring Well Construction and Development

The monitoring wells construction specification and summary of wells depths and diameters are included in the well construction logs (**Appendix A & D**), respectively. The wells are surveyed by a licensed well drilling company and surveyed by Berseck & Smith Engineering, Inc of Bensalem, PA, a licensed professional surveyor (#SU060774).

Permanent groundwater monitoring wells were constructed with varying lengths of 2-inch diameter, 0.02-inch machine-slot PVC well screen set across the saturated zone to monitor the groundwater table interface. PVC riser was added to the well screen to bring the wells to ground surface. The screen annulus was filled with sand from the base of the borehole to one foot above the screen. The remaining annulus was filled to the surface with bentonite pellets and cement slurry. All groundwater-monitoring wells were finished at grade with a six-inch diameter road box manholes and locking cap secured in a concrete pad.

Subsequent to installation, the wells were developed using a decontaminated submersible pump until clear, mostly sediment-free discharge water was observed.

A description of the encountered lithology and well construction for MW-1 through MW-6 is presented in the Monitoring Well Drilling Logs provided in **Appendix B**. Well construction diagrams were additionally depicted on the Geologic Cross Sections provided in **Figure 6**.

A Pennsylvania licensed well drilling company (MIG Drilling, LLC) installed these six (6) wells. MIG possess a Water Well Drillers License (License # 2450), issued by the PA Department of Conservation and Natural Resources, Water Well Drilling Licensing Program.

4.2.3 Well Gauging, Ground Water Sampling and Analytical Results

The monitoring well network was surveyed by a PA licensed surveyor to determine spatial orientation and obtain top-of-casing (TOC) elevations relative to a USGS Datum. Monitoring well elevation data are shown in **Table 1 A.** The TOC elevations for wells installed after the licensed survey were determined using a laser level and measuring

wheel or tape. The wells were gauged with an optical oil/water interface probe to determine the depth to water and monitor for the presence of separate phase liquid hydrocarbons. The gauging data was used in conjunction with the TOC data to determine groundwater elevation at each well.

Initial TWP indicated elevated contamination. A total of six (6) wells were installed on and offsite to complete site characterization and groundwater delineation.

Well Sampling Data Forms and Laboratory QA/QC for the conducted events are included in CD with **Appendix C, D, E and F**.

Historic groundwater table summarizing all sampling events are included in **Table 2.** Historical Groundwater Concentration Trends are included in **Table 5A-5G.**

Contaminant Concentrations Map is included in **Figure 10**. Isoconcentration maps for Benzene and MTBE for November 2015 event is included in **Figure 11A-11B**.

As summarized in the historic groundwater summary table (Table 2), ground water sampling events were performed on the below dates: September 25, 2013 (by KEM), November 18, 2014 from MW-1 thru MW-4 and on November 22, 2015 and February 28, 2016 from MW-1 thru MW-10.

4.2.4 Conclusion of Ground water Investigation

In conclusion, an overall review of the historic ground water sample results (**Table 3**) indicates the following:

- No free product was identified in any of the monitoring wells.

* **Possible Source Area Well: MW-1**

a) MW-1 showed results higher than the PaMSCs for Benzene and MTBE. Benzene and MTBE has increased in the most recent sampling event of February 2016. The increase in concentrations may be the result of seasonal groundwater fluctuations, which strongly suggests residues are remaining within the m\smear zone above the water table. The concentrations of remaining compounds are either below the PaDEP standards or not detected. MIG proposes quarterly sampling from this well and other wells as discussed below.

* **Side to up-gradient Wells: MW-2, MW-3, MW-4 and MW-5**

a) The side and up-gradient wells MW-2 and MW-5 showed results above standards for Benzene only. The contaminant concentrations in MW-3 and MW-4 were either non-detected or detected below the PaDEP standards.

* **Offsite/side-downgradient Wells: MW-9 & MW-10**

a) Concentrations in MW-9 were either non detected or detected below Standards.

b) The MTBE contaminant concentrations are detected above standards in MW-10, which is located downgradient of the most impacted well MW-1 (possible source area).

* **Downgradient Wells: MW-6, MW-7 & MW-8**

a) In MW-6 and MW-8, MTBE concentrations increased, as a result of seasonal variations. The concentrations of remaining compounds are either below the PaDEP standards or not detected.

b) MTBE concentration in MW-7 decreased in February 2016 event from that of November 2015 event.

4.2.5 Soil, Ground Water and Soil Gas Sampling Methods

The following sample collection methods were utilized during the site characterization activities. Field activities were conducted in accordance with a site-specific health and safety plan.

Groundwater monitoring wells were installed via hollow stem augers. A Geoprobe® 5400 direct-push unit was utilized to advance soil borings. Soil samples were collected using 4-foot long plastic sleeves. Using the direct-push drilling method, soil samples were collected using 4-foot long acetate macro-core sleeves. Each split-spoon and direct-push sampler was retrieved and opened, and the soil core was screened with a calibrated photo-ionization detector (PID) to measure approximate volatile organic compound (VOC) (i.e., petroleum hydrocarbon) concentrations, if present.

Soil

During drilling, soil samples were collected from the interval with the highest observed PID reading and one interval below for delineation purposes. If PID readings were not observed, one sample was collected from the interval directly above the apparent soil/groundwater interface depth. Soil samples were collected from ranging from 7.5 to 28 feet below ground surface using laboratory supplied disposable encore samplers and sealed. Samples were immediately placed on ice in a cooler to maintain 4° Celsius. Chain-of-custody forms were maintained from sample collection to laboratory receipt.

Soil samples were analyzed for the revised PaDEP short list of unleaded gasoline constituents (benzene, toluene, ethylbenzene, xylenes, MTBE, naphthalene, isopropyl benzene, 1,2,4-TMB and 1,3,5-TMB, 1,2-dibromoethane and 1,2-dichloroethane) via EPA Method 8260B.

Groundwater

Groundwater samples were collected from temporary well points using a Geoprobe groundwater sampler. The sampler is used in conjunction with direct-push dual tube sampling. The sampling

device was inserted into the drill rods (dual tubes) of the direct-push rig and driven into the ground. The drilling rod was then removed to expose the screen of the sampling device. After allowing the sampler to collect water, a bailer was lowered through the rods and body of the sampler to collect the groundwater sample. Purging was not performed prior to collecting a groundwater sample.

Permanent groundwater monitoring wells were constructed with varying lengths of 2-inch diameter, 0.02-inch machine-slot PVC well screen set across the saturated zone to monitor the groundwater table interface. PVC riser was added to the well screen to bring the wells to ground surface. The screen annulus was backfilled with sand from the base of the borehole to one foot above the screen. The remaining annulus was filled to the surface with bentonite pellets. All groundwater-monitoring wells were finished at grade with a six-inch diameter road box and locking cap secured in a concrete pad. The encountered lithology is illustrated in the monitoring well logs in **Appendix B**.

Soil Vapor

For soil gas sampling, MIG installed a 2-inch diameter opening to six (6) feet deep bgs. A 3/4-inch diameter perforated plastic tubing was inserted into the entire depth of the hole with one end (top). Modelling clay was used to seal the connection to three (3) foot long, smaller diameter plastic tubing. This prevents the vapor coming from underground escaping into the air. The other end of the smaller diameter plastic tubing was directly connected (clamped) to the inlet tubing regulator of the Summa canister for a period of eight (8) hours to collect the air vapor sample. The Summa canister was sent to Phoenix Environmental Laboratories, Inc. of Manchester, CT for TO-15 analysis.

Soil and Ground Water Waste Disposal

Soil generated during drilling activities and purge ground water resulted from sampling were containerized in steel 55-gallon Department of Transportation (DOT) approved drums for disposal. Once the soil disposal profile was approved, the soil and contaminated ground water waste will be transported off-site for appropriate disposal.

4.2.6 Sampling Quality Control/Quality Assurance

Soil and ground water samples collected from the site were placed in laboratory provided sample jars and cooled to 4°C. The samples were either hand delivered or picked up by a courier from Phoenix Environmental Laboratories of Manchester, CT or Test America Laboratories, Edison, NJ.

After extracting three well volumes, ground water samples were collected with dedicated disposable polyethylene bailers and transferred to laboratory provided sample jars. Collected ground water samples were analyzed in accordance with the PaDEP Unleaded gasoline parameters. Both soil and groundwater samples were documented on a laboratory provide Chains of Custody (COC), which are included in **Appendices F & I.** The purge water and impacted soil

resulted from the well installation and ground water samplings were contained in 55-gallon steel drums and will be properly disposed of offsite.

4.3 Vapor Intrusion Characterization

On-site Soil Vapor Sampling:

On July 26, 2015 & March 10, 2016, MIG conducted soil vapor sampling at the onsite. Air samples were collected for both outdoor air and sub-slab air analyses. Soil vapor samples SVP-1, SVP-2 and SVP-3 were collected as shown in the figure. The outdoor air (OA-1) analyses at the site indicted that the targeted compounds were either not detected or detected below the Soil Gas-Air Criteria for Non-Residential PaDEP $MSC_{IAQ.}$ The analytical results for the samples collected from the site are presented in **Table 4**.

Given the use of the site as a gasoline station, the more applicable in-door air screening levels that might apply to this Site would be the OSHA-derived non-residential permissible exposure level volatilization to indoor air screening levels, which were not exceeded in any of the soil samples. For these OSHA derived. Screening levels to be applicable, appropriate OSHA regulations must be fully implemented at the Site.

MIG installed a 2-inch diameter opening to six (6) feet bgs. A 3/4-inch diameter perforated poly flow was inserted into the entire depth of the hole with the upper one foot being non-perforated was sealed with clay to avoid short flow and top of the hole sample with ambient air.

The analytical sample results did not exceed Soil Gas Criteria Non-Residential PaDEP MSC_{SG} as the contaminants were either not detected or detected below the standards. The tabulated results are in **Table 6**.

4. 4 Regional Environmental History

4.4.1 Local Tank Search

MIG conducted the 1-mile and 0.5-mile radius storage tank search using PaDEP Regulated Storage Tank List and PaDEP web based mapping application (eMapPA). To determine potential off-site sources of contamination at the site. The search radius of 0.5-mile conducted at the site did not identify any storage tanks within 0.5 mile radius of the site. A map depicting the 0.5-mile storage tank search is presented as **Figure 8**.

One (1) storage tank site was identified for the search radius of one mile conducted at the site. A map depicting the one-mile storage tank search is presented in **Figure 8**.

4.4.2 Local Mining Activities

Information obtained from the PaDCNR and the Department of Interior, Office of Surface Mining (OSM) website, does not indicate historical underground mining

activities occurred in the area. Information obtained from the PaDEP eMapPA web based application does not indicate historical mining activities in the area of the site.

5.0 FATE AND TRANSPORT ASSESSMENT

The migration of dissolved phase constituents in groundwater was assessed using the PaDEP-approved New Quick Dominico (QD) groundwater program. The QD program provides a steady state analytical solution based on first order decay of constituent concentrations, retardation and three-dimensional dispersion. The QD solution provides an estimate of plume extent and morphology based on current data.

Site-specific data was used to evaluate the potential migration from on-site shallow monitoring wells MW-1, MW-8 and MW-10 for Benzene and MTBE. The migration assessment was based on the distribution of dissolved phase constituents as detected at the maximum respective concentration of Benzene and MTBE observed in MW-1.

The QD spreadsheet was prepared for Benzene and MTBE from monitoring well MW-1 and MW-8 down the centerline of the dissolved phase plume. The spreadsheet was also prepared for MW-1 and MW-10 centerline for MTBE. The ending concentrations are groundwater sample results collected from MW-8 and MW-10, being downgradient from the suspected source area well, MW-1.

The time in days between the approximate date of the release, which was reported on October 23, 2013 and February 28, 2016 sampling event, which included the majority of sampling wells, is 859 days. The time in days was used to calibrate the plume migration velocity.

The following table summarizes information input into the spreadsheet for calibration purposes:

Calibration

Date	Constituent (MW-1, MW-8 and MW-10)	Starting Concentration (µg/L)	Ending Concentration (µg/L)	Act 2 U/R MSC TDS ≤ 2500 (ug/L)	Time in days used in calibration
02/28/16	Benzene	550	0.0	5	859
02/28/16	MTBE	9400	650	20	859
02/28/16	MTBE	9400	27	20	859

Details of the site conceptualization and QD analyses are described in the following sections.

The estimated ground water flow at the site has been in a south to southeast direction.

The aquifer's hydraulic conductivity was not calculated from site wells and no slug tests were performed; however, published values were assumed and used. The soil as defined in USDA NRCS Web Soil Survey is: Made land, schist and gneiss materials. Typical profile of this type of soil is gravelly silt loam. Also when soil borings were obtained, typical soil profile consisted of silty/micaceous clay with trace sand. According to USDA NRCS, typical saturated hydraulic

conductivity of sandy/silty clay is 0.42-1.41 µm/sec (**Appendix H**). Hence, the assumed value of site hydraulic conductivity is 1.41 µm/sec, which is **0.4 foot/day**.

- **Fate and Transport Calculations**

Published effective porosity (ø) of 0.42 (dimensionless) for the clay, average hydraulic gradient (I) of 0.00236 ft/ft (calculated upon shallow ground water contour maps included as figures), and an average hydraulic conductivity (K) of 0.4 ft/day were utilized to calculate hydrocarbon velocity (V_{HC}) of contaminants beneath the site.

As shown below in the hydrocarbon migration velocity calculations, the most mobile contaminant compound, benzene, exhibits a relatively low migration rate. The projected timeframes do not take into account the effects of intrinsic biodegradation and natural attenuation of the contaminants, which would further slow down hydrocarbon migration.

As Benzene, among other contaminants identified at the site, is present in the ground water at concentrations above the PaDEP standards, estimating the time that Benzene will endure before achieving the PaDEP standard was calculated. The highest Benzene concentration was detected in MW-1 (source area well) at 550 ppb in February 2016.

5.1 Conceptual Site Model

Groundwater in the aquifer occurs primarily within an unconsolidated unit with varying amounts of silty clay and trace sand, at an average depth of 19-21 feet bgs. Based on groundwater monitoring data, the aquifer exhibits a flow generally to the south-southeast at an average historic gradient of approximately 0.00236 ft/ft.

Site specific parameters (such as concentration, source width, and source thickness) and various aquifer parameters (such as hydraulic conductivity and gradient) are input into the spreadsheet along with reported or calculated geotechnical data values for fractional organic carbon (foc), bulk density, porosity, organic carbon partition coefficient (Koc) and decay rate. The spreadsheet was run for Benzene and MTBE and was utilized to estimate constituent concentrations at MW-8 (predominant south-southeasterly ground water flow direction) and MW-10 (offsite in east-southeasterly direction) and the point at which the concentration reaches the U/R MSC in 859 days.

5.2 Spreadsheet Input Parameters

Input parameter values were defined from site-specific data whenever possible. When site-specific data was not available, literature values were utilized to define model input values. The sources of the used data (published vs. obtained from field tests) are indicated accordingly. The following describes the input parameters of the spreadsheet and the values applied in the groundwater fate and transport evaluation.

Contaminants of Concern used for Fate and Transport (F&T) evaluation: Benzene and MTBE were used as the dissolved constituents detected above U/R MSCs during the February 28, 2016 sampling event.

Initial Concentrations: The constituent concentrations as detected during the February 28, 2016 sampling event for Benzene and MTBE in monitoring well MW-1 were used in the evaluation. The spreadsheet assumed equilibrium between the groundwater and soil matrices.

For Benzene the highest concentration observed in MW-1 (550 µg/L in Feb 2016) and MTBE in MW-1 (9400 µg/L in Feb 2016) were utilized to facilitate model calibration. The distances to the receptor wells (MW-8 and MW-10) are 23 feet and 40 feet respectively. The distances in 859 days to meet the MTBE PaDEP SHS are 57' and 42' respectively. Benzene is already delineated, as downgradient wells (MW-8 and MW-10) did not show Benzene concentrations.

Aquifer Characteristics: A steady-state, uniform flow was generated based on site hydrogeologic conditions. The source thickness was considered to be 5 feet, and the published soil bulk density, porosity and Foc as 1.537 grams per cubic centimeter (g/cm^3), 0.42 and 0.005, respectively were used. A value of 0.4 (ft/day) was used as the site data hydraulic conductivity based on published records. A hydraulic gradient of 0.00236 ft/ft was used based on an average hydraulic gradient calculated over the past quarters of groundwater monitoring.

Source Width: The Source Width is the maximum width of the soil of residual contamination perpendicular to the direction of ground water flow. Soil and ground water analytical results indicated petroleum hydrocarbon width along the northeast boundary of the Site to be 91 feet wide.

Source Thickness: The Source Thickness is the vertical extent of the contamination, assumed 5 feet source thickness.

Hydraulic Conductivity: The hydraulic conductivity value is assumed to be 0.4 ft/day according to published values for soils encountered onsite.

Transport Conditions: Dispersion includes both the physical dispersion from simple flow mechanics and diffusion at the molecular level. Both processes affect plume movement.

For this analysis, the original longitudinal, lateral, and vertical dispersive values were conservatively estimated based on literature according to Table 2: Dispersivity Values In Literature of Domenico Spreadsheet Analytical Model Manual by Weixing Tong and Yue Rong. The values were then calibrated to match the field data along the direction of groundwater flow (Southeast) based on site data.

Utilizing the physical and toxicological data provided in PA Code Chapter 250, the QD spreadsheet was calibrated for each dissolved phase plume to determine the dispersive values and source area size. As discussed above, the spreadsheet for each dissolved phase plume was calibrated from groundwater monitoring well MW-1 (source well) to downgradient MW-8 and

MW-10, for both Benzene and MTBE. The QD spreadsheet calibrations are included as **Appendix H** (QD Model Calibrations).

After calibration, the QD spreadsheets were used to predict the maximum distance each dissolved phase constituent plume would travel from MW-1 toward MW-8 or MW-10 in 859 days (same time as February 28, 2016 sampling event) using the current U/R MSC as the end point.

The following table summarizes the output for the migration of Benzene and MTBE in the direction of MW-8 or MW-10 when current site data is input in to the QD spreadsheet. The spreadsheet determined the distance from MW-1 at which each constituent attains the U/R MSC.

Output Migration of contaminants

Constituent	Initial Concentration (µg/L)	Final Concentration (µg/L)/Receptor	Receptor ID/ Distance to Receptor (ft)	Distance to reach GW U/R MSC's (ft)
Benzene	550-MW-2	ND/MW-8	MW-8/23	23
MTBE	9400-MW-2	650/MW-8	MW-8/23	57
MTBE	9400-MW-1	27/MW-10	MW10/40	42

6.0 POTENTIAL EXPOSURE PATHWAYS & SENSITIVE RECEPTORS

To obtain a qualitative analysis of potential exposure pathways and sensitive receptors, the following potential exposure pathways were evaluated but not limited to:

- Ingestion of surficial soils, inhalation of outdoor vapors and particulates from surficial soils, and dermal absorption from surficial soils in contact with skin;
- Ingestion and dermal contact in subsurface soils;
- Groundwater ingestion;
- Migration to surface water; and Vapor inhalation of:
  - Indoor vapors from dissolved phase petroleum hydrocarbons in groundwater,
  - Outdoor vapors from dissolved phase petroleum hydrocarbons in groundwater.

The study evaluated potential residential, non-residential and sensitive receptors exposure and concluded that potential exposure pathways are incomplete as discussed below.

6.1 Potential Soil Exposure Pathways

- ***Ingestion of surficial soils, inhalation of outdoor vapors and particulates from surface soils, and dermal absorption from skin contact with surficial soil.*** The ingestion of surficial soils, inhalation of outdoor vapors and particulates from surficial soils, and dermal absorption from surficial soils in contact with skin were evaluated. Field PID readings collected during soil sampling events did not indicate the presence of petroleum hydrocarbons within the facility surficial soils (0-2 feet bgs). Additionally, approximately 97% of the site is covered with concrete and asphalt. The remaining 3% of the site is consists of an unused grassy area at the intersection of Newtown Street Road and West Chester Pike and also on the northern & southern exterior portion of the building. ***Therefore, on-site direct contact and ingestion of surficial soil impacts is not considered a potential exposure pathway.***

Additionally, based on the depth and location of soil impacts, in combination with soils being capped by asphalt and concrete, it is unlikely ingestion, inhalation, and dermal absorption from impacted soil would occur. Also, air quality survey of utility manholes in vicinity of the site did not indicate PID readings above background readings. ***Therefore, this potential exposure pathway is not considered a pathway of concern.***

6.2 Potential Groundwater Exposure Pathways

Groundwater at the site is impacted with Benzene and MTBE. Water well inventory records obtained from the Pennsylvania Groundwater Information System database (PaGWIS) revealed that there are no wells 0.5 miles of the site.

The fate and transport analysis predicts that MTBE could potentially migrate distances of 57 feet downgradient of the site boundary. In consideration of these data, it is unlikely that impacted groundwater from the site would affect any known groundwater supply wells and therefore this pathway is currently considered incomplete.

MIG conducted 0.5-mile radius well search using the PaDEP Conservation and Natural Resources (PaDEP CNR) and PaDEP Ground water Information System (PaGWIS) to identify potable and withdrawal wells around the site. The PaGWIS identified twenty-eight (28) well locations within 0.5-mile radius of the site. *The data collected through the system shows that the wells are either abandoned or destroyed.* A tabulated data and a map showing the well locations are presented in **Tables 8A & 8B** and **Figure 4**.

Public water is supplied to the site area by the City of Newtown Square Water Supply Department. ***Therefore, groundwater ingestion is not considered a potential exposure pathway.***

6.3 Potential Surface Water Exposure Pathways

MTBE, the only gasoline constituent was detected in groundwater remaining at the point of compliance (MW-8) at concentrations exceeding U/R MSCs. The Hunter Run River is located greater than 5,000 feet south/southeast of the site. Based on the distance to the Hunter Run river

and groundwater fate and transport evaluation results **(Appendix I)** which indicated that dissolved phase constituents will migrate at approximately 57 feet in approximately 850 days (2.33 years), ***discharge of impacted groundwater to surface water is not considered a concern.***

6.4 Potential Vapor Exposure Pathways

6.4.1 Soil Vapor Inhalation

Soil characterization activities conducted in July 2015 identified compounds below the PaDEP unsaturated U/R MSCs. Since the compounds detected in soil samples were either non detected or detected below PaDEP unsaturated U/R MSCs and below Johnson-Ettinger Vapor Intrusion Model (USEPA Version 2.3) (J&E) default Screening values

Screening Values-Soil

Constituent:	Maximum on-site Soil Concentration (mg/kg)	Residential J&E Default Indoor Air Screening Value (mg/kg)	Non-Residential J&E Default Indoor Air Screening Value (mg/kg)	PaDEP Act 2 MSC (saturated/unsaturated) (mg/kg)
Benzene	(July 2015) Not Detected	0.37	0.63	0.5
MTBE	(July 2015) Not Detected	4.6	1500+	1.3/2.3

During the July 2015 site characterization activities, soil samples did not identify gasoline related compounds at the site. ***Also, the air quality survey of utility manholes did not indicate readings above background PID readings and concluded utility trenches are not pathway of concern.***

Additionally, as indicated above, the current concentrations are below the Screening levels for non-residential settings. As such, soil vapor inhalation is not considered a concern.

6.4.2 Groundwater Vapor Inhalation

The inhalation of indoor vapors from Dissolved Phase Hydrocarbon (DPH) in site groundwater was evaluated. Benzene and MTBE have been identified in groundwater exceeding U/R MSCs. Maximum on-site groundwater concentrations observed including source and downgradient wells of concern are compared to the J&E default screening values for the following constituents:

Screening Values-Ground Water

Constituent	Maximum On-site Ground water Concentration (µg/L)	Residential J&E Default Indoor Air Screening value (µg/L)	Non-Residential J&E Default Indoor Air Screening value (µg/L)	PaDEP Act 2 MSC (µg/L)
Benzene	550 (MW-1)	3,500	5,900	5
MTBE	15,000 (MW-1)	380,000	640,000	20

Current maximum constituent concentrations do not exceed respective J&E default screening values for the residential or non-residential settings.

Site characterization activities identified gasoline constituents in site groundwater along the downgradient site boundary near potential preferential pathways. However, data collected from the July 2015 and March 2016 soil vapor sampling events indicate constituent concentrations below applicable residential and non-residential indoor air quality criteria. The analytical data is illustrated in **Table 4**. Additionally, an air quality survey of utility manholes did not indicate PID readings above background PID readings and concluded utility trenches are not pathway of concern.

All such, exposure pathways to human or ecological receptors are incomplete. Accordingly, Site Specific Standards (SSS) are recommended for soil and groundwater at the site.

7.0 SELECTION OF CLEANUP STANDARDS AND RATIONALE

Facility groundwater is impacted with unleaded gasoline constituents primarily Benzene and MTBE. PaDEP cleanup standards, established in the Land Recycling Act (Act 2), 25 PA Code Chapter §250, indicate the following three potential standards for remediating a site.

The three cleanup standards are:

- Background Standard;
- Statewide Health Standard (SHS);
- Site Specific Standard (SSS).

There are different compliance criteria/procedures for each standard. There is no current evidence that the site is being impacted by an off-site source, therefore, the Background Standard has been eliminated from further consideration at this time. Due to groundwater contamination exceeding the PaDEP SHS at this active gasoline service station in urbanized Pennsylvania, the SHS is inapplicable at this time. The Ground water buffer option cannot be selected for this site since there is no buffer distances specified for several compounds including benzene and MTBE. Therefore, the SSS is the most applicable standard for this site.

7.1 Site Specific Standard

Analysis of fate and transport, potential exposure pathways, sensitive receptors, soil, and ground water has concluded the development of a nonnumeric SSS as the most appropriate criteria for at this site. ***The SSS was selected as a cleanup standard for this site based upon rationales and Technical Guidance in The Pennsylvania's Land and Recycling Program: Technical Guidance Manual, Section II (Remediation standards) C. Site Specific Standards (1-9) and Section 304 (j,o,n) of Act 2.***

As required for attainment of a nonnumeric SSS, MIG conducted a detailed evaluation of potential receptors (Section 2.2) and exposure pathways (Section 6). All pathways of exposure are evaluated and the past, current and future use of the land is considered. The resulting cleanup remedy selected to meet site-specific soil and groundwater standards. The groundwater monitoring will be conducted along with maintaining engineering and institutional controls of the site. Consideration of engineering and institutional controls at the site concluded exposure pathways to be incomplete or nonexistent.

In accordance to 25 Pa. Code Chapters 250.404, 250.405, and 245.310, a risk assessment is not necessary because neither present nor future exposure pathways exist for soil and ground water. Determinations of exposure pathways are available in Section 6.0. As a risk assessment is not required, a numerical SSS is not calculated at this time. In determining soil and groundwater standards, consideration was given to appropriate exposure factors to receptors based on land use of the site, the effectiveness of institutional or other controls placed on the future land use, potential pathways for human exposure, and appropriate statistical techniques.

7.2 Attainment Demonstration and Proposed Remedial Action Plan

Fate and transport analysis, which takes into account the effects of engineering and institutional controls, and analysis of potential exposure pathways and sensitive receptors ***demonstrate that neither present nor future exposure pathways exist***. Hence, according to 25 Pa. Code Chapter 250.405 and 25 Pa. Code Chapter 245.310, a risk assessment report is not required. Also, according to the Land Recycling Program Q&A Database, question ID#:88, the response indicates development of site-specific numeric values is not necessary when no complete exposure pathway exists. The groundwater monitoring will be conducted along with maintaining engineering and institutional controls of the site.

The Remedial Action Plan (RAP) will be submitted to the PaDEP, along with the revised SCR within 90 days of the date of this SCR. In the RAP, to demonstrate attainment of groundwater remediation via natural attenuation and biodegradation, MIG proposes 8 rounds of quarterly groundwater sampling events. Each event will be reported to PaDEP in a Remedial Action Progress Reports (RAPR).

8.0 CONCLUSIONS AND RECOMMENDATIONS

The site is currently and planned future use is retail gasoline facility (Facility #: 23-093154). Land use surrounding the site is primarily commercial down gradient and residential up gradient of the site. Site Characterization activities conducted to-date indicates that ground water is impacted by gasoline related compounds. The identified compounds (Benzene & MTBE) were delineated horizontally and proposed to be delineated vertically.

Laboratory analyses indicated the following:

- Soil sample results did not indicate contaminant concentrations above PaDEP SHS.
- Only Benzene and MTBE are detected in groundwater at the site above the PaDEP SHS;
- Benzene was detected in only 3 wells (MW-1, MW-2 & MW-5) out of 10 wells sampled at the site at concentrations above the PaDEP SHS. Benzene concentration in these wells is generally steady although occasionally fluctuating with seasonal water table elevations at the site.
- MTBE was detected in 5 wells (MW-1, MW-6, MW-7, MW-8 & MW-10) out of 10 wells sampled at the site at concentrations above PaDEP SHS. MTBE concentration in these wells is generally fluctuating with seasonal water table elevations at the site.
- As indicated by fate and transport analyses, the modeled extend of the plume is not expected to impact sensitive receptors as contaminants will naturally attenuate and over time as the initial source of contamination is depleting and no additional source(s) is contributing to the existing contamination. Vapor screening analysis indicates that soil

and ground water contaminants volatilization are not a concern for this site. Additionally, exposure pathways relevant for this site are incomplete or none existing.

- Considering the site conditions, SSS are selected as most applicable cleanup standards. Based on the determination that no known exposure pathway is of concern, a risk assessment and a numerical set of site specific standards is not warranted.

- Upon the PaDEP approval, the process checklist as indicated in Section II-C (Remediation Standards-Site Specific Standard) of the Pennsylvania's Land Recycling Program: Technical Guidance Manual will be followed.

Potential Source Area

- MIG reviewed the historic reports (KEM Reports 2007 & 2013) & RTKL records in search for source area. However, the reports did not specify the source area and emphasized only Groundwater contamination.

- MIGs recent soil sampling as shown in **Table 1**, also did not indicate soil contamination or source area.

- MIGs groundwater sampling indicates the most elevated concentrations are located at MW-1, which is located at immediately down-gradient of dispenser area, making it suspected source area. Additional elevated Benzene concentrations were identified near the gasoline UST field in MW-2 & MW-5, which makes the Gasoline UST field as secondary potential source area.

Recommendations

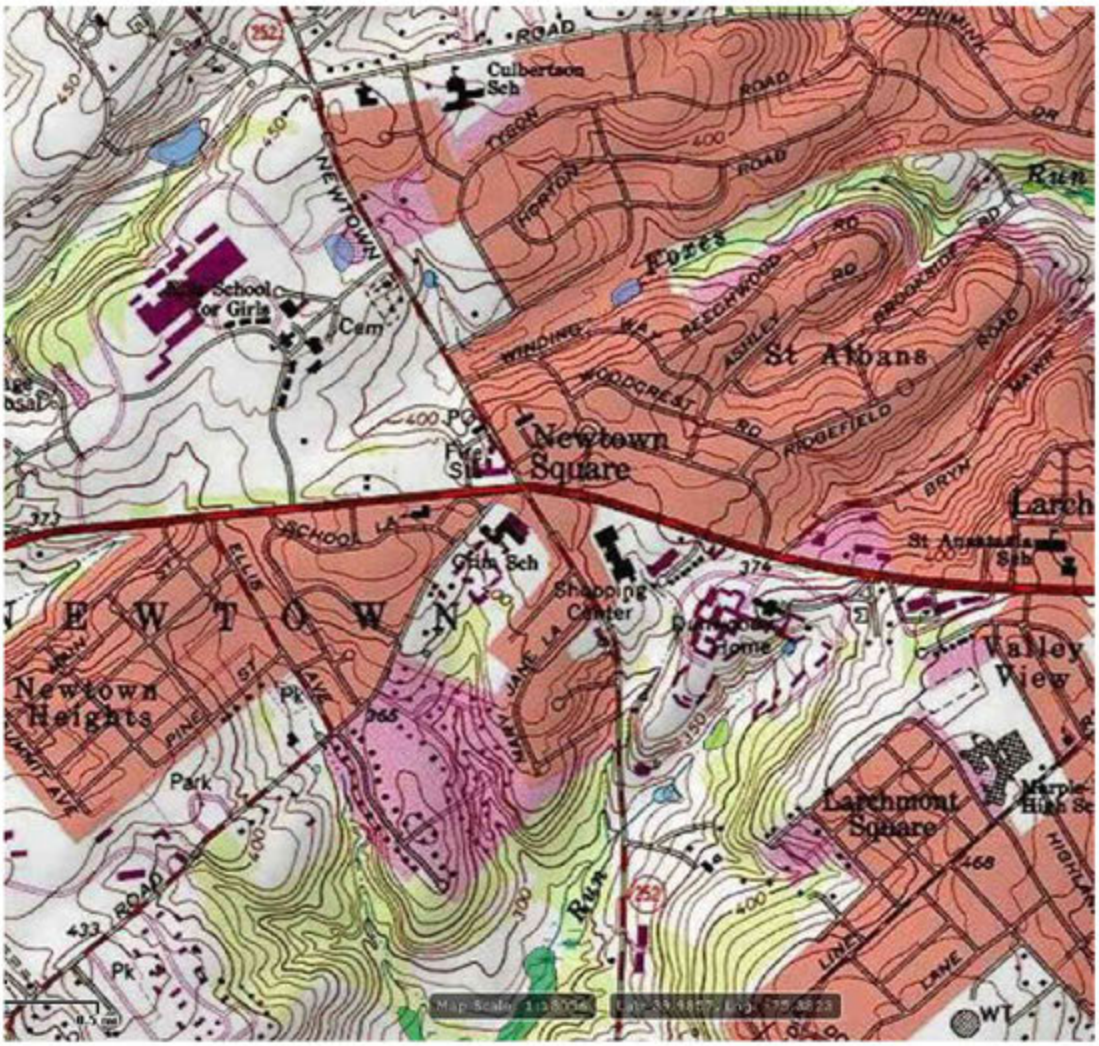
- To complete the horizontal delineation, down-gradient of MW-8 and MW-10, two (2) monitoring wells are proposed to be installed on the adjacent southern property; Neimeyer Corp. Property- as shown in **Figure 4**. Please note that B&B, a third party reviewer for USTIF, also suggested delineation on the Neimeyer Corp.

- To complete the horizontal delineation onsite, one (1) monitoring well is proposed to be installed, west of Gasoline UST field; since MW-2 & MW-5 identified Benzene concentrations above the PaDEP Standards.

- For vertical delineation within the suspected source area, in the same mobilization, MIG proposes to install one (1) deep well in the vicinity of MW-1, to approximately 45 feet (5-feet screen), within the saprolite zone (weathered bedrock) to be terminated at the top of the competent bedrock – as shown in **Figure 4.**

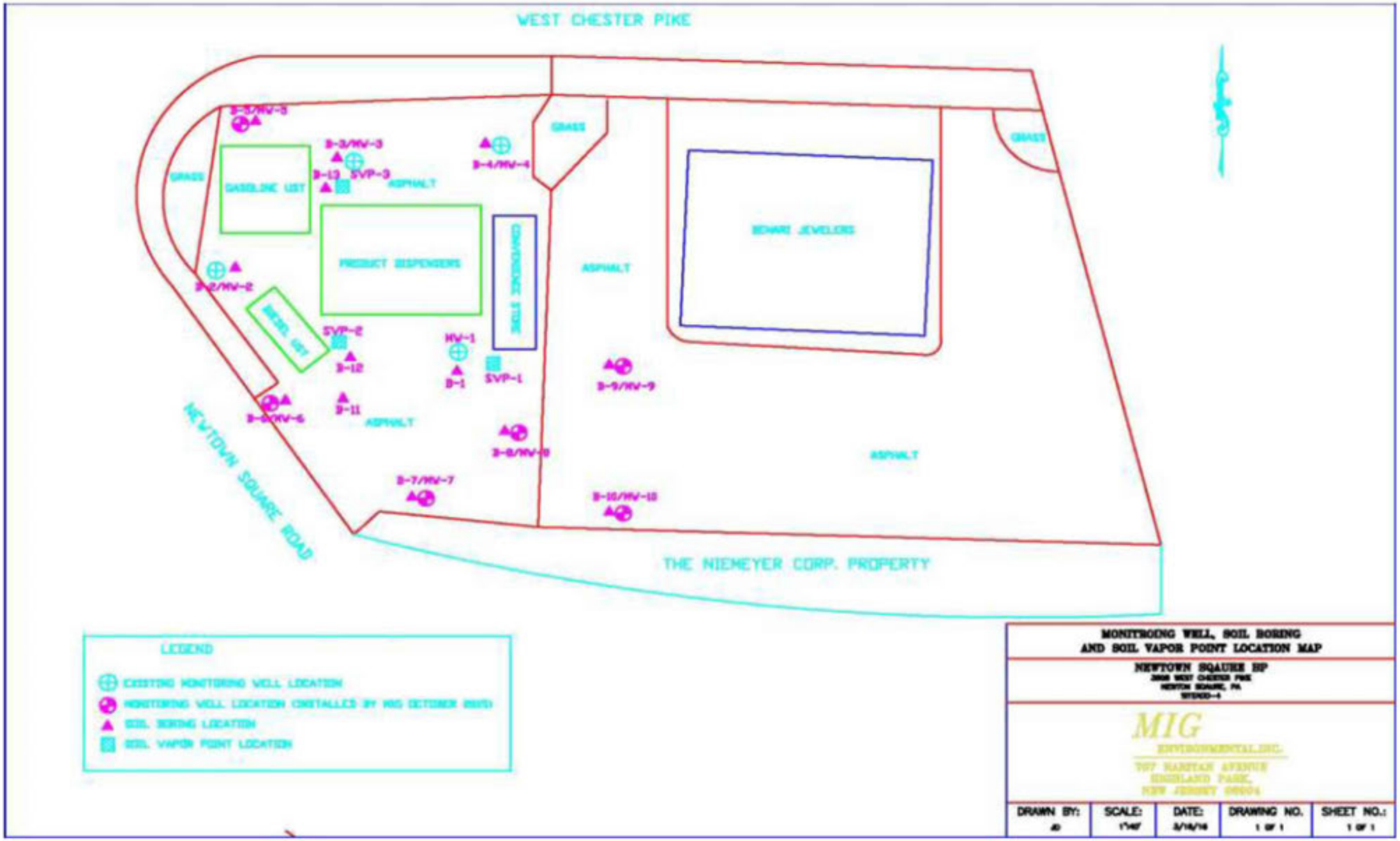
- The Remedial Action Plan (RAP) will be submitted to the PaDEP, along with the revised SCR within 90 days of the date of this SCR. In the RAP, to demonstrate attainment of groundwater remediation via natural attenuation and biodegradation, MIG proposes 8

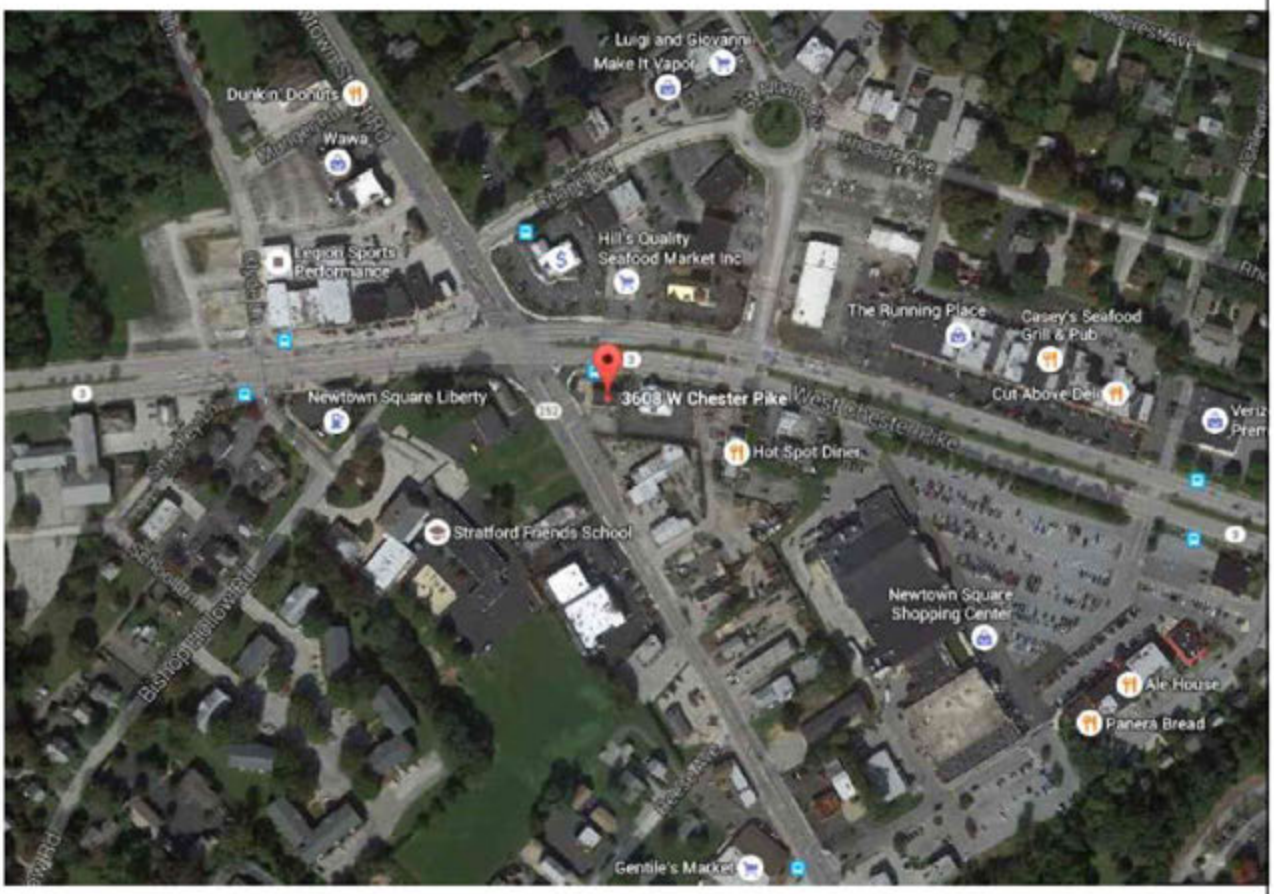
rounds of quarterly groundwater sampling events. Each event will be reported to PaDEP in a Remedial Action Progress Reports (RAPR).



MIG Consulting LLC **707 Raritan Ave., Suite 203** **Highland Park, NJ 08904**	**Site Name:** **3608 West Chester Pike** **Newtown Square** **Pennsylvania**	**Figure: 1** **SITE LOCATION MAP** **USGS 7.5 minutes Topographic Map**

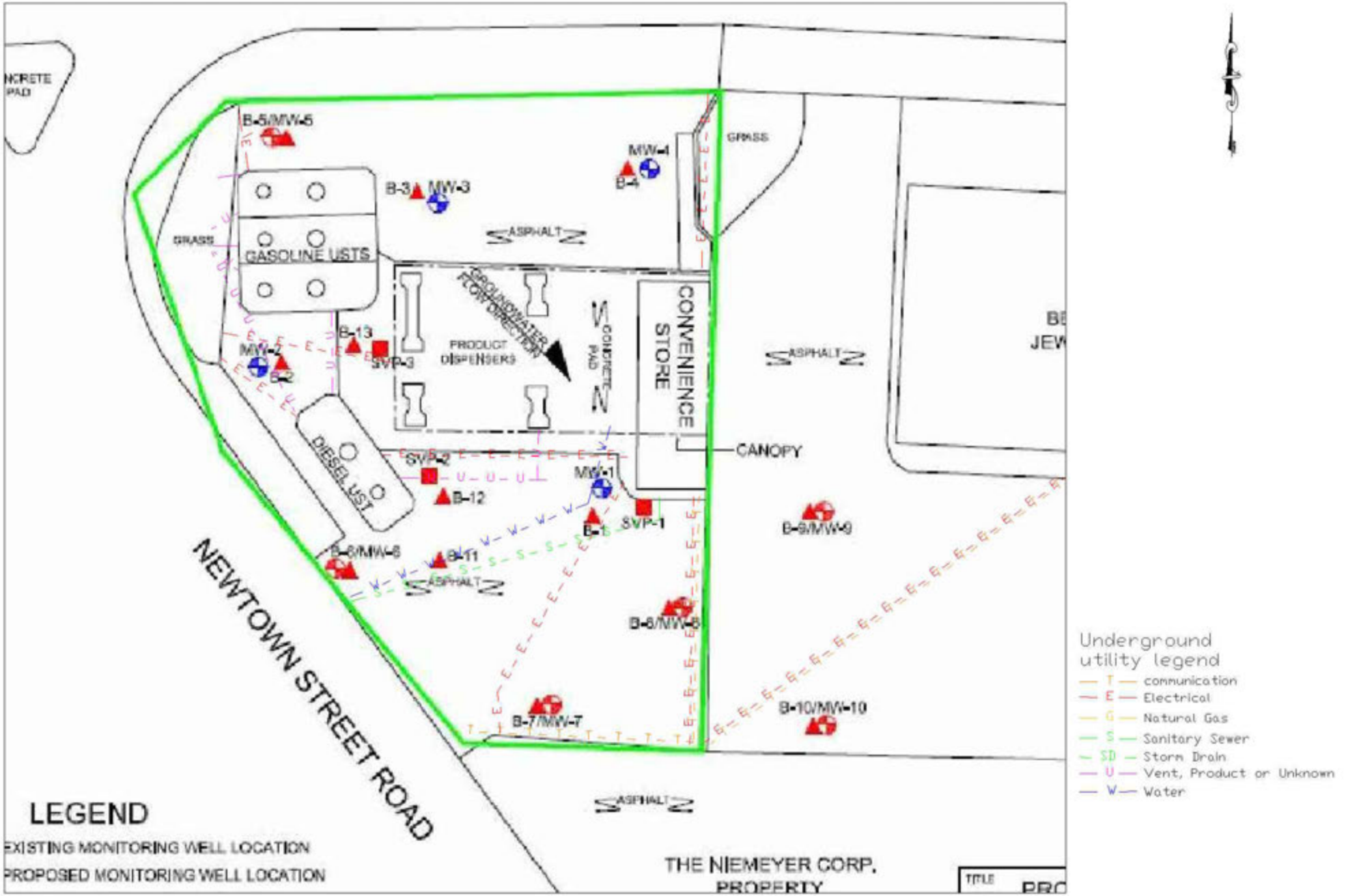
Figure 1A:
Monitoring Well Locations

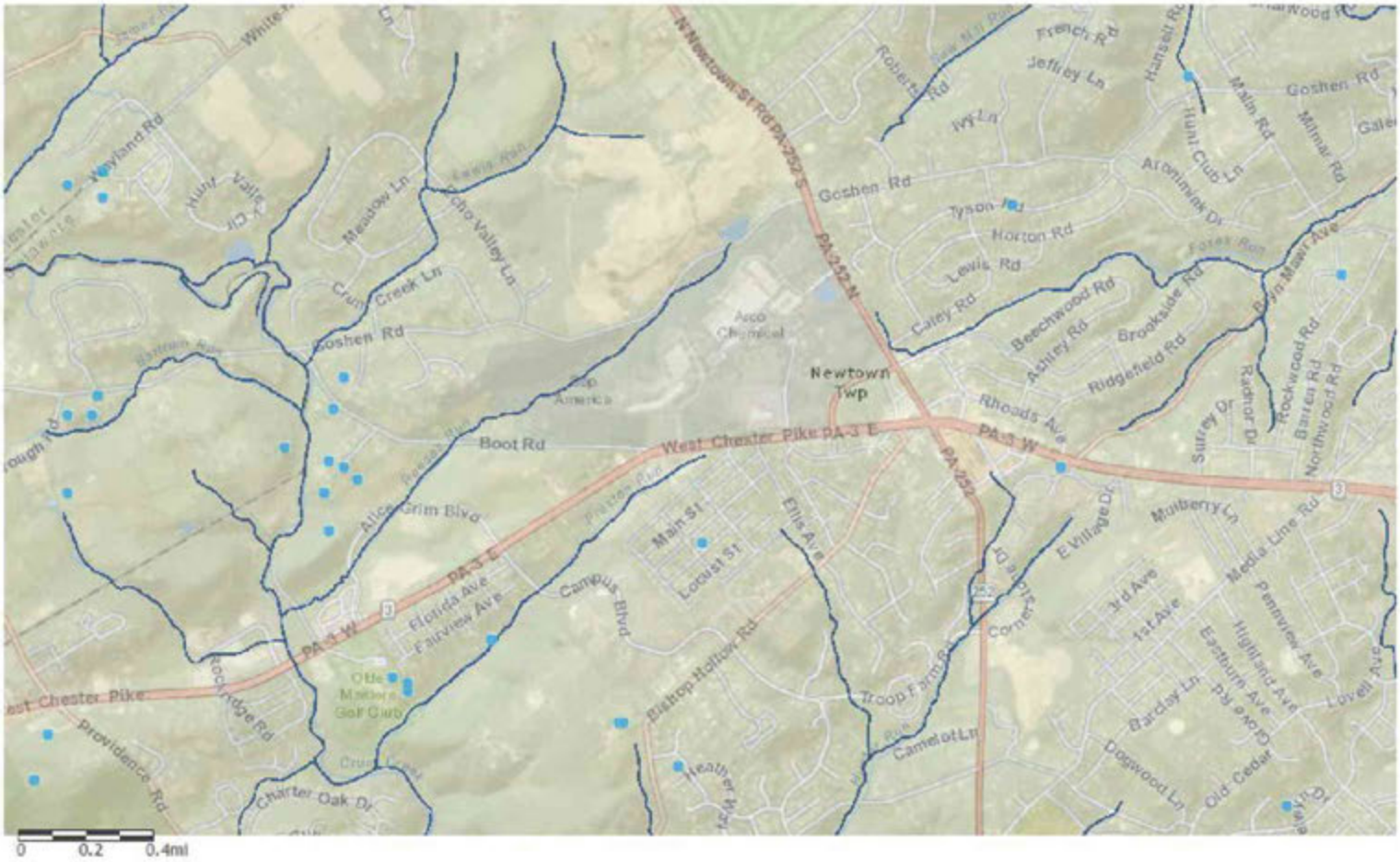




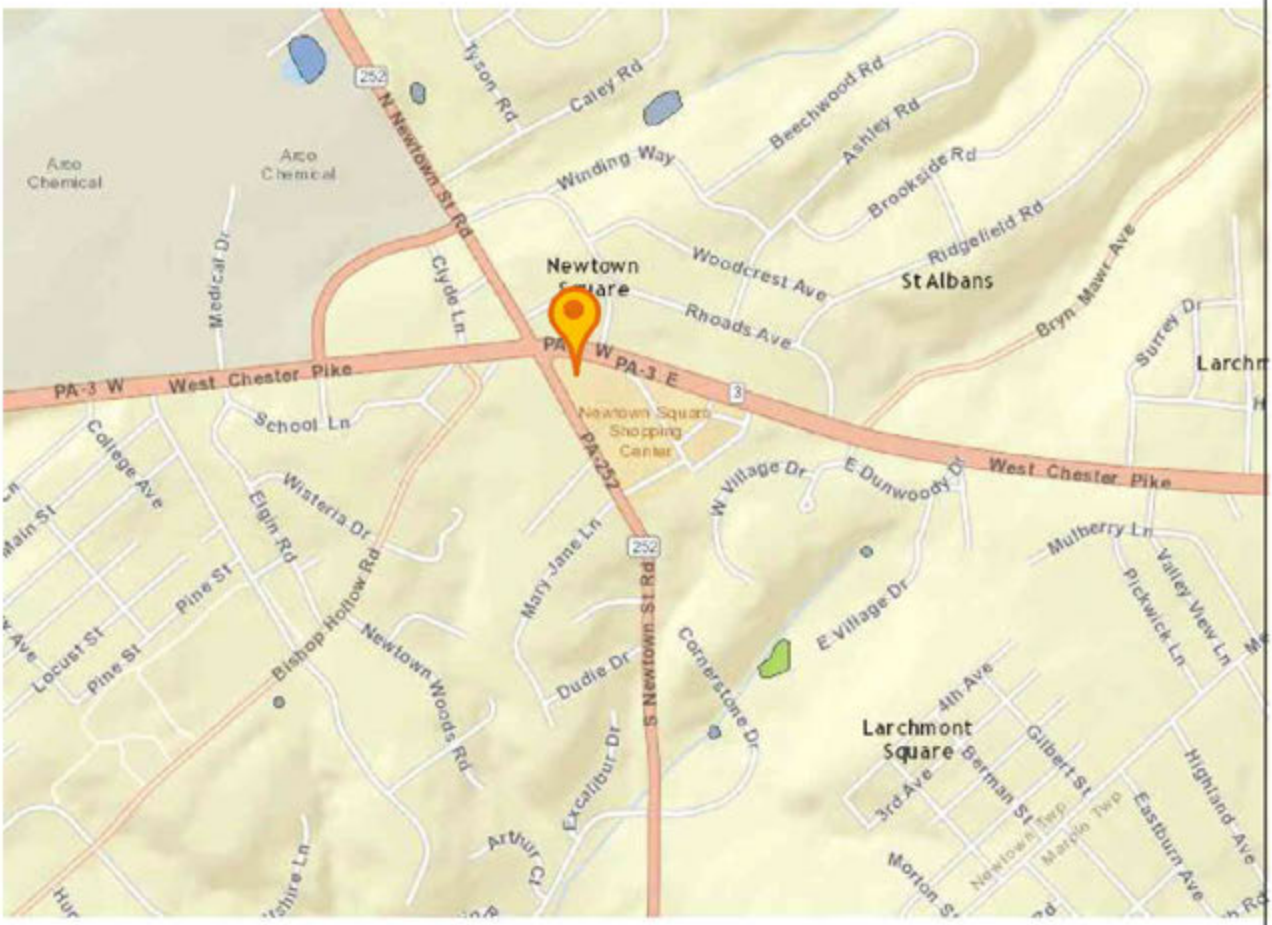
MIG Consulting LLC **707 Raritan Ave., Suite 203** **Highland Park, NJ 08904**	**Site Name:** **3608 West Chester Pike** **Newtown Square** **Pennsylvania**	**Figure: 2** **AERIAL MAP** **Google Earth**

Figure 3: Underground Utility Mark-out





MIG Consulting LLC **707 Raritan Ave., Suite 203** **Highland Park, NJ 08904**	**Site Name:** **3608 West Chester Pike** **Newtown Square** **Pennsylvania**	**Figure: 4** **0.5 MILE WELL SEARCH**



MIG Consulting LLC **707 Raritan Ave., Suite 203** **Highland Park, NJ 08904**	**Site Name:** **3608 West Chester Pike** **Newtown Square** **Pennsylvania**	**Figure: 5** **National Wetlands Inventory Map** **Fish and Wildlife Service**

Figure 6: Geologic Cross Sections (A/A')

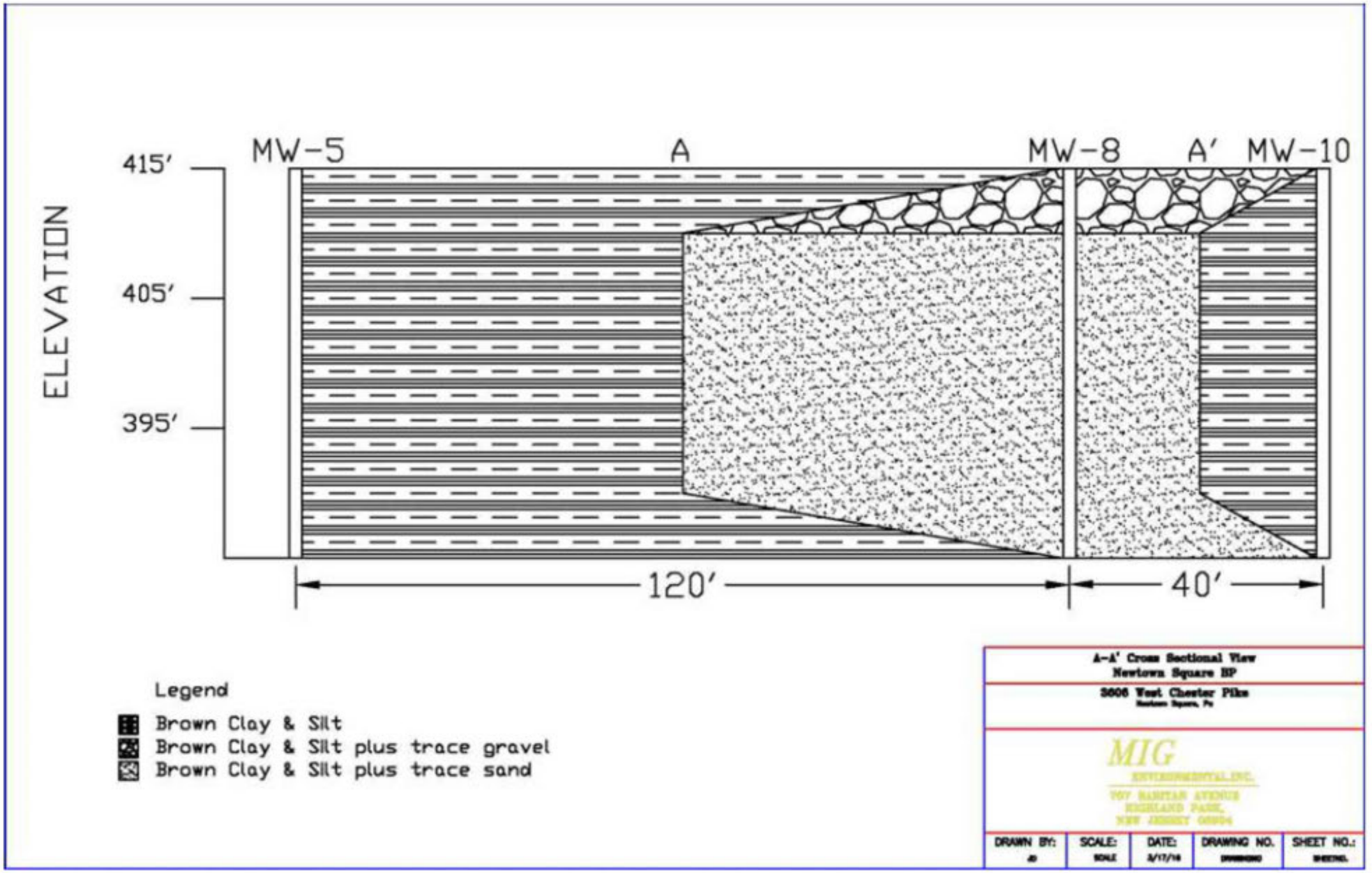


Figure 6: Geologic Cross Sections (B/B')

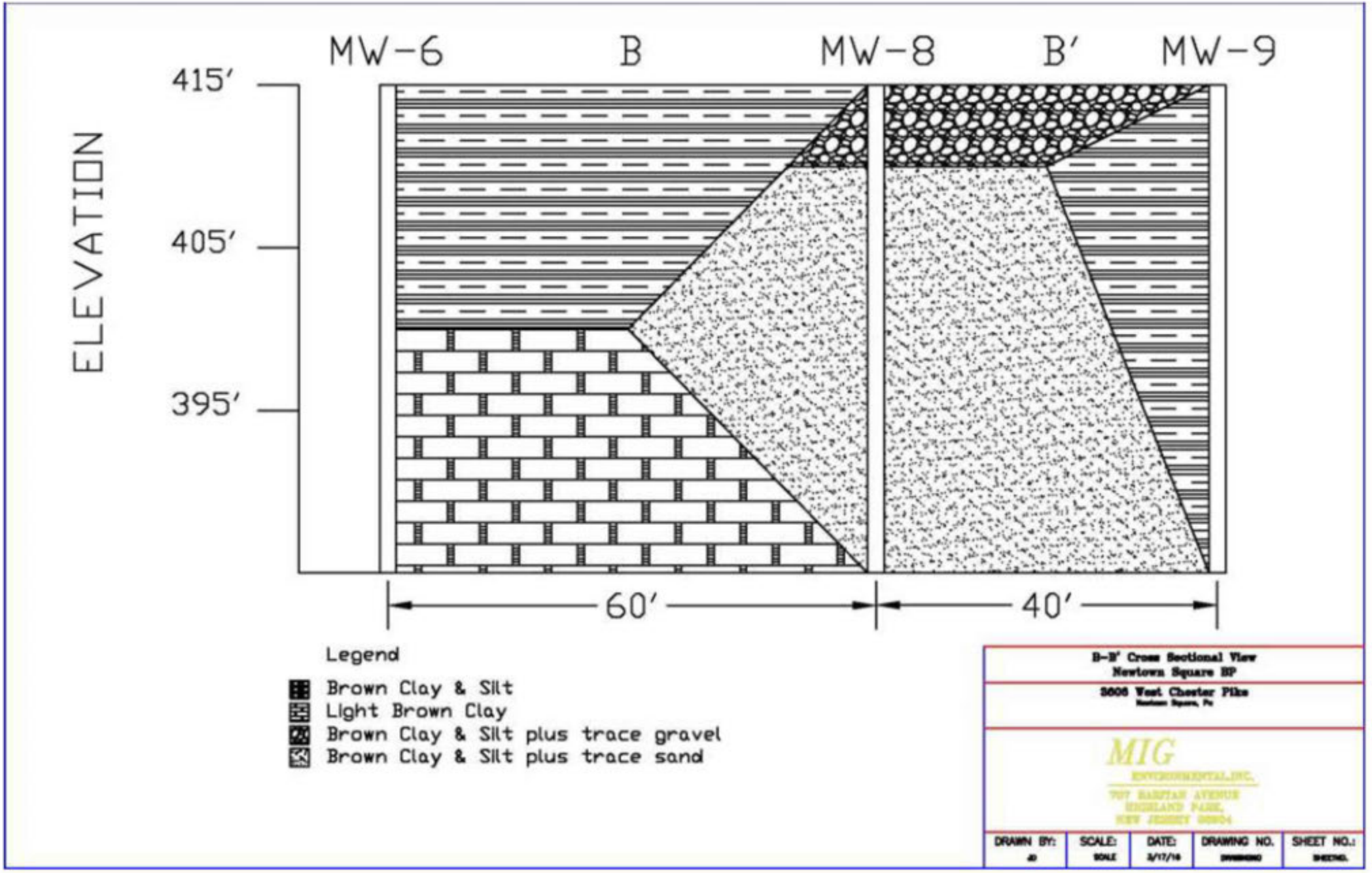


FIGURE 7A GROUNDWATER CONTOUR MAP

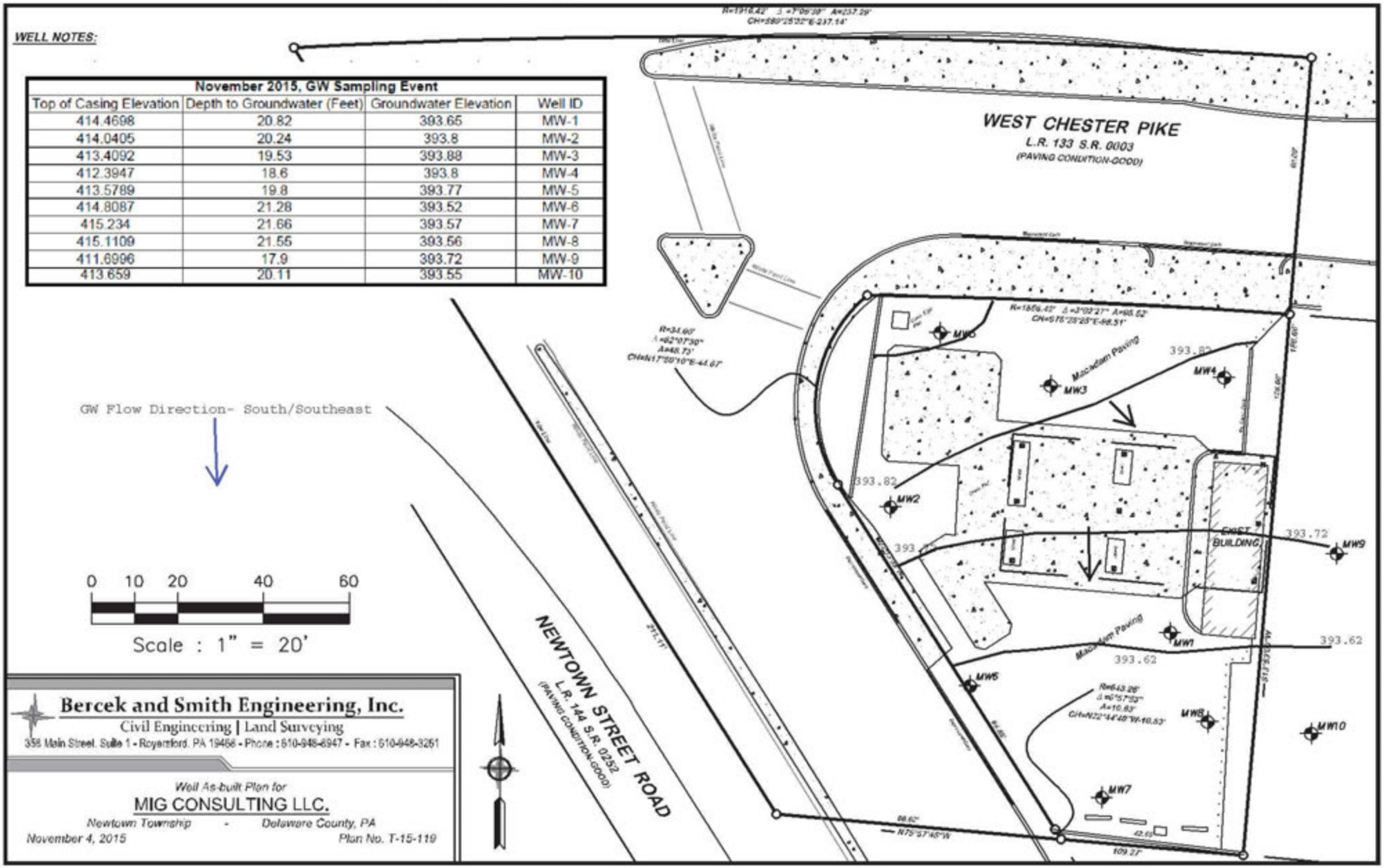
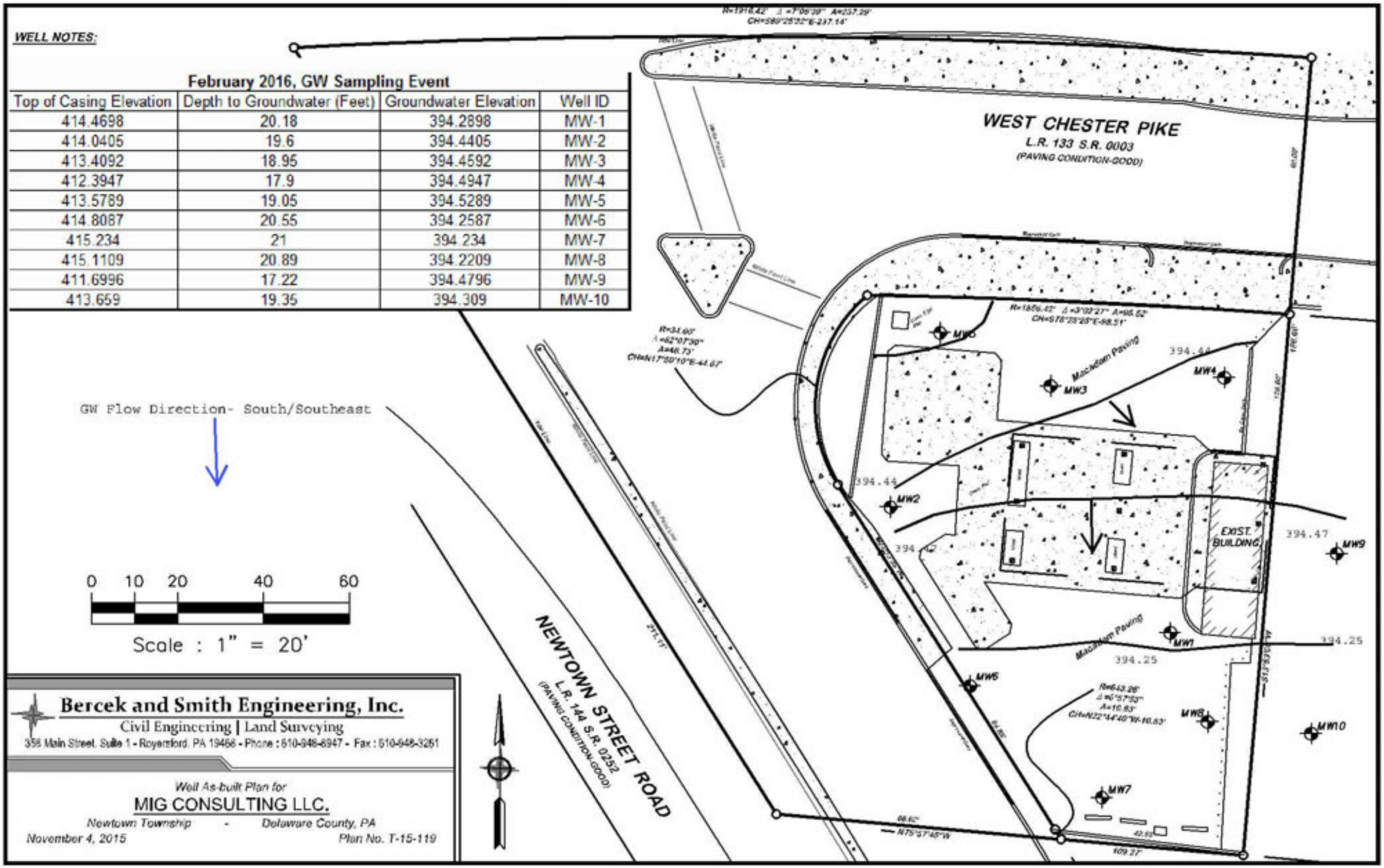
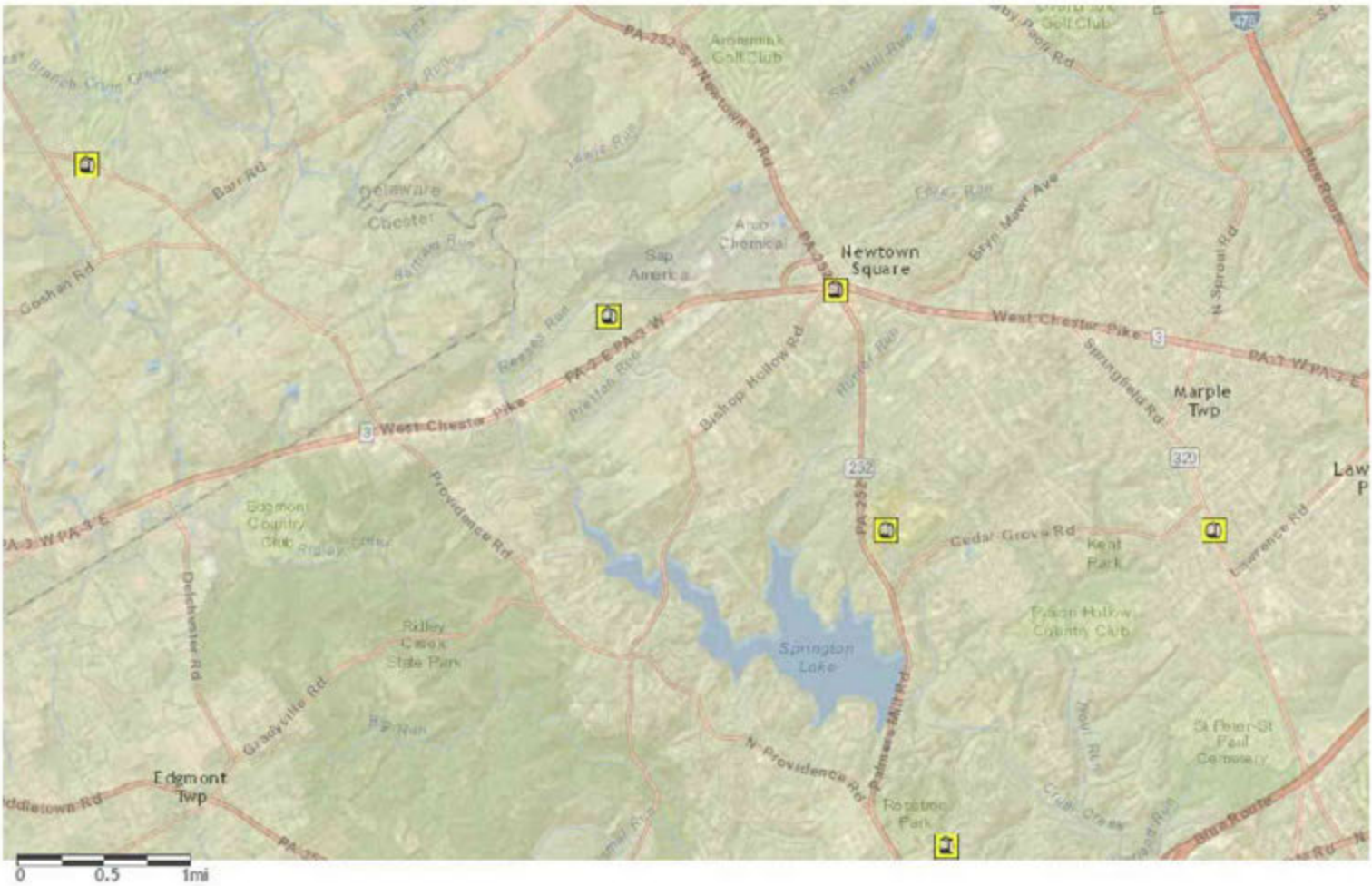


FIGURE 7B: GROUNDWATER CONTOUR MAP





MIG Consulting LLC **707 Raritan Ave., Suite 203** **Highland Park, NJ 08904**	**Site Name:** **3608 West Chester Pike** **Newtown Square** **Pennsylvania**	**Figure: 8** **0.5 & 1 MILE STORAGE TANK SEARCH**

Table 9: Soil Boring, Soil Vapor Point, and Temporary Well Point Locations

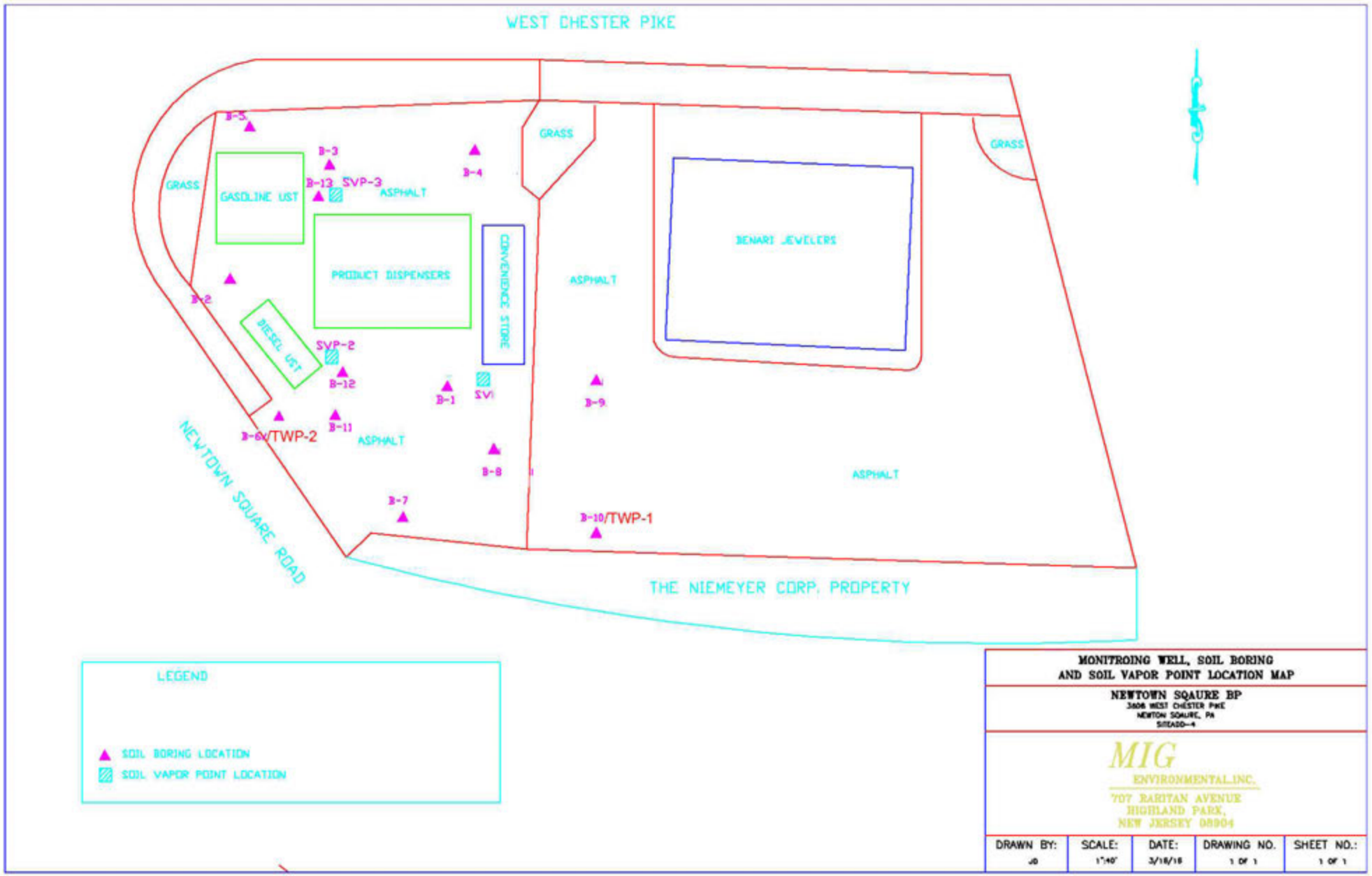


Figure 10: Contaminant Concentration Map

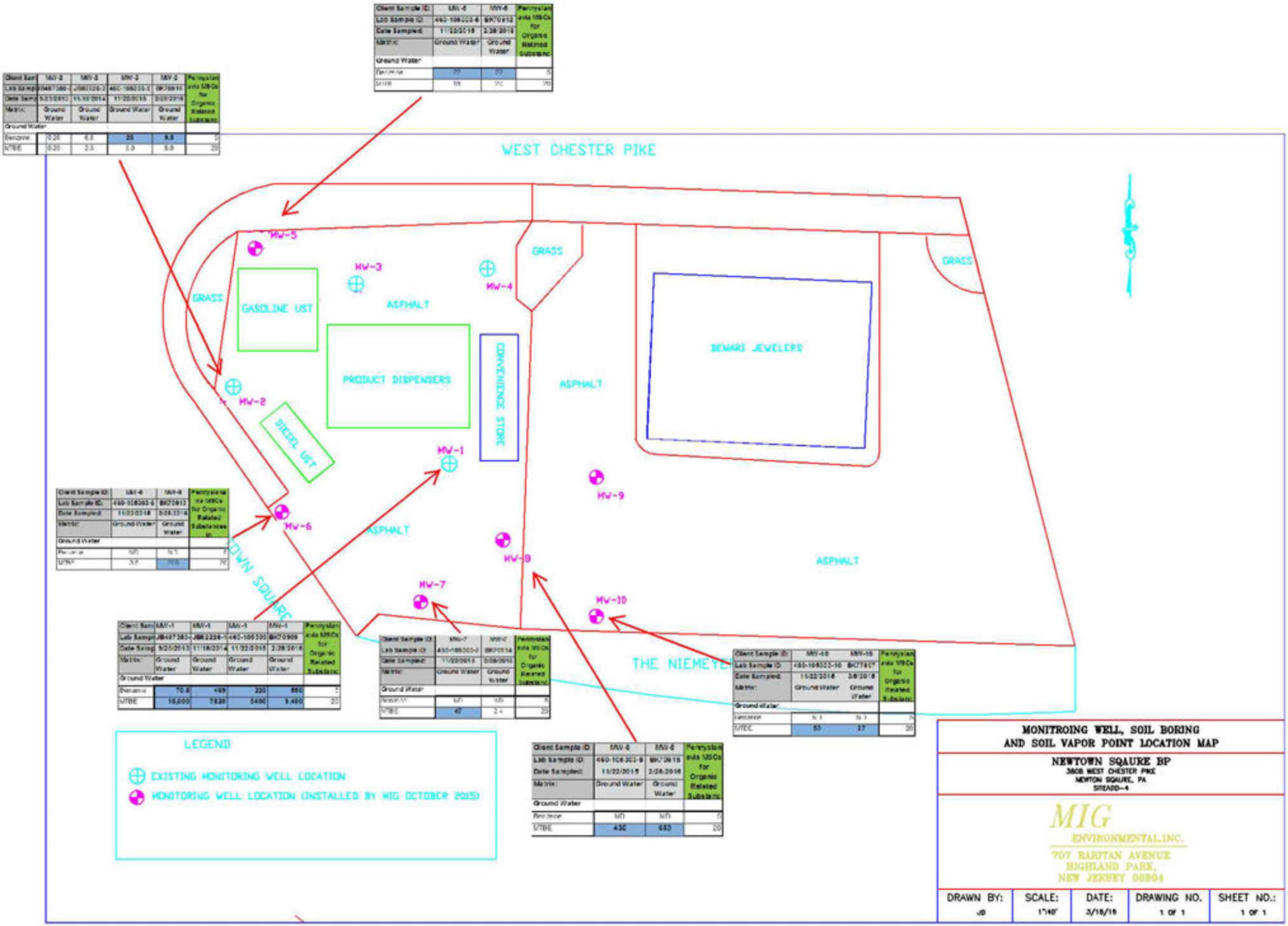


FIGURE 11 A : BENZENE ISOPLETH MAP

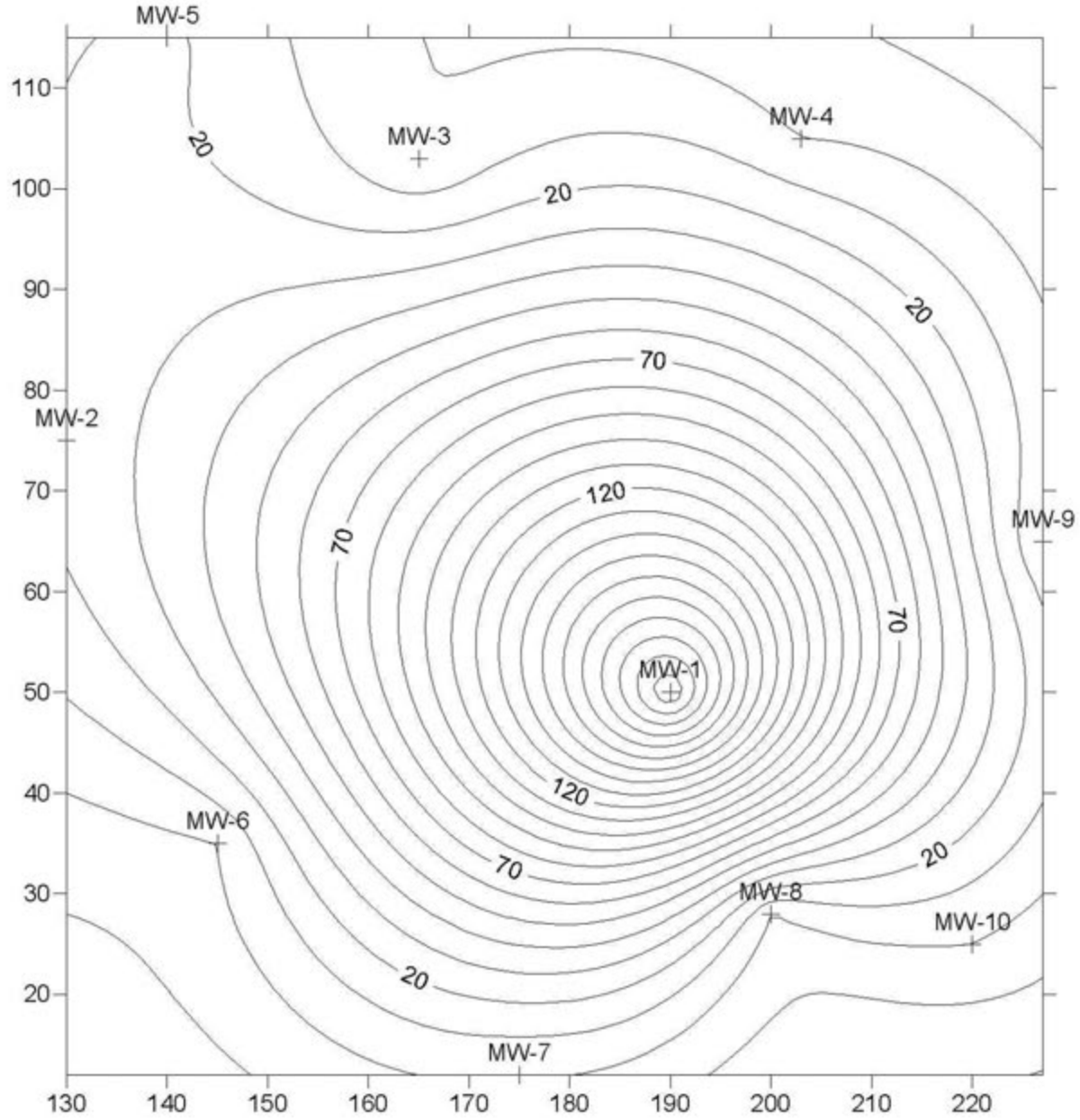
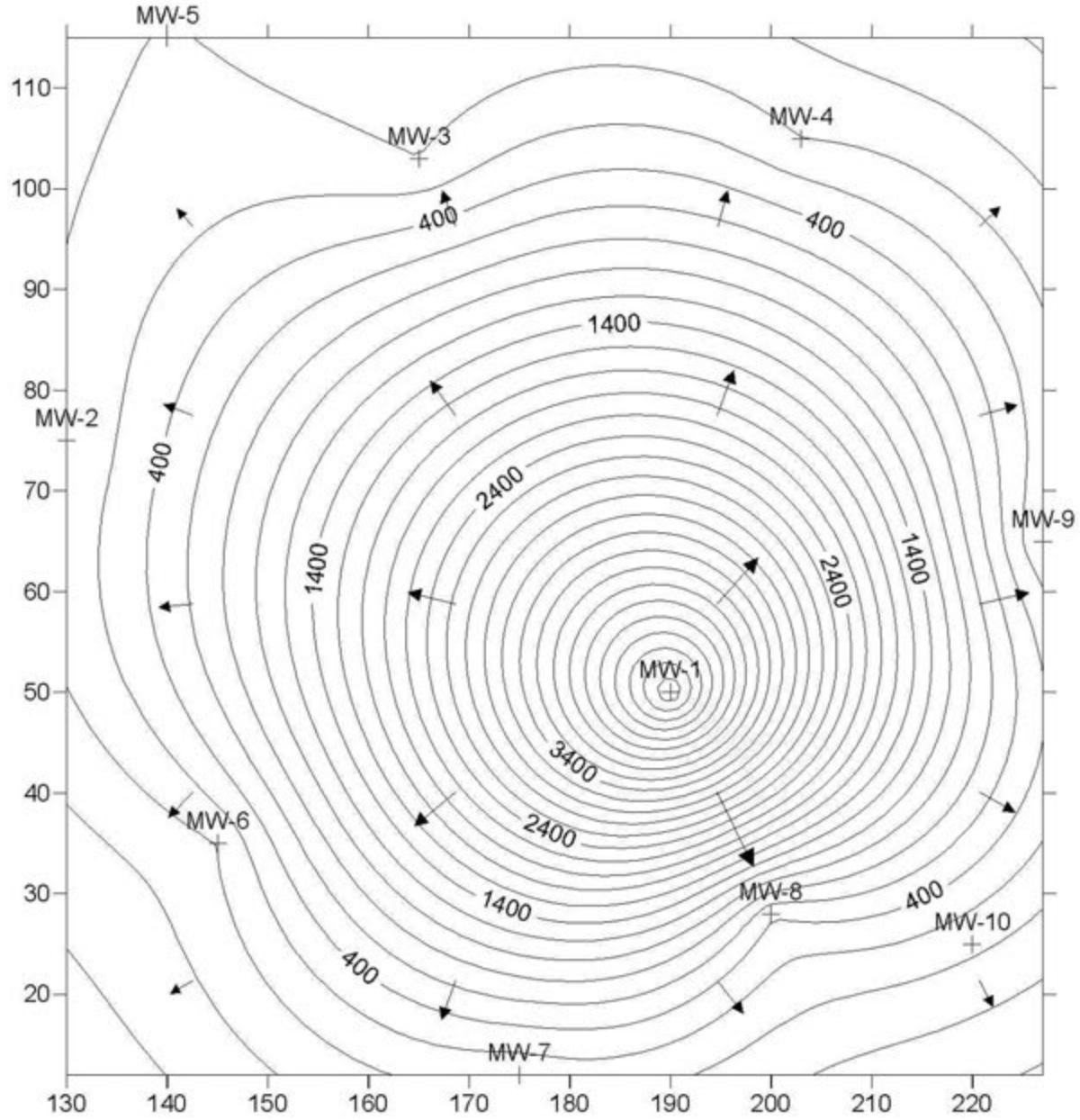


FIGURE 11 B :MTBE ISOPLETH MAP



TestAmerica Laboratories, Inc Job ID: 460-98505-1

Job Description: Newton Square, 3608 Westchester Pike, PA

For:

MIG Consulting LLC

707 Raritan Ave

Highland Park, New Jersey 08904

Table 1: Historic Soil Summary Table

Project: Newtown Square, 3608 Westchester Pike, PA								
Client ID	PA Residential MCS	PA Residential MCS	SB-1 (7.5-8')	SB-1 (17.5-18')	SB-2 (7.5-8')	SB-2 (23.5-24')	SB-3 (7.5-8')	SB-3 (23.5-24')
Lab Sample ID	Soil to GroundWater	Soil to GroundWater	460-98505-1	460-98505-2	460-98551-4	460-98551-5	460-98551-8	460-98551-9
Sampling Date	Used Aquifers	Used Aquifers	07/23/2015 14:10:00	07/23/2015 14:30:00	07/24/2015 13:20:00	07/24/2015 13:45:00	07/24/2015 15:50:00	07/24/2015 16:20:00
Matrix	Generic	100 X GW MCS	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor	TDS<2500	TDS<2500	1	1	1	1	1	1
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOA 8260C SOIL			Result	Result	Result	Result	Result	Result
SOIL BY 8260C								
1,2,4-Trimethylbenzene	8.4	15	0.00092	0.00049	0.00065	0.00098	0.0008	0.0004
1,3,5-Trimethylbenzene	2.3	13	0.00025	0.00017	0.00021	0.00022	0.00031	0.00016
Benzene	0.13	0.5	0.00036	0.00027	0.00032	0.00034	0.00048	0.00025
Ethylbenzene	46	70	0.00034	0.00024	0.00029	0.00031	0.00044	0.00022
Isopropylbenzene	600	84	0.00033	0.00023	0.00027	0.00029	0.00041	0.00021
Methyl tert-butyl ether	0.28	2	0.00033	0.00023	0.00027	0.00029	0.00041	0.00021
Naphthalene	25	10	0.00023	0.00016	0.00019	0.00021	0.00029	0.00015
Toluene	44	100	0.00036	0.00026	0.00031	0.00033	0.00046	0.00023
Xylenes, Total	990	1000	0.00021	0.00015	0.00018	0.00019	0.00027	0.00014
Total Conc	NA	NA	0	0.00069	0	0	0	0

Project: Newtown Square, 3608 Westchester Pike, PA								
Client ID	PA Residential MCS	PA Residential MCS	SB-4 (7.5-8')	SB-4 (15.5-16')	SB-5 (7.5-8')	SB-5 (14.5-15')	SB-6 (7.5-8')	SB-6 (27.5-28')
Lab Sample ID	Soil to GroundWater	Soil to GroundWater	460-98551-6	460-98551-7	460-98551-10	460-98551-11	460-98505-5	460-98505-6
Sampling Date	Used Aquifers	Used Aquifers	07/24/2015 14:15:00	07/24/2015 15:00:00	07/24/2015 16:55:00	07/24/2015 17:20:00	07/23/2015 16:25:00	07/23/2015 17:50:00
Matrix	Generic	100 X GW MCS	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor	TDS<2500	TDS<2500	1	1	1	1	1	1
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOA 8260C SOIL			Result	Result	Result	Result	Result	Result
SOIL BY 8260C								
1,2,4-Trimethylbenzene	8.4	15	0.00073	0.00044	0.00052	0.00054	0.00058	0.00046
1,3,5-Trimethylbenzene	2.3	13	0.00026	0.00017	0.00041	0.00021	0.00022	0.00016
Benzene	0.13	0.5	0.00043	0.00026	0.00030	0.00032	0.00034	0.00025
Ethylbenzene	46	70	0.00039	0.00023	0.00027	0.00029	0.00031	0.00022
Isopropylbenzene	600	84	0.00037	0.00022	0.00026	0.00027	0.00029	0.00024
Methyl tert-butyl ether	0.28	2	0.00037	0.00022	0.00026	0.00027	0.00029	0.00024
Naphthalene	25	10	0.00026	0.00015	0.00018	0.00019	0.00020	0.00017
Toluene	44	100	0.00045	0.00024	0.00029	0.00030	0.00047	0.00039
Xylenes, Total	990	1000	0.00024	0.00014	0.00017	0.00017	0.00029	0.00016
Total Conc	NA	NA	0.00045	0	0.00041	0	0.00076	0.00039

Project: Newtown Square, 3608 Westchester Pike, PA								
Client ID	PA Residential MCS	PA Residential MCS	SB-7 (7.5-8')	SB-7 (11.5-12')	SB-9 (7.5-8 ft)	SB-10 (9.5-10 ft)	SB-10 (24.5-25 ft)	SB-11 (7.5-8')
Lab Sample ID	Soil to GroundWater	Soil to GroundWater	460-98505-3	460-98505-4	460-97906-1	460-97906-2	460-97906-3	460-98551-2
Sampling Date	Used Aquifers	Used Aquifers	07/23/2015 15:10:00	07/23/2015 15:30:00	07/12/2015 13:55:00	07/12/2015 15:23:00	07/12/2015 16:30:00	07/23/2015 18:45:00
Matrix	Generic	100 X GW MCS	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor	TDS<2500	TDS<2500	1	1	1	1	1	1
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOA 8260C SOIL			Result	Result	Result	Result	Result	Result
SOIL BY 8260C								
1,2,4-Trimethylbenzene	8.4	15	0.00076	0.00060	0.00043	0.00036	0.00037	0.00087
1,3,5-Trimethylbenzene	2.3	13	0.00029	0.00023	0.00016	0.00014	0.00014	0.0003
Benzene	0.13	0.5	0.00045	0.00035	0.00025	0.00021	0.00022	0.00051
Ethylbenzene	46	70	0.00040	0.00031	0.00022	0.00019	0.00020	0.00046
Isopropylbenzene	600	84	0.00038	0.00030	0.00021	0.00018	0.00019	0.00044
Methyl tert-butyl ether	0.28	2	0.00038	0.00030	0.00021	0.00018	0.00062	0.00044
Naphthalene	25	10	0.00027	0.00021	0.00016	0.00014	0.00013	0.00031
Toluene	44	100	0.00043	0.0011	0.00024	0.00040	0.00024	0.00049
Xylenes, Total	990	1000	0.0011	0.00049	0.00014	0.00012	0.00012	0.00028
Total Conc	NA	NA	0.0011	0.00199	0.00016	0.00064	0.00099	0

Project: Newtown Square, 3608 Westchester Pike, PA							
Client ID	PA Residential MCS	PA Residential MCS	SB-12 (7.5-8')	SB-12 (23.5-24')	SB-13 (7.5-8')	SB-13 (15.5-16')	
Lab Sample ID	Soil to GroundWater	Soil to GroundWater	460-98551-1	460-98551-3	460-98551-12	460-98551-13	
Sampling Date	Used Aquifers	Used Aquifers	07/24/2015 12:15:00	07/24/2015 12:55:00	07/24/2015 17:40:00	07/24/2015 18:00:00	
Matrix	Generic	100 X GW MCS	Soil	Soil	Soil	Soil	
Dilution Factor	TDS<2500	TDS<2500	1	1	1	1	
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
VOA 8260C SOIL			Result	Result	Result	Result	
SOIL BY 8260C							
1,2,4-Trimethylbenzene	8.4	15	0.00064	0.00045	0.00057	0.00039	
1,3,5-Trimethylbenzene	2.3	13	0.00024	0.00017	0.00022	0.00015	
Benzene	0.13	0.5	0.00038	0.00026	0.00033	0.00023	
Ethylbenzene	46	70	0.00034	0.00024	0.00030	0.00021	
Isopropylbenzene	600	84	0.00032	0.00023	0.00028	0.00020	
Methyl tert-butyl ether	0.28	2	0.00032	0.00023	0.00028	0.00020	
Naphthalene	25	10	0.00023	0.00016	0.00020	0.00014	
Toluene	44	100	0.00042	0.00029	0.00032	0.00022	
Xylenes, Total	990	1000	0.00021	0.00015	0.00018	0.00013	
Total Conc	NA	NA	0.00063	0.00088	0	0.00024	

Table 2: Historic Groundwater Summary Table

Project:		3608 West Chester Pike, Newtown Square, PA												
Client Sample ID:		MW-1	MW-1	MW-1	MW-1	MW-2	MW-2	MW-2	MW-2	MW-3	MW-3	MW-3	MW-3	Pennsylvania MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID:		JB487380-1	JB82226-1	460-105303-1	BK70909	JB487380-3	JB82226-2	460-105303-2	BK70910	JB487380-4	JB82226-3	460-105303-3	BK70911	
Date Sampled:		9/25/2013	11/18/2014	11/22/2015	2/28/2016	9/25/2013	11/18/2014	11/22/2015	2/28/2016	9/25/2013	11/18/2014	11/22/2015	2/28/2016	
Matrix:		Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	
Ground Water														
Benzene	ug/l	70.8	460	220	550	0.28	6.8	23	9.5	3	1.3 J	0.63 J	ND	5
Toluene	ug/l	11	84.9	22	23	0.44	0.29 J	0.25 J	ND	0.44	ND	ND	ND	1000
Ethylbenzene	ug/l	18.7	145	63	87	0.21	1.6	0.55 J	ND	0.21	ND	ND	ND	700
Xylene (total)	ug/l	6.4	104	16 J	22	0.19	1.9	1.4 J	ND	0.19	ND	ND	ND	10000
Methyl Tert Butyl Ether	ug/l	15,000	7820	5400	9,400	0.29	2.3	8.9	8.9	0.29	13	2.8	2.3	20
Naphthalene	ug/l	71.4	104 J	59	110	0.25	1.5 J	5.2 J	ND	0.25	1.7 J	ND	ND	100
Isopropylbenzene	ug/l	13.8	19.3 J	12 J	30	0.22	0.32 J	ND	ND	0.22	ND	ND	ND	840
1,2,4-Trimethylbenzene	ug/l	ND	24.8 J	9.3 J	ND	ND	0.99 J	ND	ND	ND	ND	ND	ND	15
1,3,5-Trimethylbenzene	ug/l	ND	16.4 J	5.8 J	ND	ND	0.47 J	ND	ND	ND	ND	ND	ND	13

Project:		3608 West Chester Pike, Newtown Square, PA												
Client Sample ID:		MW-4	MW-4	MW-4	MW-4	MW-5	MW-5	MW-5	MW-5	MW-6	MW-6	MW-6	MW-6	Pennsylvania MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID:		JB487380-2	JB82226-4	460-105303-4	BK77806	X	X	460-105303-5	BK70912	X	X	460-105303-6	BK70913	
Date Sampled:		9/25/2013	11/18/2014	11/22/2015	3/9/2015	X	X	11/22/2015	2/28/2016	X	X	11/22/2015	2/28/2016	
Matrix:		Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	
GC/MS Volatiles (SW846 8260B)														
Benzene	ug/l	0.28	0.42 J	ND	ND	X	X	22	27	X	X	ND	ND	5
Toluene	ug/l	0.44	ND	ND	ND	X	X	0.89 J	ND	X	X	ND	ND	1000
Ethylbenzene	ug/l	0.21	ND	ND	ND	X	X	ND	ND	X	X	ND	ND	700
Xylene (total)	ug/l	0.19	0.23 J	ND	ND	X	X	2.2	ND	X	X	ND	ND	10000
Methyl Tert Butyl Ether	ug/l	0.29	0.31 J	ND	ND	X	X	18	20	X	X	3.5	200	20
Naphthalene	ug/l	0.25	ND	ND	ND	X	X	ND	ND	X	X	ND	ND	100
Isopropylbenzene	ug/l	0.22	ND	ND	ND	X	X	ND	ND	X	X	ND	ND	840
1,2,4-Trimethylbenzene	ug/l	ND	ND	ND	ND	X	X	ND	ND	X	X	ND	ND	15
1,3,5-Trimethylbenzene	ug/l	ND	ND	ND	ND	X	X	ND	ND	X	X	ND	ND	13

Project:		3608 West Chester Pike, Newtown Square, PA												
Client Sample ID:		MW-7	MW-7	MW-7	MW-7	MW-8	MW-8	MW-8	MW-8	MW-9	MW-9	MW-9	MW-9	Pennsylvania MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID:		X	X	460-105303-7	BK70914	X	X	460-105303-8	BK70915	X	X	460-105303-9	BK70916	
Date Sampled:		X	X	11/22/2015	2/28/2016	X	X	11/22/2015	2/28/2016	X	X	11/22/2015	2/28/2016	
Matrix:		Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	
GC/MS Volatiles (SW846 8260B)														
Benzene	ug/l	X	X	ND	ND	X	X	ND	ND	X	X	0.15 J	ND	5
Toluene	ug/l	X	X	ND	ND	X	X	ND	ND	X	X	ND	ND	1000
Ethylbenzene	ug/l	X	X	ND	ND	X	X	ND	ND	X	X	ND	ND	700
Xylene (total)	ug/l	X	X	ND	ND	X	X	ND	ND	X	X	ND	ND	10000
Methyl Tert Butyl Ether	ug/l	X	X	47	2.4	X	X	430	650	X	X	ND	ND	20
Naphthalene	ug/l	X	X	ND	ND	X	X	ND	ND	X	X	ND	ND	100
Isopropylbenzene	ug/l	X	X	ND	ND	X	X	ND	ND	X	X	ND	ND	840
1,2,4-Trimethylbenzene	ug/l	X	X	ND	ND	X	X	ND	ND	X	X	ND	ND	15
1,3,5-Trimethylbenzene	ug/l	X	X	ND	ND	X	X	ND	ND	X	X	ND	ND	13

Project:		3608 West Chester Pike, Newtown Square, PA								
Client Sample ID:		MW-10	MW-10	MW-10	MW-10	FIELD BLANK	TRIP BLANK	FIELD BLANK	TRIP BLANK	Pennsylvania MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID:		X	X	460-105303-10	BK77807	460-105303-11	460-105303-12	BK70917	BK70918	
Date Sampled:		X	X	11/22/2015	2/28/2019	11/22/2015	11/22/2015	2/28/2016	2/28/2016	
Matrix:		Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	
GC/MS Volatiles (SW846 8260B)										
Benzene	ug/l	X	X	ND	ND	ND	ND	ND	ND	5
Toluene	ug/l	X	X	ND	ND	ND	ND	ND	ND	1000
Ethylbenzene	ug/l	X	X	ND	ND	ND	ND	ND	ND	700
Xylene (total)	ug/l	X	X	ND	ND	ND	ND	ND	ND	10000
Methyl Tert Butyl Ether	ug/l	X	X	58	27	ND	ND	ND	ND	20
Naphthalene	ug/l	X	X	ND	ND	ND	ND	ND	ND	100
Isopropylbenzene	ug/l	X	X	ND	ND	ND	ND	ND	ND	840
1,2,4-Trimethylbenzene	ug/l	X	X	ND	ND	ND	ND	ND	ND	15
1,3,5-Trimethylbenzene	ug/l	X	X	ND	ND	ND	ND	ND	ND	13

ND	Not Detected
47	Compounds Detected above Standards
X	Not Sampled

Table 3: Temporary Well Point Summary Table

Client ID	TWP-1 (@ SB-10)	TWP-2@SB-6	Pennyslanavia MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID	460-97906-4	460-98505-7	
Sampling Date	07/12/2015 16:45:00	07/23/2015 18:15:00	
Matrix	Water	Water	
Unit	ug/l	ug/l	
VOA-8260B-WATER	Result	Result	
1,2,4-Trimethylbenzene	1.0	ND	15
1,3,5-Trimethylbenzene	0.34J	ND	13
Benzene	0.21J	ND	5
Ethylbenzene	2.9	0.30	700
Isopropylbenzene	ND	ND	840
Methyl tert-butyl ether	70	0.14J	20
Naphthalene	0.59J	ND	100
Toluene	2.4	0.26J	1000
Xylenes, Total	8.7	ND	10000
Total Conc	86.14	0.4	NA

Table 4: Historical Vapor Sampling Results

Project:		3608 West Chester Pike, Newtown Square, PA									
Client Sample ID:		SVP-2	SVP-2	SVP-3	SVP-3	OA-1	OA-1	SVP-1	SVP-1	Indoor Air Criteria Nonresidential PADEP MSC_{IAQ}	Soil Gas Criteria Nonresidential PADEP MSC_{SG}
Lab Sample ID:		BJ63807	BK77802	BJ63808	BK77805	BJ63809	BK77803	BJ63810	BK77804		
Date Sampled:		7/26/2015	3/10/2016	7/26/2015	3/10/2016	7/26/2015	3/10/2016	7/26/2015	3/10/2016		
Matrix:		Air	Air	Air	Air	Air	Air	Air	Air		
Volatiles (TO15) By TO15		Result	Result	Result	Result	Result	Result	Result	Result		
1,2,4-Trimethylbenzene	mg/m3	0.0673	0.00171	0.133	ND	0.00176	ND	0.0536	0.00148	0.017	1.7
1,3,5-Trimethylbenzene	mg/m3	0.0172	ND	0.0585	ND	ND	ND	0.015	ND	0.017	1.7
2-Hexanone(MBK)	mg/m3	ND	ND	ND	ND	ND	ND	0.0581	ND		
4-Ethyltoluene	mg/m3	0.0115	ND	0.03	ND	ND	ND	0.00766	ND		
4-Isopropyltoluene	mg/m3	ND	ND	0.00631	ND	ND	ND	0.00216	ND		
Acetone	mg/m3	ND	0.349	ND	ND	0.00916	0.0113	7	0.213	91	9100
Benzene	mg/m3	0.111	0.0012	ND	0.492	ND	ND	0.00738	0.00143	0.011	1.1
Carbon Disulfide	mg/m3	ND	ND	0.00737	ND	ND	ND	ND	ND	2	200
Carbon Tetrachloride	mg/m3	ND	0.00026	0.00045	ND	0.00056	0.0005	0.00059	0.00033	0.0055	0.55
Chloroform	mg/m3	ND	ND	0.00441	ND	ND	ND	ND	ND	0.00092	0.092
Chloromethane	mg/m3	ND	ND	0.00185	ND	0.00118	0.00144	0.00419	ND	0.045	4.5
Cyclohexane	mg/m3	0.544	ND	0.0616	12	ND	ND	0.0103	ND		
Dichlorodifluoromethane	mg/m3	ND	ND	0.00123	ND	0.00174	ND	0.00154	ND	0.51	51
Ethanol	mg/m3	ND	0.00158	0.0484	ND	0.00505	0.00171	0.111	0.00174		
Ethylbenzene	mg/m3	0.0174	0.0243	0.0428	ND	ND	0.0083	0.0233	0.0974	0.073	7.3
Heptane	mg/m3	0.311	0.00104	0.245	ND	ND	ND	0.0308	ND		
Hexane	mg/m3	5	ND	0.366	ND	ND	ND	0.0343	ND	0.58	58
Isopropylalcohol	mg/m3	ND	0.00333	0.0124	15	0.00106	ND	0.0486	ND		
Isopropylbenzene	mg/m3	ND	0.00373	0.0158	ND	ND	0.00143	0.0028	0.0127	1.1	110
m,p-Xylene	mg/m3	0.0616	ND	0.266	ND	0.002	ND	0.0746	ND		
Methyl Ethyl Ketone	mg/m3	ND	0.00236	0.089	ND	0.00117	0.00115	0.336	0.00102	2.9	290
Methyl tert-butyl ether(MTBE)	mg/m3	ND	ND	ND	ND	ND	ND	ND	ND	0.3	30
Methylene Chloride	mg/m3	ND	0.00319	0.00202	ND	ND	ND	0.00154	0.00189	0.17	17
n-Butylbenzene	mg/m3	ND	ND	0.012	ND	ND	ND	0.00513	ND	0.41	41
o-Xylene	mg/m3	0.032	0.00159	0.121	ND	ND	ND	0.0383	ND		
Propylene	mg/m3	ND	0.0065	ND	ND	ND	ND	0.104	0.00494		
sec-Butylbenzene	mg/m3	ND	ND	0.00768	ND	ND	ND	0.00103	ND	0.41	41
Styrene	mg/m3	ND	ND	ND	ND	ND	ND	ND	ND	2.9	290
Tetrachloroethene	mg/m3	0.0264	0.0474	0.0443	0.0451	0.00144	0.00037	0.046	0.0493	0.14	14
Tetrahydrofuran	mg/m3	ND	ND	ND	ND	ND	ND	ND	ND		
Toluene	mg/m3	0.0218	0.00272	0.058	0.0802	0.0028	0.00198	0.0225	0.00197	12	1200
Trichlorofluoromethane	mg/m3	ND	0.00115	0.00133	ND	0.00139	0.0013	0.00118	0.00158	0.048	4.8
Xylenes (Total)	mg/m3	0.09	0.00159	0.39	ND	0.00	ND	0.11	ND	0.3	30

Table 5A: Historical Groundwater Concentration in MW-1

Client Sample ID:		MW-1	MW-1	MW-1	MW-1	Pennyslanavia MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID:		JB487380-1	JB82226-1	460-105303-1	BK70909	
Date Sampled:		9/25/2013	11/18/2014	11/22/2015	2/28/2016	
Matrix:		Ground Water	Ground Water	Ground Water	Ground Water	
Ground Water						
Benzene	ug/l	70.8	469	220	550	5
Methyl Tert Butyl Ether	ug/l	15,000	7820	5400	9,400	20

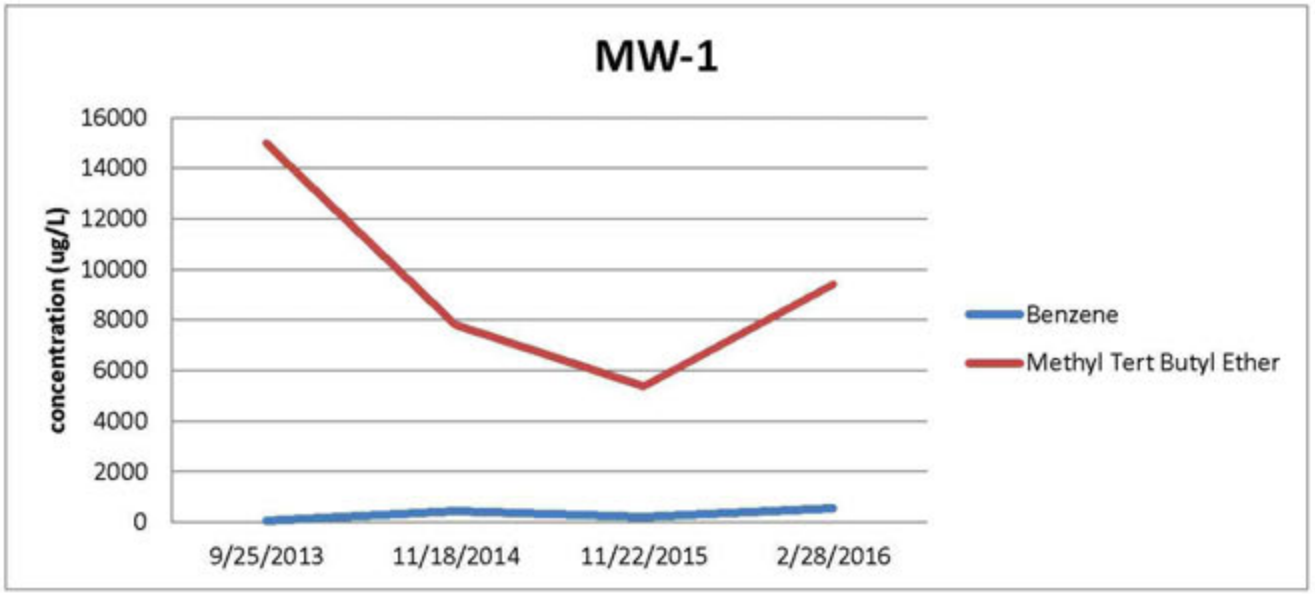


Figure 5B: Historical Groundwater Concentration in MW-2

Client Sample ID:		MW-2	MW-2	MW-2	MW-2	Pennyslanavia MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID:		JB487380-3	JB82226-2	460-105303-2	BK70910	
Date Sampled:		9/25/2013	11/18/2014	11/22/2015	2/28/2016	
Matrix:		Ground Water	Ground Water	Ground Water	Ground Water	
Ground Water						
Benzene	ug/l	0.28	6.8	23	9.5	5
Methyl Tert Butyl Ether	ug/l	0.29	2.3	8.9	8.9	20

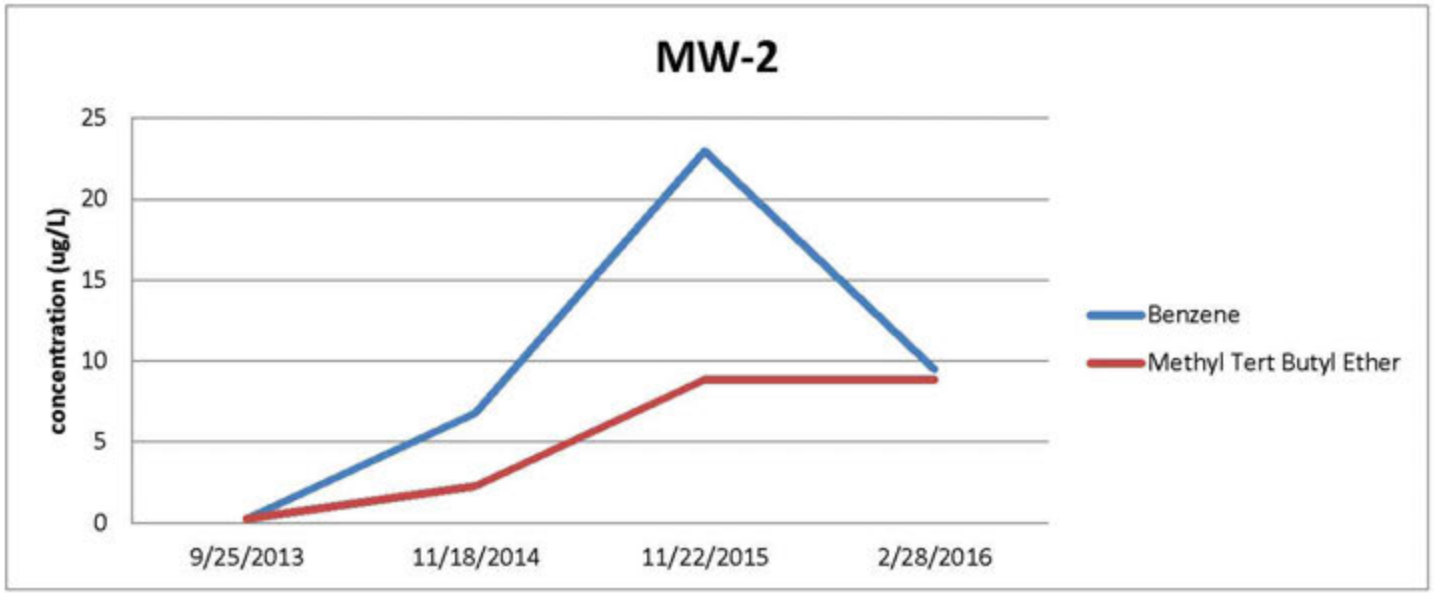


Figure 5C: Historic Groundwater Trends in MW-5

Client Sample ID:		MW-5	MW-5	Pennyslanavia MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID:		460-105303-5	BK70912	
Date Sampled:		11/22/2015	2/28/2016	
Matrix:		Ground Water	Ground Water	
Ground Water				
Benzene	ug/l	22	27	5
Methyl Tert Butyl Ether	ug/l	18	20	20

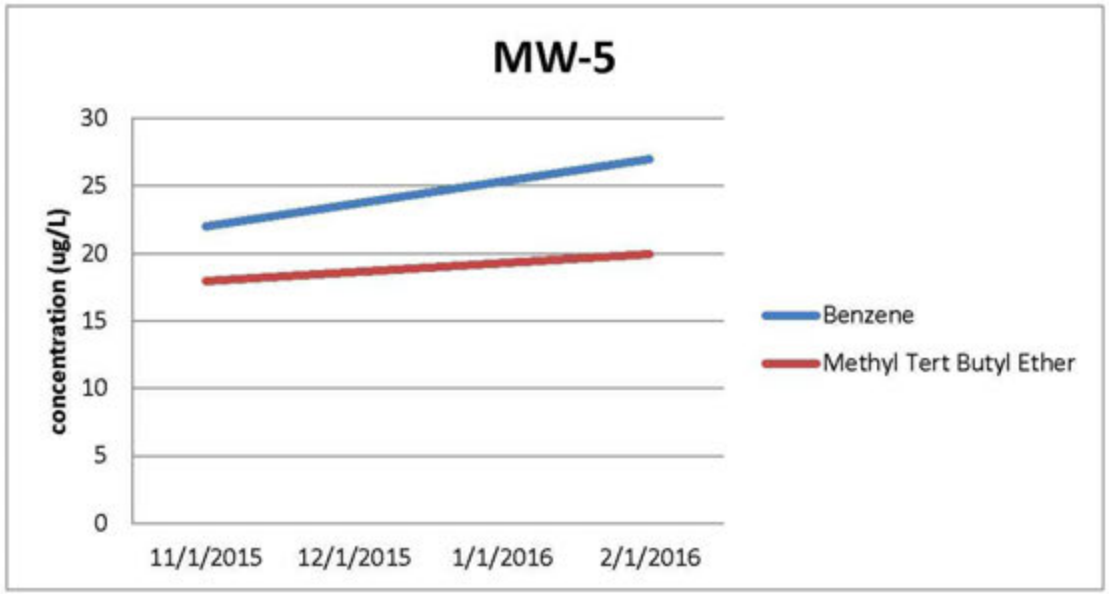


Figure 5D: Historical Groundwater Concentration in MW-6

Client Sample ID:		MW-6	MW-6	Pennyslanavia MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID:		460-105303-6	BK70913	
Date Sampled:		11/22/2015	2/28/2016	
Matrix:		Ground Water	Ground Water	
Ground Water				
Methyl Tert Butyl Ether	ug/l	3.5	200	20

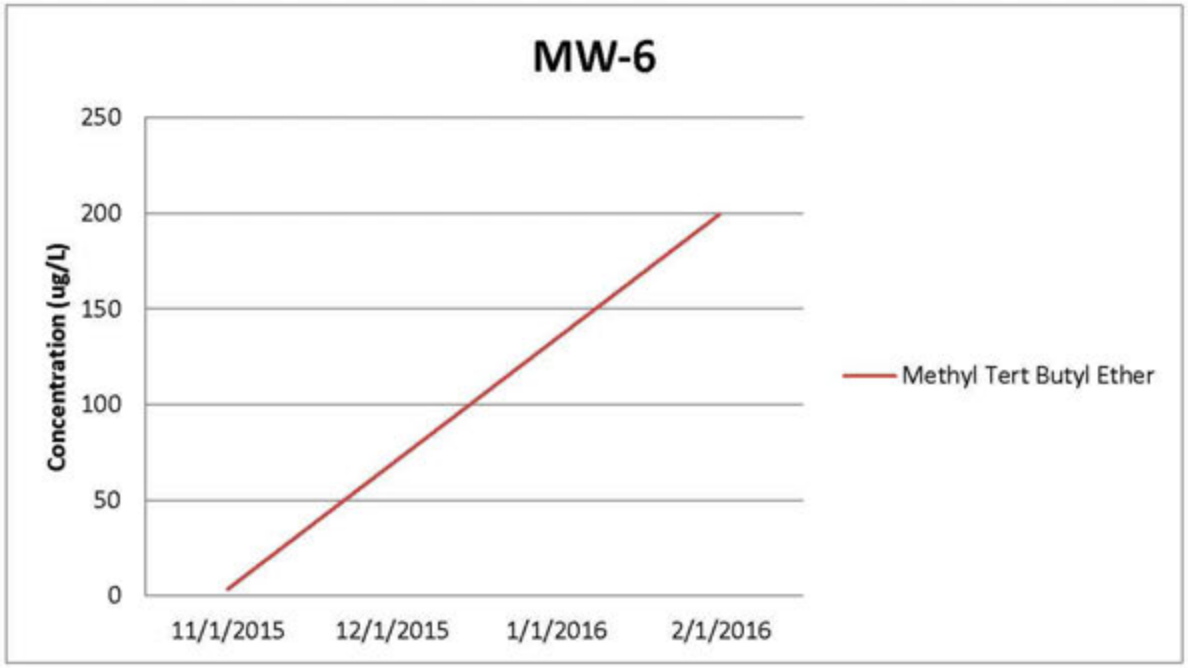


Figure 5E: Historical Groundwater Concentration in MW-7

Client Sample ID:		MW-7	MW-7	Pennyslanavia MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID:		460-105303-7	BK70914	
Date Sampled:		11/22/2015	2/28/2016	
Matrix:		Ground Water	Ground Water	
Ground Water				
Methyl Tert Butyl Ether	ug/l	47	2.4	20

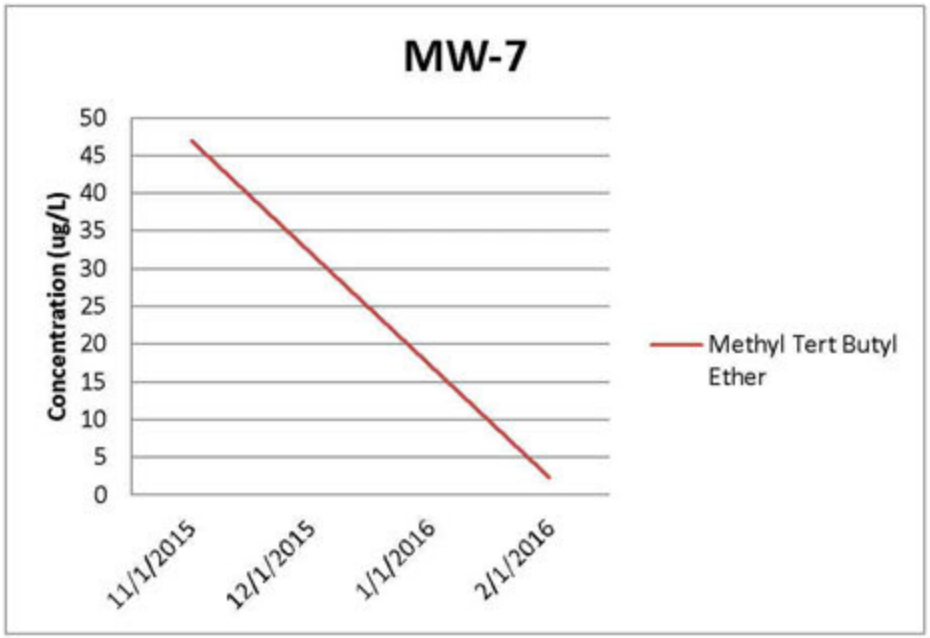


Figure 5F: Historical Groundwater Concentration in MW-8

Client Sample ID:		MW-8	MW-8	Pennyslanavia MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID:		460-105303-8	BK70915	
Date Sampled:		11/22/2015	2/28/2016	
Matrix:		Ground Water	Ground Water	
Ground Water				
Methyl Tert Butyl Ether	ug/l	430	650	20

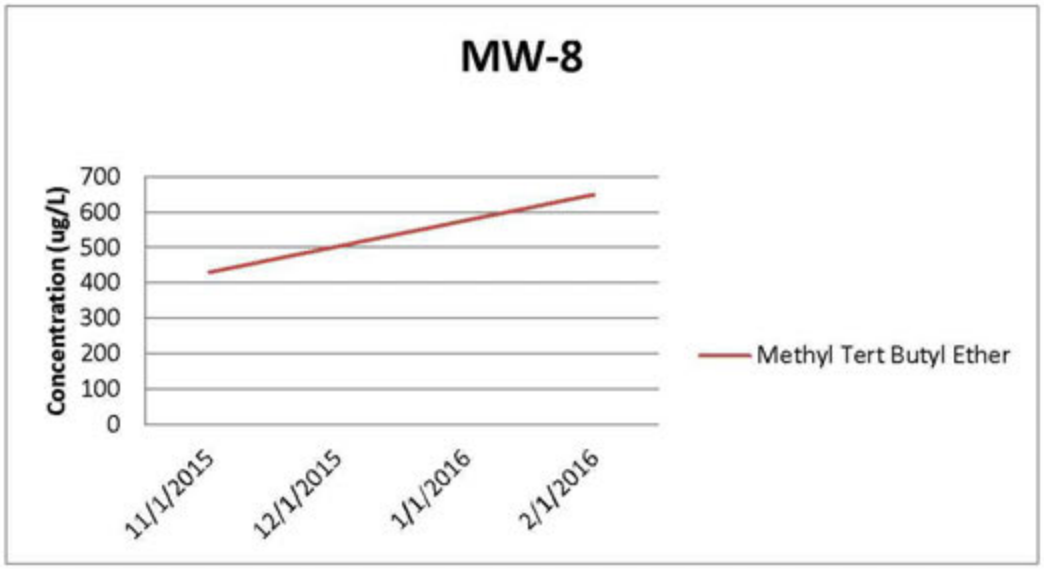


Figure 5G: Historical Groundwater Concentration in MW-10

Client Sample ID:		MW-10	MW-10	Pennyslanavia MSCs for Organic Related Substances in Groundwater (ug/l)
Lab Sample ID:		460-105303-10	BK77807	
Date Sampled:		11/22/2015	2/27/2016	
Matrix:		Ground Water	Ground Water	
Ground Water				
Methyl Tert Butyl Ether	ug/l	50	27	20

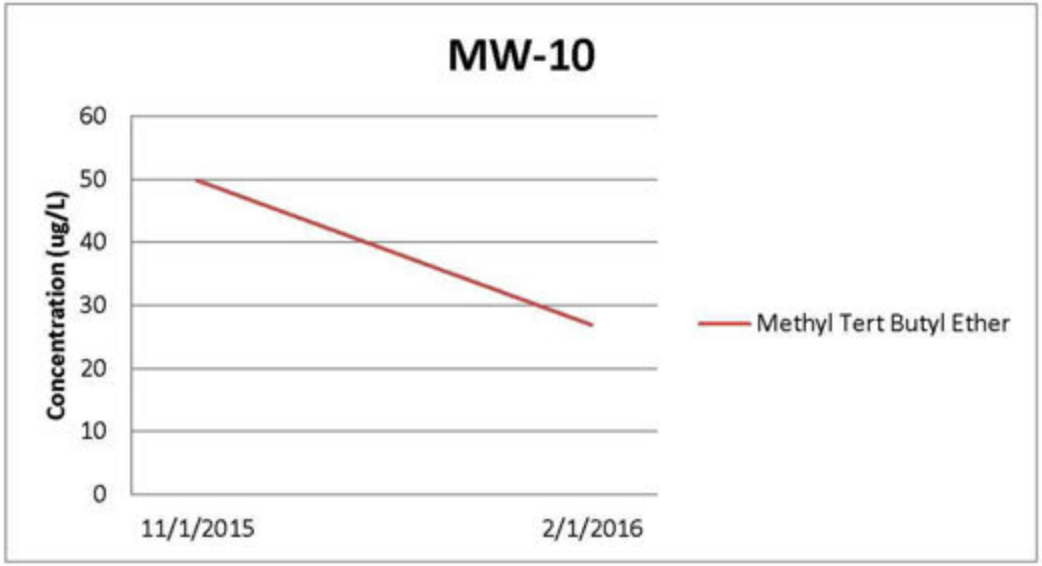


TABLE 6

PaGWIS Records

Geological Survey

About the Survey
Classroom
Collecting
Economic Resources
Geology of PA
Geologic Hazards
Groundwater
Library
PAMAP
Web-Mapping Application
Publications and Digital Data
GeoLinks
Contact the Survey

Search DCNR go

Find us on Facebook

Radial Search

This retrieval approximates a radial search around a fixed location. the results will include wells in the "corners" of this figure.

Enter the coordinates of the center in decimal-degree format and the radius of the search in miles.
All fields must be filled in to perform the search. The longitude must be a negative number.

○ Multiple Criteria ○ Polygon Search ◉ Radial Search

Longitude : -75.400178
Latitude : 39.986551
Radius in Miles : 0.5

Preview List | Create List | Clear Selections

"Preview List" creates a list which contains links to individual well information.
You can choose to create a comma separated list from the preview.
"Create List" creates a comma separated list without viewing the selection first.
If you choose to open the file it may open in Excel if you have Microsoft Office installed.

Total Records Returned : 28 Records **Click on the column headers to sort the Search Results.**

Shows rows: 20 Page 1 of 2

PA Well ID	Driller	Driller Ref	Date Drilled	Owner	County	Municipality	Image
619236	EICHELBERGERS INC.	DK15045-MW5	4/30/2015	BPG ELLIS PRESERVE	DELAWARE	NEWTOWN TWP.	
619568	EICHELBERGERS INC.	DK15045-MW202	4/30/2015	BPG ELLIS PRESERVE	DELAWARE	NEWTOWN TWP.	
619234	EICHELBERGERS INC.	DK15045-MW1	4/30/2015	BPG ELLIS PRESERVE	DELAWARE	NEWTOWN TWP.	
619566	EICHELBERGERS INC.	DK15045-MW4	4/30/2015	BPG ELLIS PRESERVE	DELAWARE	NEWTOWN TWP.	
619567	EICHELBERGERS INC.	DK15045-MW107	4/30/2015	BPG ELLIS PRESERVE	DELAWARE	NEWTOWN TWP.	
554975	EICHELBERGERS INC.	DK13075-MW201	7/23/2013	NEWTOWN SQUARE	DELAWARE	NEWTOWN TWP.	
504861	THOMAS G KEYES INC	13003	1/22/2013	OCEANIC	DELAWARE	NEWTOWN TWP.	
489954	B L MYERS BROS. OF PA. INC.	MW - # 1	9/19/2011	HOT SPOT DINER	DELAWARE	NEWTOWN TWP.	
491367	B L MYERS BROS. OF PA. INC.	MW # 8	11/30/2009	SUNOCO	DELAWARE	NEWTOWN TWP.	
491368	B L MYERS BROS. OF PA. INC.	MW # 15	11/30/2009	SUNOCO	DELAWARE	NEWTOWN TWP.	
491369	B L MYERS BROS. OF PA. INC.	MW # 19	11/30/2009	SUNOCO	DELAWARE	NEWTOWN TWP.	
478998	B L MYERS BROS. OF PA. INC.	MW # 20	8/26/2009	SUNOCO, INC.	DELAWARE	NEWTOWN TWP.	
478999	B L MYERS BROS. OF PA. INC.	MW # 21	8/26/2009	SUNOCO, INC.	DELAWARE	NEWTOWN TWP.	
479000	B L MYERS BROS. OF PA. INC.	MW # 22	8/26/2009	SUNOCO, INC.	DELAWARE	NEWTOWN TWP.	

479001	B L MYERS BROS. OF PA. INC.	MW # 23	8/26/2009	SUNOCO, INC.	DELAWARE	NEWTOWN TWP.	
479861	B L MYERS BROS. OF PA. INC.	MW # 24	8/26/2009	SUNOCO, INC.	DELAWARE	NEWTOWN TWP.	
617330	EICHELBERGERS INC.	DS09018-IW3	3/5/2009	SUNOCO	DELAWARE	NEWTOWN TWP.	
617328	EICHELBERGERS INC.	DS09018-IW1	3/5/2009	SUNOCO	DELAWARE	NEWTOWN TWP.	
617329	EICHELBERGERS INC.	DS09018-IW2	3/5/2009	SUNOCO	DELAWARE	NEWTOWN TWP.	
624395	EICHELBERGERS INC.	DS07030-MW18	3/15/2007	SUNOCO	DELAWARE	NEWTOWN TWP.	

Shows rows: 20 ▼ Page 1 of 2

APPENDIX A

Well/Boring SB-9
Sheet 1

PROJECT	Newtown Square	DATE STARTED	07/12/15
LOCATION	SB-9	DATE FINISHED	07/12/15
PROJECT NO.		ELEVATION & DATUM	
RIG TYPE	Geoprobe	COMPLETION DEPTH	1-5-8' bgs
DRILLING METHOD	Geoprobe	ROCK DEPTH	
BIT DIAMETER		NO. OF SAMPLES	1
CASING DIAMETER		WATER LEVEL	
HAMMER/FALL		FIRST	
		COMPLETION	
		24 HRS.	
SAMPLER		DRILLING CO.	MLG Jeary
HAMMER/FALL		DRILLER	
		INSPECTOR	Ravi Kolanki

DEPTH SCALE (ft)		PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
1			(0-4)		- grey micaceous clay with white clay in between	No visual olfactory contamination
2						
3						
4						
5			(4-8)		- grey micaceous clay + little gravel white in between	Drill refusal @ 8 ft bgs
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Well/Boring
Sheet 1

PROJECT	Newbern Square	DATE STARTED	07/12/05
LOCATION	SB-10	DATE FINISHED	07/12/05
PROJECT NO.		ELEVATION & DATUM	
RIG TYPE		COMPLETION DEPTH	24-5-25' bgs
DRILLING METHOD	Geoprobe	ROCK DEPTH	
BIT DIAMETER	1 Geoprobe	NO. OF SAMPLES	(2)
		WATER LEVEL	
CASING DIAMETER		FIRST	
HAMMER/FALL		COMPLETION	
		24 HRS.	
SAMPLER		DRILLING CO.	HIG Leary
HAMMER/FALL		DRILLER	
		INSPECTOR	Rain Holcomb

DEPTH SCALE (ft)		PID	SAMPLE ID	SAMPLE (ft bgs)	STRATIGRAPHY	REMARKS
1			0-4		- grey micaceous clay + asphalt fill	No visual olfactory Contamination
2						
3						
4						
5					- grey micaceous clay + little gravel white in between	No visual olfactory contamination
6			4-8			
7						
8						
9			8-12		- grey micaceous clay + little gravel	No visual olfactory contamination
10						
11						
12						
13			12-16		- grey micaceous clay + little gravel	No visual olfactory contamination
14						
15						

Well/Boring _____

Sheet 2 of 2

DEPTH SCALE (ft)		PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
16			16-20		- gray micaceous clay	
17					with little moist	No visual / olfactory
18					- Moisture found	contamination
19						
20						
21			20-24		- Micaceous clay	No visual / olfactory
22					- Moisture	contamination
23						
24			24		- Drill refusal @ 24'	
25					↳ End of Borehole	
26					Sample collected	
27					@ 24.5 - 25' bgs	
28						
29						
30						

Well/Boring SV-1
Sheet 1

PROJECT	Woodbine Square	DATE STARTED	07/26/15
LOCATION	SVE-1	DATE FINISHED	07/26/15
PROJECT NO.		ELEVATION & DATUM	
RIG TYPE	Geoprobe	COMPLETION DEPTH	6' bgs
DRILLING METHOD	Geoprobe	ROCK DEPTH	
BIT DIAMETER		NO. OF SAMPLES	(1)
CASING DIAMETER		WATER LEVEL	
HAMMER/FALL		FIRST	
		COMPLETION	
		24 HRS.	
SAMPLER		DRILLING CO.	NEG Leary
HAMMER/FALL		DRILLER	
		INSPECTOR	Ravi

DEPTH SCALE (ft)		PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
1			0-4		silty clay + micaceous fill material	No visual/ olfactory contamination
2						
3						
4						
5					micaceous brown silty clay	No visual/ olfactory contamination
6			4-6			
7						
8						
9					End of Borehole @ 6' bgs	
10						
11						
12						
13						
14						
15						

Well/Boring SV-2
Sheet 1

PROJECT	Newburg Square	DATE STARTED	03/26/15
LOCATION	SVP-2	DATE FINISHED	03/26/15
PROJECT NO.		ELEVATION & DATUM	
RIG TYPE	Geoprobe	COMPLETION DEPTH	6' bgs
DRILLING METHOD	Geoprobe	ROCK DEPTH	
BIT DIAMETER	3	NO. OF SAMPLES	(1)
CASING DIAMETER		WATER LEVEL	
HAMMER/FALL		FIRST	
		COMPLETION	
		24 HRS.	
SAMPLER		DRILLING CO.	HIG Leaney
HAMMER/FALL		DRILLER	
		INSPECTOR	Ravi

DEPTH SCALE (ft)		PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
1			0-4		Brown clay with little to some sand + trace silt + fill material	No visual / olfactory contamination
2						
3						
4						
5						
6			4-6		Tan micaceous silt + occasional black micaceous silt	No visual / olfactory contamination
7						
8						
9					End of borehole @ 6' bgs	
10						
11						
12						
13						
14						
15						

Well/Boring SV-3
Sheet 1

PROJECT	Newtown Square	DATE STARTED	07/26/15
LOCATION	SVP-3	DATE FINISHED	07/26/15
PROJECT NO.		ELEVATION & DATUM	
RIG TYPE	Geoprobe	COMPLETION DEPTH	6' bgs
DRILLING METHOD	Geoprobe	ROCK DEPTH	
BIT DIAMETER		NO. OF SAMPLES	(1)
CASING DIAMETER		WATER LEVEL FIRST	
HAMMER/FALL		COMPLETION	
		24 HRS.	
SAMPLER		DRILLING CO.	HIG Leaning
HAMMER/FALL		DRILLER	
		INSPECTOR	Ravi

DEPTH SCALE (ft)	X	PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
1			0-4		Brown clay + fill material	No Visual / olfactory Contamination
2						
3						
4						
5					Brown micaceous clay + little gravel	No Visual / olfactory Contamination
6			4-6			
7						
8						
9					End of Borehole @ 6' bgs	
10						
11						
12						
13						
14						
15						

MIG Consulting LLC
SOIL BORING LOG

BORING/WELL NO: SB-1	DATE DRILLED: 07/23/15 | 14:25
PROJECT: Newtown Square	DRILLING CONTRACTOR: MIG Drilling
CLIENT: Newtown Square	DRILLER: Haile
LOCATION: SB-1	DRILLING MACHINE: Geoprobe 5400
JOB NO.: —	SIZE & TYPE OF BIT: 2 inch DPT SAMPLER
TOTAL DEPTH: 18'	SAMPLING METHOD: macro core DPT
LOGGED BY: RAVI	G.W ENCOUNTERED:

DEPTH (Feet)	SAMPLE No.	USCS	Recovery (inches)	Soil/Geological Description	WATER	PID VALUE (ppm)
Surface						
0			(0-4)	Silty clay + micaceous Fill	No visual/olfactory contamination	0
1						
2						
3						
4			(4-8)	micaceous brown silty clay	No visual/olfactory contamination	0
5						
6						
7						
8			(8-12)	micaceous brown silty clay (loose)	No visual/olfactory Contamination	0
9						
10						
11						
12			(12-16)	micaceous brown to grey (black) clay	No visual/olfactory contamination	0
13						
14						
15						
16						

Well/Boring SB-1
Sheet 2 of 2

DEPTH SCALE (ft)		PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
16				(16-20)	brown moist micaceous clay	0
17						No visual / olfactory contamination
18						
19					Drill refusal @ 18' bgs	
20						
21					Samples collected at 17.5 - 18' & 6.5 - 7'	
22						
23						
24						
25						
26						
27						
28						
29						
30						

MIG Consulting LLC
SOIL BORING LOG

BORING/WELL NO: SB-2	DATE DRILLED: 07/24/15
PROJECT: Newtown Square	DRILLING CONTRACTOR: MIG Drilling
CLIENT: Newtown Square	DRILLER: MIG/Mike
LOCATION: SB-2	DRILLING MACHINE: Geoprobe 5400
JOB NO.:	SIZE & TYPE OF BIT: 2 inch DPT SAMPLER
TOTAL DEPTH: 24'	SAMPLING METHOD: macro core DPT
LOGGED BY: Ravi	G.W ENCOUNTERED: No

DEPTH (Feet)	SAMPLE No.	USCS	Recovery (inches)	Soil/Geological Description	WATER	PID VALUE (ppm)
Surface						
0				(0-4) Fill + slight brown to tan clay + little silt & micaceous		0
1						
2				- Fill	No visual/ olfactory contamination	
3				- silt		
4				- Brown clay		
5				(4-8) slight brown to tan silty clay with calcite gravel		0
6					No visual/olfactory contamination	
7				- Brown & tan clay		
8						
9				(8-12) light brown to tan silty clay with white calcite gravel		0
10					No visual/olfactory contamination	
11						
12						
13				(12-16) light brown to tan clay + micaceous + gravel		0
14					No visual/olfactory contamination	
15						
16						

Well/Boring

Sheet 2 of 2

SC	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
16			(16-20) light brown to tan calcious + micaceous clay	0 No visual / olfactory contamination
17				
18				
20				
21			(20-24) - light brown to tan micaceous clay - moist	0 No visual / olfactory contamination
24				
25			EOB - 24' bgs samples collected @ 7.5-8' bgs 23.5-24' bgs - drill refusal at 4' office location, relocated	
28				
29				

MIG Consulting LLC
SOIL BORING LOG

BORING/WELL NO: SB-3 @ 15:50	DATE DRILLED: 07/24/15
PROJECT: Newtown Square	DRILLING CONTRACTOR: MIG Drilling
CLIENT: Newtown Square	DRILLER: Mark
LOCATION: SB-3	DRILLING MACHINE: Geoprobe 5400
JOB NO.:	SIZE & TYPE OF BIT: 2 inch DPT SAMPLER
TOTAL DEPTH:	SAMPLING METHOD: macro core DPT
LOGGED BY: Ray I	G.W ENCOUNTERED:

DEPTH (Feet)	SAMPLE No.	USCS	Recovery (inches)	Soil/Geological Description	WATER	PID VALUE (ppm)
Surface						
0				(0-4) Brown clay + fill material		0
1						
2						
3						
4				(4-8) Brown micacious clay + little gravel		0
5						
6						
7						
8				(8-12) Brown to grey silty clay, often tan + micacious + gravel		0
9						
10						
11						
12				(12-16) Brown loose clay + silt + often tan inbetween		0
13						
14						
15						
16						

Well/Boring

Sheet 2 of 2

DEPTH SCALE (ft)	PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
16				(16-20) Brown, tan white calcite, mécaceous loose clay + silt	0
17					
18					
19					
20					
21					
22					
23					
24					
25					
26				B3 moved to downgradient of MW3 because of B13 location	
27					
28				EOB - 24' bgs	
29				samples collected @	
30				7.5-8' & 23.5-24' bgs	

MIG Consulting LLC
SOIL BORING LOG

BORING/WELL NO: SB-4 @ 14:15	DATE DRILLED: 07/24/15
PROJECT: Newtown Square	DRILLING CONTRACTOR: MIG Drilling
CLIENT: Newtown Square	DRILLER: Mario
LOCATION: SB-4	DRILLING MACHINE: Geoprobe 5400
JOB NO.:	SIZE & TYPE OF BIT: 2 inch DPT SAMPLER
TOTAL DEPTH: 16'	SAMPLING METHOD: macro core DPT
LOGGED BY: Ravi	G.W ENCOUNTERED: No

DEPTH (Feet)	SAMPLE No.	USCS	Recovery (inches)	Soil/Geological Description	WATER	PID VALUE (ppm)
Surface						
0				(0-4) Fill + grey to brown loose soil + little gravel		0
1						
2						
3						
4				(4-8) Brown loose sand (clay) + micaceous to calcite gravel		0
5						
6						
7						
8				(8-12) Brown to tan clay silty + little gravel + micaceous		0
9						
10						
11						
12				(12-16)		
13						
14						
15				EOB - 16' (Drill refusal), Samples collected @ 4.5-8 & 15.5-16'		
16						

SB-5

Well/Boring SB-5
Sheet 1

PROJECT	Newtown Square	DATE STARTED	07/24/15
LOCATION	SB-5 @ 16:40	DATE FINISHED	07/24/15
PROJECT NO.		ELEVATION & DATUM	—
RIG TYPE		COMPLETION DEPTH	15' bgs
DRILLING METHOD	Geoprobe 5403	ROCK DEPTH	—
BIT DIAMETER		NO. OF SAMPLES	2
CASING DIAMETER		WATER LEVEL	—
HAMMER WT.		FIRST	
		COMPLETION	
SAMPLER	Ravi	24 HRS.	
HAMMER WT.		DRILLING CO.	MLG
		DRILLER	John Maire
		INSPECTOR	Ravi

SC	PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
			(0-4	Fill + silt gravel brown / grey loose clay	0
			(4-8)	light brown to tan silty / gravel clay inbetween tan	0
			(8-12	brown to tan clay + silt	0
				sample collected @ 14.5 - 15' bgs moist brown to tan micaceous clay EOB - 15' bgs	Drill refusal

5

MIG Consulting LLC
SOIL BORING LOG

BORING/WELL NO: SB-6	DATE DRILLED: 07/23/15
PROJECT: Newtown Square	DRILLING CONTRACTOR: MIG Drilling
CLIENT:	DRILLER: MLG
LOCATION: SB-6	DRILLING MACHINE: Geoprobe 5400
JOB NO.:	SIZE & TYPE OF BIT: 2 inch DPT SAMPLER
TOTAL DEPTH:	SAMPLING METHOD: macro core DPT
LOGGED BY: RAVI	G.W ENCOUNTERED: Yes

DEPTH (Feet)	SAMPLE No.	USCS	Recovery (inches)	Soil/Geological Description	WATER	PID VALUE (ppm)
Surface						
0			(0-4)			Drill refusal @ 4' moved to another location
1				– gray micaceous clay with white clay in between		
2				– micaceous		
3				– white clay		
4						
5			(4-8)	– gray micaceous clay		
6				+ little gravel		0
7				– & white in between		
8						
9			(8-12)	gray micaceous clay		
10				+ little gravel		0
11						
12						
13			(12-16)	– gray micaceous clay		
14				– little gravel		0
15						
16						

Well/Boring

Sheet 2 of 2

DEPTH SCALE (ft)	PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
16			(16-20)	- Grey micaceous clay with little moist - Moist in between	0
17					
18					
19					
20					
21			(20-24)	Moist Grey micaceous clay Moist	0
22					
23					
24					
25				- Samples collected @ (7.5-8') & (23.5-24') - GW collected @ 22 ft bgs	
26					
27					
28					
29					
30					

MIG Consulting LLC
SOIL BORING LOG

BORING/WELL NO: SB-7 15:10	DATE DRILLED: 07/23/15
PROJECT: Newtown Square	DRILLING CONTRACTOR: MIG Drilling
CLIENT: Newtown Square	DRILLER: MIG
LOCATION: SB-7	DRILLING MACHINE: Geoprobe 5400
JOB NO.:	SIZE & TYPE OF BIT: 2 inch DPT SAMPLER
TOTAL DEPTH: 12' bgs	SAMPLING METHOD: macro core DPT
LOGGED BY: RAM	G.W ENCOUNTERED:

DEPTH (Feet)	SAMPLE No.	USCS	Recovery (inches)	Soil/Geological Description	WATER	PID VALUE (ppm)
Surface						
0						
1				Fill - No sample		0
2				- asphalt broken fill	-	
3						
4						
5				- grey micaceous soil		
6				with little gravel		0
7				- drill refusal (partial)	-	
8						
9				- grey micaceous clay		
10				grey to little brown clay		0
11				Drill refusal @ 12' bgs	-	
12						
13				sample collected @ 11.5-12' bgs		0
14						
15				Dup 11.5-12' bgs		
16						

Well/Boring SB-8
Sheet 1

PROJECT	Newtown Square	DATE STARTED	07/23/15
LOCATION	SB-8	DATE FINISHED	07/23/15
PROJECT NO.	Newtown Square	ELEVATION & DATUM	
RIG TYPE	5403	COMPLETION DEPTH	
DRILLING METHOD	Geoprobe	ROCK DEPTH	—
BIT DIAMETER		NO. OF SAMPLES	(2)
		WATER LEVEL	
CASING DIAMETER	—	FIRST	—
HAMMER/FALL	—	COMPLETION	—
		24 HRS.	13:10
SAMPLER	RAVI	DRILLING CO.	MIG DRILLING
HAMMER/FALL	—	DRILLER	Mike
		INSPECTOR	RAVI

DEPTH SCALE (ft)		PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
1			(1)		Rock | Fill	—
2						
3						
4						
5			(2)		No sample - collapse/ old fills - Drill refusal	—
6						
7						
8						
9			(3)		Drill refusal	—
10						
11						
12						
13					Relocated	
14						
15						

Well/Boring SB-8 (1)
Sheet 1

PROJECT	Newtown Square Inc	DATE STARTED	07/23/15
LOCATION	SB-8	DATE FINISHED	07/23/15
PROJECT NO.	Newtown Square	ELEVATION & DATUM	
RIG TYPE	5403	COMPLETION DEPTH	
DRILLING METHOD	Geoprobe	ROCK DEPTH	
BIT DIAMETER		NO. OF SAMPLES	(2)
		WATER LEVEL	
CASING DIAMETER		FIRST	
HAMMER/FALL		COMPLETION	
		24 HRS.	13:45
SAMPLER	RAVI	DRILLING CO.	NIG
HAMMER/FALL		DRILLER	Naire
		INSPECTOR	RAVI

DEPTH SCALE (ft)		PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
1					Drill refusals at 3 (SB-8) locations	
2						
3						
4						
5					No SB-8 sample collected due to refusal @ 3 locations	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

MIG Consulting LLC
SOIL BORING LOG

BORING/WELL NO: SB-11	DATE DRILLED: 07/23/15 @ 12:11
PROJECT: Newtown Square	DRILLING CONTRACTOR: MIG Drilling
CLIENT: Newtown Square	DRILLER: MIG
LOCATION: SB-11	DRILLING MACHINE: Geoprobe 5400
JOB NO.:	SIZE & TYPE OF BIT: 2 inch DPT SAMPLER
TOTAL DEPTH: 8'	SAMPLING METHOD: macro core DPT
LOGGED BY: Ravi	G.W ENCOUNTERED: No

DEPTH (Feet)	SAMPLE No.	USCS	Recovery (inches)	Soil/Geological Description	WATER	PID VALUE (ppm)
Surface						
0	SB-11			- asphalt fill		
1				- grey micaceous clay + little gravel		0
2						
3						
4				- grey to brown clay		
5						
6				- grey micaceous clay + little gravel		0
7						
8				Drill refusal @ 9.5'		0
9						
10				Sample collected at 7.5-8'		
11						
12						
13						
14						
15						
16						

MIG Consulting LLC
SOIL BORING LOG

BORING/WELL NO: B12 @ 12:55 pm	DATE DRILLED: 7/24/15 (m/d/y)
PROJECT: NEWTOWN SQUARE	DRILLING CONTRACTOR: MIG Drilling
CLIENT:	DRILLER: MIG DRILLING
LOCATION: NEWTOWN SQUARE, PA	DRILLING MACHINE: Geoprobe 5400
JOB NO.:	SIZE & TYPE OF BIT: 2 inch DPT SAMPLER
TOTAL DEPTH:	SAMPLING METHOD: macro core DPT
LOGGED BY: MAIRE	G.W ENCOUNTERED:

DEPTH (Feet)	SAMPLE No.	USCS	Recovery (inches)	Soil/Geological Description	WATER	PID VALUE (ppm)
Surface						
0			26/48	(0-1) BROWN CLAY W/ LITTLE TO SOME SAND & TRACE SILT (LITTLE ORANGE MOLTING); DRY		
1						
2				(1-2) TAN TO WHITE SAND & GRAVEL (PULVERIZED ROCK); DRY		
3				(2-3) ORANGE FINE SAND W/ TRACE SILT & CLAY; DRY		
4			48/48	(3-4) LIGHT BROWN SILT & CLAY; DRY		
5				(4-8) ORANGE MICACEOUS SILT; DRY		
6						
7						
8			48/48	(8-9) SAA (NOTE BLACK MIST 4 IN)		
9				(9-12) TAN MICACEOUS SILT W/ OCCASIONAL BLACK MICACEOUS SILT; DRY		
10				(NOTE BLACK FOR ~ 8 IN)		
11						
12			48/48	(12-16) TAN SILT & CLAY (MICACEOUS) W/ LITTLE ORANGE MOLTING; DRY TO MOIST		
13						
14						
15						
16						

Well/Boring

Sheet 2 of 2

DEPTH SCALE (ft)	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS
16 (40/48)			(16-20) TAN SILT w/ SOME TO LITTLE CLAY, MICACEOUS; DRY	
17				
18				
19				
20				
21			(20-24) Moist silt w/ some to little clay, micaceous	
22				
23				
24				
25			Samples collected @ 7.5-8' bgs & 23.5-24' bgs	No Visual / olfactory contamination
26				
27				
28			EOB - 24' bgs	
29				
30				

Well/Boring SB-13
Sheet 1

PROJECT Newtown Square
LOCATION SB-13 @ 17:35
PID/FID
RIG TYPE
DRILL METHOD Geoprobe 5402
BIT DIAMETER —
CASING DIAM —
HAMMER/FAL —
SAMPLER Ravi
BACKFILL —

DATE STARTED 07/24/15
DATE FINISHED 07/24/15
ELEVATION & DATUM —
COMPLETION DEPTH
ROCK DEPTH —
NO OF SAMPLES
WATER LEVEL —
FIRST
COMPLETION —
24 HRS. —
DRILLING CO. NJG
DRILLER Mark
INSPECTOR Kayla

DEPTH (ft)	PID	SAMPLE ID	SAMPLE Rec. (ft)	STRATIGRAPHY	REMARKS (PID)
				(0-4) fill + dark orange clay + little gravel	PID 0 No contamination
				(4-8) orange clay + little gravel	No contamination 0
				(8-12) ~~grey to~~ orange to grey micaceous clay	0 No Contamination
				(12-16) orange to grey micaceous clay moist	EOB - 16' bgs Samples collected @ 7.5-8' & 15.5'-16'

EOB - 16'

INDOOR AIR BUILDING SURVEY
and SAMPLING FORM

Preparer's name: Ravi Kumar Kolaventi Date: 07/24/15

Preparer's affiliation: MIG Consulting LLC Phone #: 732-543-1150

Site Name: BP - Amoco Case #: _____

Part I - Occupants

Building Address: 3608 West Chester Pike, Newtown Square, PA 19703

Property Contact: Harbir Singh (Owner) / Renter / other: Owner

Contact's Phone: home ( )_____ work ( )_____ cell ( )_____

# of Building occupants: Children under age 13 0 Children age 13-18 0 Adults 1

Part II – Building Characteristics

Building type: residential / multi-family residential / office / strip mall / commercial / industrial

Describe building: Single storied store Year constructed: _____

Sensitive population: day care / nursing home / hospital / school / other (specify): Strafford Junior school

Number of floors below grade: 0 (full basement / crawl space / slab on grade)

Number of floors at or above grade: 0

Depth of basement below grade surface: – ft. Basement size: – ft^2

Basement floor construction: concrete / dirt / floating / stone / other (specify): –

Foundation walls: poured concrete / cinder blocks / stone / other (specify) _____

Basement sump present? *Yes / No* Sump pump? *Yes / No* Water in sump? *Yes / No*

Type of heating system (circle all that apply):

hot air circulation	hot air radiation	wood	steam radiation
heat pump	hot water radiation	kerosene heater	electric baseboard
other (specify): _____			

Type of ventilation system (circle all that apply):

central air conditioning	mechanical fans	bathroom ventilation fans individual air
conditioning units	kitchen range hood fan	outside air intake
other (specify): _____		

Type of fuel utilized (circle all that apply):
Natural gas / electric / fuel oil / wood / coal / solar / kerosene – NA

Are the basement walls or floor sealed with waterproof paint or epoxy coatings? *Yes / No* – NA

Is there a whole house fan? *Yes / (No)*

Septic system? *Yes / Yes (but not used) / No*

Irrigation/private well? *Yes / Yes (but not used) / (No)*

Type of ground cover outside of building: grass / (concrete) / (asphalt) / other (specify) _____

Existing subsurface depressurization (radon) system in place? *Yes / (No)* *active / passive*

Sub-slab vapor/moisture barrier in place? *Yes / (No)*
Type of barrier: _____

Part III - Outside Contaminant Sources

NJDEP contaminated site (1000-ft. radius): _____

Other stationary sources nearby (gas stations, emission stacks, etc.): _____

Heavy vehicular traffic nearby (or other mobile sources): _____

Part IV – Indoor Contaminant Sources

Identify all potential indoor sources found in the building (including attached garages), the location of the source (floor and room), and whether the item was removed from the building 48 hours prior to indoor air sampling event. Any ventilation implemented after removal of the items should be completed at least 24 hours prior to the commencement of the indoor air sampling event.

Potential Sources	Location(s)	Removed (Yes / No / NA)
Gasoline storage cans	Propane tanks	
Gas-powered equipment	—	
Kerosene storage cans	—	
Paints / thinners / strippers	—	
Cleaning solvents	—	
Oven cleaners	—	
Carpet / upholstery cleaners	—	
Other house cleaning products	—	
Moth balls	—	
Polishes / waxes	—	
Insecticides	—	
Furniture / floor polish	—	
Nail polish / polish remover	—	
Hairspray	—	
Cologne / perfume	—	
Air fresheners	—	
Fuel tank (inside building)	—	NA
Wood stove or fireplace	—	NA
New furniture / upholstery	—	
New carpeting / flooring	—	NA
Hobbies - glues, paints, etc.	—	

Part V – Miscellaneous Items

Do any occupants of the building smoke? *Yes / No* How often? _____

Last time someone smoked in the building? _____ hours / *days ago*

Does the building have an attached garage directly connected to living space? *Yes* / (*No*)

If so, is a car usually parked in the garage? *Yes* / (*No*)

Are gas-powered equipment or cans of gasoline/fuels stored in the garage? *Yes / No*

Do the occupants of the building have their clothes dry cleaned? *Yes* / (*No*)

If yes, how often? weekly / monthly / 3-4 times a year

Do any of the occupants use solvents in work? *Yes* / (*No*)

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? *Yes* / (*No*)

Have any pesticides/herbicides been applied around the building or in the yard? *Yes* / (No)

If so, when and which chemicals? _____

Has there ever been a fire in the building? *Yes / No* If yes, when? _____

Has painting or staining been done in the building in the last 6 months? *Yes / No*

If yes, when _____ and where? _____

Part VI – Sampling Information

Sample Technician: Ravi Kumar Phone number: (732) 543 - 1150

Sample Source: Indoor Air / Sub-Slab / Near Slab Soil Gas / (Exterior Soil Gas) & outdoor air

Sampler Type: Tedlar bag / Sorbent / Stainless Steel Canister / Other (specify): _____

Analytical Method: TO-15 / TO-17 / other: _____ Cert. Laboratory: _____

Sample locations (floor, room):

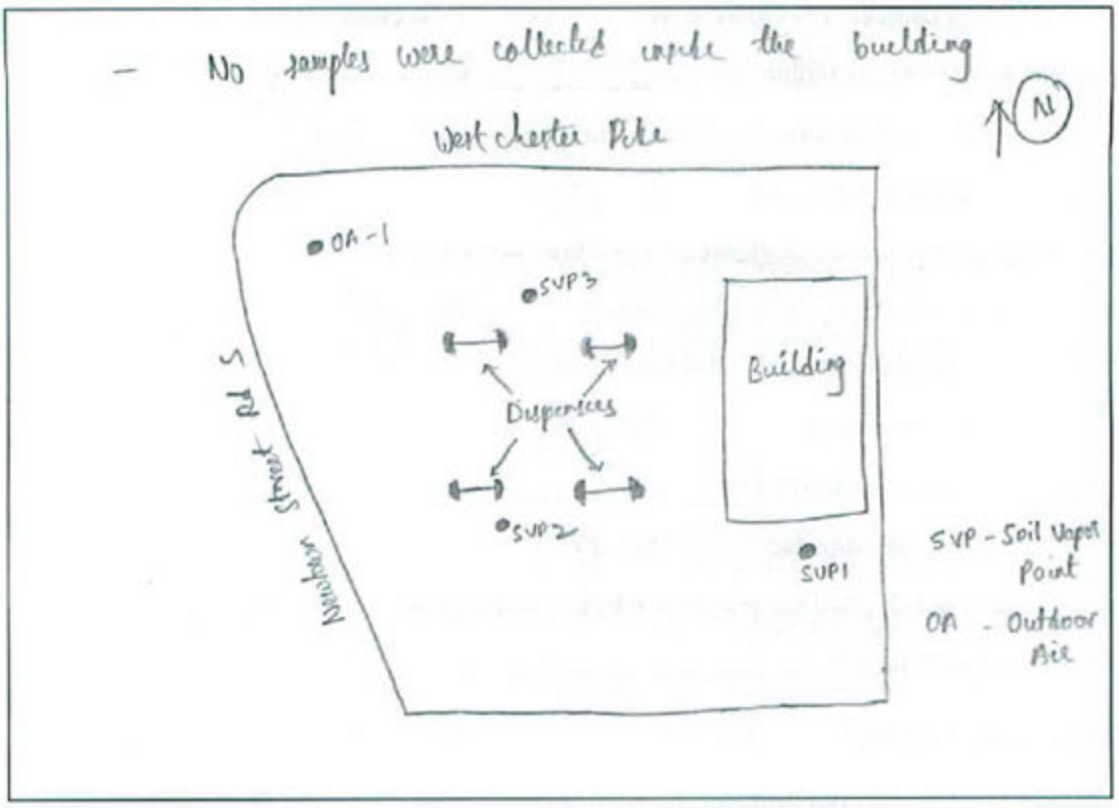
Field ID # SVP1 - _____ Field ID # SVP2 - _____

Field ID # SVP3 - _____ Field ID # OA1 - _____

Were "Instructions for Occupants" followed? (Yes) / *No*

If not, describe modifications: _____

Provide Drawing of Sample Location(s) in Building



Part VII - Meteorological Conditions

Was there significant precipitation within 12 hours prior to (or during) the sampling event? *Yes* / (*No*)

Describe the general weather conditions: Sunny High 80°F

Part VIII – General Observations

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.

- NA -

(NJDEP 1997; NHDES 1998; VDOH 1993; MassDEP 2002; NYSDOH 2005; CalEPA 2005)

APPENDIX B

MIG Consulting

Monitoring Well Log

Project:
BP Service Station (former Amoco)
3608 West Chester Pike
Newtown Square, PA 19073

Monitor Well #10

	Screen	Riser	Sand Pack	Date Completed	Driller	Permit Number
Type	PVC	PVC	#2 Morie	1/29/2016	MIG – Drilling of DE (Auger)	
Diameter	2"	2"	6" Hole			
Length	15'			Depth to Water from Ground Surface	Date	Time
Slot Size	0.02"	------	------		10/09/2015	09:20

Sample ID	Depth (feet)	Well Construction	Blow Counts	Description (Soil Classification)	Remarks (PID)
	1			0-5 : Brown clay and silt; dry	0.0 ppm
	2				
	3				
	4				
	5			5-10 : Brown clay and silt; dry	0.0 ppm
	6				
	7				
	8				
	9				
	10			10-15 : Brown clay and silt; dry	0.0 ppm
	11				
	12				
	13				
	14				
	15			15-20 : Brown clay and silt; dry	0.0 ppm
	16				
	17				
	18				
	19				
	20			20-25 : Brown clay and silt; dry	0.0 ppm
	21				
	22				
	23				
	24				
	25			25-30 : Brown clay and silt; dry	0.0 ppm
	26				
	27				
	28				
	29				
	30				

Grout & Bentonite Material

Sand Pack Well Screen

Grout & Bentonite Material Sand Pack Well Screen

MIG Consulting

Monitoring Well Log

Project:
BP Service Station (former Amoco)
3608 West Chester Pike
Newtown Square, PA 19073

Monitor Well #9

	Screen	Riser	Sand Pack	Date Completed	Driller	Permit Number
Type	PVC	PVC	#2 Morie	1/29/2016	MIG – Drilling of DE (Auger)	
Diameter	2"	2"	6" Hole			
Length	15'			Depth to Water from Ground Surface	Date	Time
Slot Size	0.02"	------	------		10/09/2015	12:00

Sample ID	Depth (feet)	Well Construction	Blow Counts	Description (Soil Classification)	Remarks (PID)
	1			0-5 : Brown clay and silt; dry	0.0 ppm
	2				
	3				
	4				
	5			5-10 : Brown clay and silt; dry	0.0 ppm
	6				
	7				
	8				
	9				
	10			10-15 : Brown clay and silt; dry	0.0 ppm
	11				
	12				
	13				
	14				
	15			15-20 : Brown clay and silt; dry	0.0 ppm
	16				
	17				
	18				
	19				
	20			20-25 : Brown clay and silt; dry	0.0 ppm
	21				
	22				
	23				
	24				
	25			25-30 : Brown clay and silt; dry	0.0 ppm
	26				
	27				
	28				
	29				
	30				

Grout & Bentonite Material Sand Pack Well Screen

MIG Consulting

Monitoring Well Log

Project:
BP Service Station (former Amoco)
3608 West Chester Pike
Newtown Square, PA 19073

Monitor Well #8

	Screen	Riser	Sand Pack	Date Completed	Driller	Permit Number
Type	PVC	PVC	#2 Morie	1/29/2016	MIG – Drilling of DE (Auger)	
Diameter	2"	2"	6" Hole			
Length	15'			Depth to Water from Ground Surface	Date	Time
Slot Size	0.02"	------	------		10/08/2015	09:20

Sample ID	Depth (feet)	Well Construction	Blow Counts	Description (Soil Classification)	Remarks (PID)
	1			0-5 : Brown clay and silt with trace grave; dry	0.0 ppm
	2				
	3				
	4				
	5			5-10 : Brown clay and silt with little sand; dry	0.0 ppm
	6				
	7				
	8				
	9				
	10			10-15 : Brown clay and silt with little sand; dry	0.0 ppm
	11				
	12				
	13				
	14				
	15			15-20 : Brown clay and silt with little sand; dry	0.0 ppm
	16				
	17				
	18				
	19				
	20			20-25 : Brown clay and silt with little sand; wet at ~24ft	0.0 ppm
	21				
	22				
	23				
	24				
	25			25-28.5: Brown clay and silt with little sand	0.0 ppm
	26				
	27				
	28.5				

Grout & Bentonite Material
Sand Pack
Well Screen

Grout & Bentonite Material Sand Pack Well Screen

MIG Consulting

Monitoring Well Log

Project:
BP Service Station (former Amoco)
3608 West Chester Pike
Newtown Square, PA 19073

Monitor Well #7

	Screen	Riser	Sand Pack	Date Completed	Driller	Permit Number
Type	PVC	PVC	#2 Morie	1/29/2016	MIG – Drilling of DE (Auger)	
Diameter	2"	2"	6" Hole			
Length	10'			Depth to Water from Ground Surface	Date	Time
Slot Size	0.02"	------	------		10/08/2015	09:05

Sample ID	Depth (feet)	Well Construction	Blow Counts	Description (Soil Classification)	Remarks (PID)
	1			0-5 : Brown clay and silt; dry	0.0 ppm
	2				
	3				
	4				
	5			5-10 : Brown clay and silt; dry	0.0 ppm
	6				
	7				
	8				
	9				
	10			10-15 : Brown clay and silt; dry	0.0 ppm
	11				
	12				
	13				
	14				
	15			15-20 : Light brown clay; moist	0.0 ppm
	16				
	17				
	18				
	19			20-25 : Light brown clay; damp	0.0 ppm
	20				
	21				
	22				
	23				
	24				
	25			25-29 : Light brown clay and silt; wet	0.0 ppm
	26				
	27				
	28				
	29				

MIG Consulting

Monitoring Well Log

Project:
BP Service Station (former Amoco)
3608 West Chester Pike
Newtown Square, PA 19073

Monitor Well #7

	Screen	Riser	Sand Pack	Date Completed	Driller	Permit Number
Type	PVC	PVC	#2 Morie	1/29/2016	MIG – Drilling of DE (Auger)	
Diameter	2"	2"	6" Hole			
Length	10'			Depth to Water from Ground Surface	Date	Time
Slot Size	0.02"	------	------		10/08/2015	09:05

Sample ID	Depth (feet)	Well Construction	Blow Counts	Description (Soil Classification)	Remarks (PID)
	1			0-5 : Brown clay and silt; dry	0.0 ppm
	2				
	3				
	4				
	5			5-10 : Brown clay and silt; dry	0.0 ppm
	6				
	7				
	8				
	9				
	10			10-15 : Brown clay and silt; dry	0.0 ppm
	11				
	12				
	13				
	14				
	15			15-20 : Light brown clay; moist	0.0 ppm
	16				
	17				
	18				
	19				
	20			20-25 : Light brown clay; damp	0.0 ppm
	21				
	22				
	23				
	24				
	25			25-29 Light brown clay and silt; wet	0.0 ppm
	26				
	27				
	28				
	29				

Grout & Bentonite Material Sand Pack Well Screen

MIG Consulting

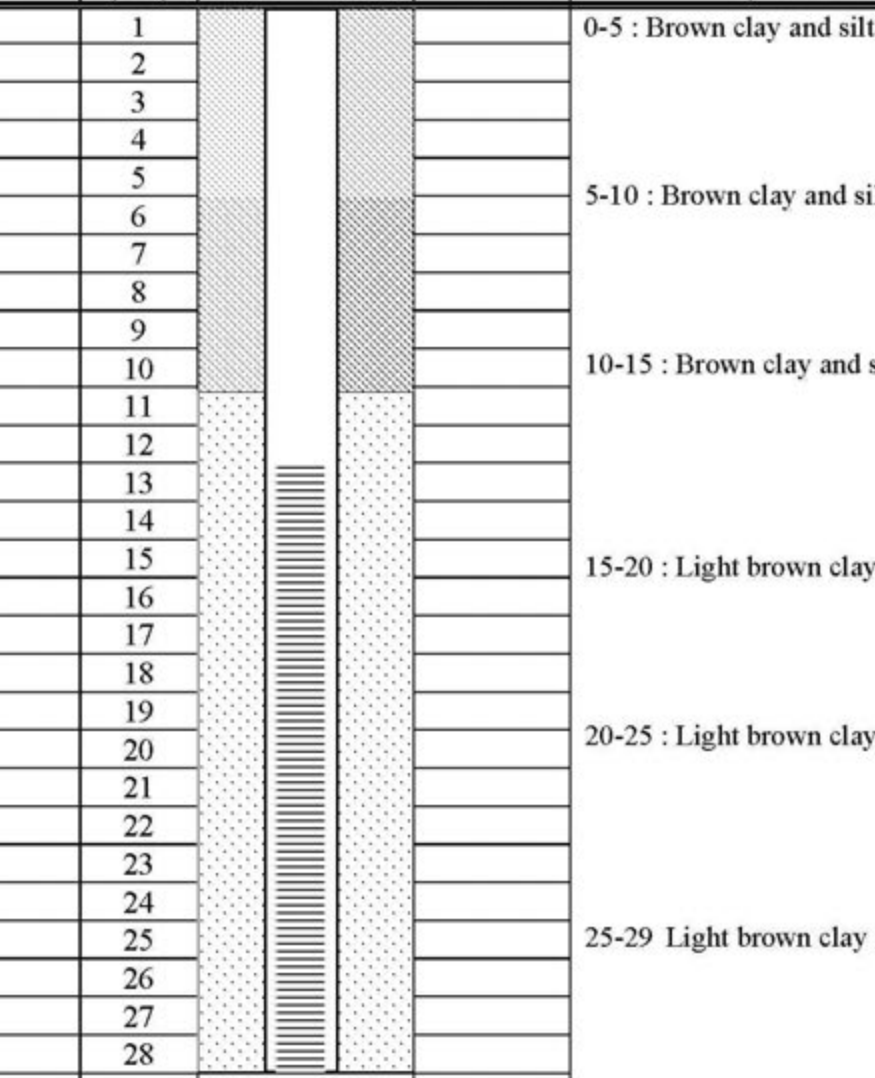
Monitoring Well Log

Project:
BP Service Station (former Amoco)
3608 West Chester Pike
Newtown Square, PA 19073

Monitor Well #6

	Screen	Riser	Sand Pack	Date Completed	Driller	Permit Number
Type	PVC	PVC	#2 Morie	1/29/2016	MIG – Drilling of DE (Auger)	
Diameter	2"	2"	6" Hole			
Length	15'			Depth to Water from Ground Surface	Date	Time
Slot Size	0.02"	------	------		10/09/2015	09:00

Sample ID	Depth (feet)	Well Construction	Blow Counts	Description (Soil Classification)	Remarks (PID)
	1			0-5 : Brown clay and silt; dry	0.0 ppm
	2				
	3				
	4				
	5			5-10 : Brown clay and silt; dry	0.0 ppm
	6				
	7				
	8				
	9				
	10			10-15 : Brown clay and silt; dry	0.0 ppm
	11				
	12				
	13				
	14				0.0 ppm
	15			15-20 : Light brown clay; moist	
	16				
	17				
	18				
	19				0.0 ppm
	20			20-25 : Light brown clay; damp	
	21				
	22				
	23				
	24				0.0 ppm
	25			25-29 Light brown clay and silt; wet	
	26				
	27				
	28				



Grout & Bentonite Material Sand Pack Well Screen

MIG Consulting

Monitoring Well Log

Project:
BP Service Station (former Amoco)
3608 West Chester Pike
Newtown Square, PA 19073

Monitor Well #5

	Screen	Riser	Sand Pack	Date Completed	Driller	Permit Number
Type	PVC	PVC	#2 Morie	1/29/2016	MIG – Drilling of DE (Auger)	
Diameter	2"	2"	6" Hole			
Length	10'			Depth to Water from Ground Surface	Date	Time
Slot Size	0.02"	------	------		10/09/2015	11:00

Sample ID	Depth (feet)	Well Construction	Blow Counts	Description (Soil Classification)	Remarks (PID)
	1			0-5 : Brown silt and clay; dry	0.3 ppm
	2				
	3				
	4				
	5			5-10 : Brown silt and clay; dry	0.3 ppm
	6				
	7				
	8				
	9				
	10			10-15 : Brown silt and clay; dry	0.3 ppm
	11				
	12				
	13				
	14				0.3 ppm
	15			15-20 : Brown silt and clay; dry	
	16				
	17				
	18				
	19				0.0 ppm
	20			20-25 : Brown silt and clay; dry	
	21				
	22				
	23				
	24				0.2 ppm
	25			25-30 Brown silt and clay; wet	
	26				
	27				
	28				
	29				
	30				

APPENDIX C

Well Sampling Data Form

Well Number: MW-1
SRP ID No:

Project Name: BP/Former Amoco **PI No:**
Site Address: 3608 West Chester Pike, Newtown Square, PA 19703-4104
Date: 2/28/2016 **Weather:** Cool to low, clear
Sampled by: Maire
Measuring Point (MP): **Depth to Free Product (ft.), if Present:**
Depth to Water Below MP (ft.): 20.18 **Total Depth of MP (ft.):** 29.90
Elevation of MP (ft, MSL): **Length of Water Column (ft, LWC)** 9.72
Volume of Water in Well (LWC x C):
C (in inches): 6.35 Gallons
(C = 0.041 for 1" ID Wells, C = 0.092 for 1.5" ID Wells, C = 0.163 for 2" ID Wells, C = 0.367 for 3" ID Wells, C = 0.653 for 4" ID Wells, C = 1.469 for 6" ID Wells, C = 2.611 for 8" ID Wells)
Amount of Water to Remove before Sampling (3 x Well Volume): 19.05 gallons
Well Purging Started: 20:24 **Well Purging Stopped:** 20:35
Sample Collected @: 20:46
Did the Well go Dry? **Amount of Water Removed (gal.):** 18

Characteristic of Well Water:

	Before	After Purge	Sampling
Time	20:24	20:35	20:46
Depth (ft.)	20.18	25.80	NM
Temperature (°C)	-		
pH	-		
Conductivity (mS/cm)	-		
Dissolved O_2 (mg/L)	-		
TDS (ppt)	-		
Color	-		Clear
Odor	-		

OVM reading @ casing: 0.0 ppm
Pumped / Hand Bailed: **If Pumped Flow Rate:** gpm
Method of Sample Collection: Bailers
Types of Samples Collected, Preservation, and Bottles Used: VOCs, HCL, 40 mL

Laboratory Name, Number and Location: Phoenix Environmental Laboratories, Inc, PA Lab #68-03530
687 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040

Remarks:

Well Sampling Data Form

Well Number: MW-2
SRP ID No:

Project Name: BP/Former Amoco **PI No:**
Site Address: 3608 West Chester Pike, Newtown Square, PA 19703-4104
Date: 2/28/2016 **Weather:** Cool to low, clear
Sampled by: Maire
Measuring Point (MP): **Depth to Free Product (ft.), if Present:**
Depth to Water Below MP (ft.): 19.60 **Total Depth of MP (ft.):** 29.35
Elevation of MP (ft, MSL): **Length of Water Column (ft, LWC)** 9.75
Volume of Water in Well (LWC x C):
C (in inches): 6.37 Gallons

(C = 0.041 for 1" ID Wells, C = 0.092 for 1.5" ID Wells, C = 0.163 for 2" ID Wells, C = 0.367 for 3" ID Wells, C = 0.653 for 4" ID Wells, C = 1.469 for 6" ID Wells, C = 2.611 for 8" ID Wells)

Amount of Water to Remove before Sampling (3 x Well Volume): 19.1 gallons
Well Purging Started: 21:52 **Well Purging Stopped:** 22.05
Sample Collected @: 22:10
Did the Well go Dry? **Amount of Water Removed (gal.):** 20

Characteristic of Well Water:

	Before	After Purge	Sampling
Time	21:52	22:05	22:10
Depth (ft.)	19.60	26.46	22.06
Temperature (^{o}C)	-		
pH	-		
Conductivity (mS/cm)	-		
Dissolved O_2 (mg/L)	-		
TDS (ppt)	-		
Color	-		Clear
Odor	-		

OVM reading @ casing: 230.0 ppm
Pumped / Hand Bailed: **If Pumped Flow Rate:** gpm
Method of Sample Collection: Bailers
Types of Samples Collected, Preservation, and Bottles Used: VOCs, HCL, 40 mL

Laboratory Name, Number and Location: Phoenix Environmental Laboratories, Inc, PA Lab #68-03530
687 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040

Remarks:

Well Sampling Data Form

Well Number: MW-3
SRP ID No:

Project Name: BP/Former Amoco **PI No:**
Site Address: 3608 West Chester Pike, Newtown Square, PA 19703-4104
Date: 2/28/2016 **Weather:** Cool to low, clear
Sampled by: Maire
Measuring Point (MP): **Depth to Free Product (ft.), if Present:**
Depth to Water Below MP (ft.): 18.95 **Total Depth of MP (ft.):** 29.80
Elevation of MP (ft, MSL): **Length of Water Column (ft, LWC)** 10.85
Volume of Water in Well (LWC x C):
C (in inches): 7.10 Gallons

(C = 0.041 for 1" ID Wells, C = 0.092 for 1.5" ID Wells, C = 0.163 for 2" ID Wells, C = 0.367 for 3" ID Wells, C = 0.653 for 4" ID Wells, C = 1.469 for 6" ID Wells, C = 2.611 for 8" ID Wells)

Amount of Water to Remove before Sampling (3 x Well Volume): 21.3 gallons
Well Purging Started: 21:18 **Well Purging Stopped:** 21:30
Sample Collected @: 21:35
Did the Well go Dry? **Amount of Water Removed (gal.):** 22

Characteristic of Well Water:

	Before	After Purge	Sampling
Time	21:18	21:30	21:35
Depth (ft.)	18.95	26.06	24.90
Temperature (^{o}C)	-		
pH	-		
Conductivity (mS/cm)	-		
Dissolved O_2 (mg/L)	-		
TDS (ppt)	-		
Color	-		Clear
Odor	-		

OVM reading @ casing: 0.0 ppm
Pumped / Hand Bailed: **If Pumped Flow Rate:** gpm
Method of Sample Collection: Bailers
Types of Samples Collected, Preservation, and Bottles Used: VOCs, HCL, 40 mL

Laboratory Name, Number and Location: Phoenix Environmental Laboratories, Inc, PA Lab #68-03530
687 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040

Remarks:

Well Sampling Data Form

Well Number: MW-4
SRP ID No:

Project Name: BP/Former Amoco **PI No:**
Site Address: 3608 West Chester Pike, Newtown Square, PA 19703-4104
Date: 3/9/2016 **Weather:** Cool to low, clear
Sampled by: Maire
Measuring Point (MP): **Depth to Free Product (ft.), if Present:**
Depth to Water Below MP (ft.): **Total Depth of MP (ft.):**
Elevation of MP (ft, MSL): **Length of Water Column (ft, LWC)**
Volume of Water in Well (LWC x C):
C (in inches): Gallons
(C = 0.041 for 1" ID Wells, C = 0.092 for 1.5" ID Wells, C = 0.163 for 2" ID Wells, C = 0.367 for 3" ID Wells, C = 0.653 for 4" ID Wells, C = 1.469 for 6" ID Wells, C = 2.611 for 8" ID Wells)
Amount of Water to Remove before Sampling (3 x Well Volume): gallons
Well Purging Started: 21:50 **Well Purging Stopped:** 22:00
Sample Collected @: 22:05
Did the Well go Dry? **Amount of Water Removed (gal.):** 22

Characteristic of Well Water:

	Before	After Purge	Sampling
Time	21:50	22:00	22:05
Depth (ft.)	17.90	18.95	18.30
Temperature (^{o}C)	-		
pH	-		
Conductivity (mS/cm)	-		
Dissolved O_2 (mg/L)	-		
TDS (ppt)	-		
Color	-		Clear
Odor	-		

OVM reading @ casing:
Pumped / Hand Bailed: **If Pumped Flow Rate:** gpm
Method of Sample Collection: Bailers
Types of Samples Collected, Preservation, and Bottles Used: VOCs, HCL, 40 mL

Laboratory Name, Number and Location: Phoenix Environmental Laboratories, Inc, PA Lab #68-03530
687 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040

Remarks:

Well Sampling Data Form

Well Number: MW-5
SRP ID No:

Project Name: BP/Former Amoco **PI No:**
Site Address: 3608 West Chester Pike, Newtown Square, PA 19703-4104
Date: 2/27/2016 **Weather:** Cool to low, clear
Sampled by: Maire
Measuring Point (MP): **Depth to Free Product (ft.), if Present:**
Depth to Water Below MP (ft.): 19.05 **Total Depth of MP (ft.):** 29.80
Elevation of MP (ft, MSL): **Length of Water Column (ft, LWC)** 10.75
Volume of Water in Well (LWC x C):
C (in inches): 1.75 Gallons
(C = 0.041 for 1" ID Wells, C = 0.092 for 1.5" ID Wells, C = 0.163 for 2" ID Wells, C = 0.367 for 3" ID Wells, C = 0.653 for 4" ID Wells, C = 1.469 for 6" ID Wells, C = 2.611 for 8" ID Wells)
Amount of Water to Remove before Sampling (3 x Well Volume): 5.25 gallons
Well Purging Started: 22.26 **Well Purging Stopped:** 22:32
Sample Collected @: 22:40
Did the Well go Dry? **Amount of Water Removed (gal.):** 20

Characteristic of Well Water:

	Before	After Purge	Sampling
Time	22:26	22:32	22:40
Depth (ft.)	19.05	20.96	19.95
Temperature (^{o}C)	-		
pH	-		
Conductivity (mS/cm)	-		
Dissolved O_2 (mg/L)	-		
TDS (ppt)	-		
Color	-		Little turbid tan
Odor	-		

OVM reading @ casing: 171.0 ppm
Pumped / Hand Bailed: **If Pumped Flow Rate:** gpm
Method of Sample Collection: Bailers
Types of Samples Collected, Preservation, and Bottles Used: VOCs, HCL, 40 mL

Laboratory Name, Number and Location: Phoenix Environmental Laboratories, Inc, PA Lab #68-03530
687 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040

Remarks:

Well Sampling Data Form

Well Number: MW-6
SRP ID No:

Project Name: BP/Former Amoco **PI No:**
Site Address: 3608 West Chester Pike, Newtown Square, PA 19703-4104
Date: 2/27/2016 **Weather:** Cool to low, clear
Sampled by: Maire
Measuring Point (MP): **Depth to Free Product (ft.), if Present:**
Depth to Water Below MP (ft.): 20.55 **Total Depth of MP (ft.):** 29.10
Elevation of MP (ft, MSL): **Length of Water Column (ft, LWC)** 8.55
Volume of Water in Well (LWC x C):
C (in inches): 1.39 Gallons
(C = 0.041 for 1" ID Wells, C = 0.092 for 1.5" ID Wells, C = 0.163 for 2" ID Wells, C = 0.367 for 3" ID Wells, C = 0.653 for 4" ID Wells, C = 1.469 for 6" ID Wells, C = 2.611 for 8" ID Wells)
Amount of Water to Remove before Sampling (3 x Well Volume): 4.18 gallons
Well Purging Started: 22:00 **Well Purging Stopped:** 22:10
Sample Collected @: 22:15
Did the Well go Dry? **Amount of Water Removed (gal.):** 20

Characteristic of Well Water:

	Before	After Purge	Sampling
Time	22:00	22:10	22:15
Depth (ft.)	20.55	20.75	20.55
Temperature (^{o}C)	-		
pH	-		
Conductivity (mS/cm)	-		
Dissolved O_2 (mg/L)	-		
TDS (ppt)	-		
Color	-		Little turbid tan
Odor	-		

OVM reading @ casing: 0.0 ppm
Pumped / Hand Bailed: **If Pumped Flow Rate:** gpm
Method of Sample Collection: Bailers
Types of Samples Collected, Preservation, and Bottles Used: VOCs, HCL, 40 mL

Laboratory Name, Number and Location: Phoenix Environmental Laboratories, Inc, PA Lab #68-03530
687 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040

Remarks:

Well Sampling Data Form

Well Number: MW-7
SRP ID No:

Project Name: BP/Former Amoco **PI No:**
Site Address: 3608 West Chester Pike, Newtown Square, PA 19703-4104
Date: 2/28/2016 **Weather:** Cool to low, clear
Sampled by: Maire
Measuring Point (MP): **Depth to Free Product (ft.), if Present:**
Depth to Water Below MP (ft.): 21.00 **Total Depth of MP (ft.):** 28.80
Elevation of MP (ft, MSL): **Length of Water Column (ft, LWC)** 7.80
Volume of Water in Well (LWC x C):
C (in inches): 1.3 Gallons
(C = 0.041 for 1" ID Wells, C = 0.092 for 1.5" ID Wells, C = 0.163 for 2" ID Wells, C = 0.367 for 3" ID Wells, C = 0.653 for 4" ID Wells, C = 1.469 for 6" ID Wells, C = 2.611 for 8" ID Wells)
Amount of Water to Remove before Sampling (3 x Well Volume): 3.9 gallons
Well Purging Started: 21:28 **Well Purging Stopped:** 21:40
Sample Collected @: 21:45
Did the Well go Dry? **Amount of Water Removed (gal.):** 20

Characteristic of Well Water:

	Before	After Purge	Sampling
Time	21:28	21:40	21:45
Depth (ft.)	21.00	23.80	NM
Temperature (^{o}C)	-		
pH	-		
Conductivity (mS/cm)	-		
Dissolved O_2 (mg/L)	-		
TDS (ppt)	-		
Color	-		Little turbid tan
Odor	-		

OVM reading @ casing: 0.0 ppm
Pumped / Hand Bailed: **If Pumped Flow Rate:** gpm
Method of Sample Collection: Bailers
Types of Samples Collected, Preservation, and Bottles Used: VOCs, HCL, 40 mL

Laboratory Name, Number and Location: Phoenix Environmental Laboratories, Inc, PA Lab #68-03530
687 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040

Remarks:

Well Sampling Data Form

Well Number: MW-8
SRP ID No:

Project Name: BP/Former Amoco **PI No:**
Site Address: 3608 West Chester Pike, Newtown Square, PA 19703-4104
Date: 2/28/2016 **Weather:** Cool to low, clear
Sampled by: Maire
Measuring Point (MP): **Depth to Free Product (ft.), if Present:**
Depth to Water Below MP (ft.): 20.89 **Total Depth of MP (ft.):** 28.35
Elevation of MP (ft, MSL): **Length of Water Column (ft, LWC)** 7.46
Volume of Water in Well (LWC x C):
C (in inches): 1.2 Gallons
(C = 0.041 for 1" ID Wells, C = 0.092 for 1.5" ID Wells, C = 0.163 for 2" ID Wells, C = 0.367 for 3" ID Wells, C = 0.653 for 4" ID Wells, C = 1.469 for 6" ID Wells, C = 2.611 for 8" ID Wells)
Amount of Water to Remove before Sampling (3 x Well Volume): 3.6 gallons
Well Purging Started: 20:52 **Well Purging Stopped:** 21:03
Sample Collected @: 21:10
Did the Well go Dry? **Amount of Water Removed (gal.):** 20

Characteristic of Well Water:

	Before	After Purge	Sampling
Time	20:52	21:03	21:10
Depth (ft.)	20.89	24.05	23.56
Temperature (^{o}C)	-		
pH	-		
Conductivity (mS/cm)	-		
Dissolved O_2 (mg/L)	-		
TDS (ppt)	-		
Color	-		Turbid gray
Odor	-		

OVM reading @ casing: 0.0 ppm
Pumped / Hand Bailed: **If Pumped Flow Rate:** gpm
Method of Sample Collection: Bailers
Types of Samples Collected, Preservation, and Bottles Used: VOCs, HCL, 40 mL

Laboratory Name, Number and Location: Phoenix Environmental Laboratories, Inc, PA Lab #68-03530
687 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040

Remarks:

Well Sampling Data Form

Well Number: MW-9
SRP ID No:

Project Name: BP/Former Amoco **PI No:**
Site Address: 3608 West Chester Pike, Newtown Square, PA 19703-4104
Date: 2/26/2016 **Weather:** Cool to low, clear
Sampled by: Maire
Measuring Point (MP): **Depth to Free Product (ft.), if Present:**
Depth to Water Below MP (ft.): 17.22 **Total Depth of MP (ft.):** 28.90
Elevation of MP (ft, MSL): **Length of Water Column (ft, LWC)** 11.68
Volume of Water in Well (LWC x C):
C (in inches): 1.9 Gallons
(C = 0.041 for 1" ID Wells, C = 0.092 for 1.5" ID Wells, C = 0.163 for 2" ID Wells, C = 0.367 for 3" ID Wells, C = 0.653 for 4" ID Wells, C = 1.469 for 6" ID Wells, C = 2.611 for 8" ID Wells)
Amount of Water to Remove before Sampling (3 x Well Volume): 5.7 gallons
Well Purging Started: 21:22 **Well Purging Stopped:** 21:33
Sample Collected @: 21:35
Did the Well go Dry? **Amount of Water Removed (gal.):** 20

Characteristic of Well Water:

	Before	After Purge	Sampling
Time	21:22	21:33	21:35
Depth (ft.)	17.22	NM	25.20
Temperature (^{o}C)	-		
pH	-		
Conductivity (mS/cm)	-		
Dissolved O_2 (mg/L)	-		
TDS (ppt)	-		
Color	-		Cloudy, white-ish
Odor	-		

OVM reading @ casing: 0.0 ppm
Pumped / Hand Bailed: **If Pumped Flow Rate:** gpm
Method of Sample Collection: Bailers
Types of Samples Collected, Preservation, and Bottles Used: VOCs, HCL, 40 mL

Laboratory Name, Number and Location: Phoenix Environmental Laboratories, Inc, PA Lab #68-03530
687 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040

Remarks:

Well Sampling Data Form

Well Number: MW-10
SRP ID No:

Project Name: BP/Former Amoco **PI No:**
Site Address: 3608 West Chester Pike, Newtown Square, PA 19703-4104
Date: 3/9/2016 **Weather:** Cool to low, clear
Sampled by: Maire
Measuring Point (MP): **Depth to Free Product (ft.), if Present:**
Depth to Water Below MP (ft.): **Total Depth of MP (ft.):**
Elevation of MP (ft, MSL): **Length of Water Column (ft, LWC)**
Volume of Water in Well (LWC x C):
C (in inches): Gallons
(C = 0.041 for 1" ID Wells, C = 0.092 for 1.5" ID Wells, C = 0.163 for 2" ID Wells, C = 0.367 for 3" ID Wells, C = 0.653 for 4" ID Wells, C = 1.469 for 6" ID Wells, C = 2.611 for 8" ID Wells)
Amount of Water to Remove before Sampling (3 x Well Volume): gallons
Well Purging Started: 21:05 **Well Purging Stopped:** 21:15
Sample Collected @: 21:30
Did the Well go Dry? **Amount of Water Removed (gal.):** 20

Characteristic of Well Water:

	Before	After Purge	Sampling
Time	21:05	21:15	21:30
Depth (ft.)	19.35	21.90	20.40
Temperature (^{o}C)	-		
pH	-		
Conductivity (mS/cm)	-		
Dissolved O_2 (mg/L)	-		
TDS (ppt)	-		
Color	-		Cloudy, white-ish
Odor	-		

OVM reading @ casing: 0.0 ppm
Pumped / Hand Bailed: **If Pumped Flow Rate:** gpm
Method of Sample Collection: Bailers
Types of Samples Collected, Preservation, and Bottles Used: VOCs, HCL, 40 mL

Laboratory Name, Number and Location: Phoenix Environmental Laboratories, Inc, PA Lab #68-03530
687 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040

Remarks:

APPENDIX D

New Jersey ACCUTEST LABORATORIES

01/23/15

Technical Report for

MIG Consulting

3608 West Chester Pike, Newtown Square, PA

Accutest Job Number: JB82226

Sampling Date: 11/18/14

Report to:

MIG Consulting, LLC
707 Raritan Avenue Suite 203
Highland Park, NJ 08904
MigConsultingLLC@gmail.com

ATTN: Ravi Kolaventi

Total number of pages in report: **89**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Nancy Cole
Laboratory Director

Client Service contact: Kelly Patterson 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), AZ (AZ0786), PA, RI, SC, TN, VA, WV, DoD ELAP (L-A-B L2248)

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Sample Summary

MIG Consulting

3608 West Chester Pike, Newtown Square, PA

Job No: JB82226

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
JB82226-1	11/18/14	11:39	RK	11/19/14	AQ	Ground Water	MW-1
JB82226-2	11/18/14	15:45	RK	11/19/14	AQ	Ground Water	MW-2
JB82226-3	11/18/14	14:50	RK	11/19/14	AQ	Ground Water	MW-3
JB82226-4	11/18/14	13:30	RK	11/19/14	AQ	Ground Water	MW-4
JB82226-5	11/18/14	14:30	RK	11/19/14	AQ	Field Blank Water	FIELD BLANK
JB82226-6	11/18/14	15:45	RK	11/19/14	AQ	Trip Blank Water	TRIP BLANK

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	MIG Consulting	**Job No**	JB82226
Site:	3608 West Chester Pike, Newtown Square, PA	**Report Date**	1/23/2015 3:26:14 PM

On 11/19/2014, 4 Sample(s), 1 Trip Blank(s) and 1 Field Blank(s) were received at Accutest Laboratories at a temperature of 5.3 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB82226 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: AQ **Batch ID:** V2D5853

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB82232-10MS, JB82232-10MSD were used as the QC samples indicated.
- JB82232-10MSD: (pH=4)Sample is not acid preservation per method/client criteria. Sample analyzed within 7 days holding time.
- JB82232-10MS: (pH=4)Sample is not acid preservation per method/client criteria. Sample analyzed within 7 days holding time.

Matrix: AQ **Batch ID:** VS7786

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB82645-1MS, JB82645-1MSD were used as the QC samples indicated.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

Summary of Hits

Job Number: JB82226
Account: MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA
Collected: 11/18/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JB82226-1	**MW-1**					
Benzene		469	25	10	ug/l	SW846 8260B
Toluene		64.9	50	11	ug/l	SW846 8260B
Ethylbenzene		145	50	20	ug/l	SW846 8260B
Xylene (total)		104	50	10	ug/l	SW846 8260B
Methyl Tert Butyl Ether		7820	50	13	ug/l	SW846 8260B
Naphthalene		104 J	250	17	ug/l	SW846 8260B
Isopropylbenzene		19.3 J	50	13	ug/l	SW846 8260B
1,2,4-Trimethylbenzene		24.8 J	100	9.3	ug/l	SW846 8260B
1,3,5-Trimethylbenzene		16.4 J	100	8.7	ug/l	SW846 8260B
JB82226-2	**MW-2**					
Benzene		6.8	0.50	0.21	ug/l	SW846 8260B
Toluene		0.29 J	1.0	0.22	ug/l	SW846 8260B
Ethylbenzene		1.6	1.0	0.40	ug/l	SW846 8260B
Xylene (total)		1.9	1.0	0.20	ug/l	SW846 8260B
Methyl Tert Butyl Ether		2.3	1.0	0.26	ug/l	SW846 8260B
Naphthalene		1.5 J	5.0	0.34	ug/l	SW846 8260B
Isopropylbenzene		0.32 J	1.0	0.26	ug/l	SW846 8260B
1,2,4-Trimethylbenzene		0.99 J	2.0	0.19	ug/l	SW846 8260B
1,3,5-Trimethylbenzene		0.47 J	2.0	0.17	ug/l	SW846 8260B
JB82226-3	**MW-3**					
Benzene		1.3 J	2.0	0.84	ug/l	SW846 8260B
Methyl Tert Butyl Ether		13.0	4.0	1.1	ug/l	SW846 8260B
Naphthalene		1.7 J	20	1.4	ug/l	SW846 8260B
JB82226-4	**MW-4**					
Benzene		0.42 J	0.50	0.21	ug/l	SW846 8260B
Xylene (total)		0.23 J	1.0	0.20	ug/l	SW846 8260B
Methyl Tert Butyl Ether		0.31 J	1.0	0.26	ug/l	SW846 8260B
JB82226-5	**FIELD BLANK**					
No hits reported in this sample.						
JB82226-6	**TRIP BLANK**					
No hits reported in this sample.						

New Jersey ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-1		
Lab Sample ID:	JB82226-1	**Date Sampled:**	11/18/14
Matrix:	AQ - Ground Water	**Date Received:**	11/19/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	3608 West Chester Pike, Newtown Square, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S189803.D	50	11/26/14	VC	n/a	n/a	VS7786
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Unleaded Gasoline with TMB List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	469	25	10	ug/l	
108-88-3	Toluene	64.9	50	11	ug/l	
100-41-4	Ethylbenzene	145	50	20	ug/l	
1330-20-7	Xylene (total)	104	50	10	ug/l	
1634-04-4	Methyl Tert Butyl Ether	7820	50	13	ug/l	
91-20-3	Naphthalene	104	250	17	ug/l	J
98-82-8	Isopropylbenzene	19.3	50	13	ug/l	J
95-63-6	1,2,4-Trimethylbenzene	24.8	100	9.3	ug/l	J
108-67-8	1,3,5-Trimethylbenzene	16.4	100	8.7	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		79-120%
17060-07-0	1,2-Dichloroethane-D4	89%		72-123%
2037-26-5	Toluene-D8	104%		78-119%
460-00-4	4-Bromofluorobenzene	93%		74-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-2		
Lab Sample ID:	JB82226-2	**Date Sampled:**	11/18/14
Matrix:	AQ - Ground Water	**Date Received:**	11/19/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	3608 West Chester Pike, Newtown Square, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D139667.D	1	11/24/14	BK	n/a	n/a	V2D5853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Unleaded Gasoline with TMB List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	6.8	0.50	0.21	ug/l	
108-88-3	Toluene	0.29	1.0	0.22	ug/l	J
100-41-4	Ethylbenzene	1.6	1.0	0.40	ug/l	
1330-20-7	Xylene (total)	1.9	1.0	0.20	ug/l	
1634-04-4	Methyl Tert Butyl Ether	2.3	1.0	0.26	ug/l	
91-20-3	Naphthalene	1.5	5.0	0.34	ug/l	J
98-82-8	Isopropylbenzene	0.32	1.0	0.26	ug/l	J
95-63-6	1,2,4-Trimethylbenzene	0.99	2.0	0.19	ug/l	J
108-67-8	1,3,5-Trimethylbenzene	0.47	2.0	0.17	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	82%		79-120%
17060-07-0	1,2-Dichloroethane-D4	81%		72-123%
2037-26-5	Toluene-D8	91%		78-119%
460-00-4	4-Bromofluorobenzene	85%		74-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-3		
Lab Sample ID:	JB82226-3	**Date Sampled:**	11/18/14
Matrix:	AQ - Ground Water	**Date Received:**	11/19/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	3608 West Chester Pike, Newtown Square, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S189801.D	4	11/26/14	VC	n/a	n/a	VS7786
Run #2	S189802.D	40	11/26/14	VC	n/a	n/a	VS7786

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA Unleaded Gasoline with TMB List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	1.3	2.0	0.84	ug/l	J
108-88-3	Toluene	ND	4.0	0.88	ug/l	
100-41-4	Ethylbenzene	ND	4.0	1.6	ug/l	
1330-20-7	Xylene (total)	ND	4.0	0.80	ug/l	
1634-04-4	Methyl Tert Butyl Ether	13.0	4.0	1.1	ug/l	
91-20-3	Naphthalene	1.7	20	1.4	ug/l	J
98-82-8	Isopropylbenzene	ND	4.0	1.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	8.0	0.74	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	8.0	0.70	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%	98%	79-120%
17060-07-0	1,2-Dichloroethane-D4	90%	90%	72-123%
2037-26-5	Toluene-D8	105%	104%	78-119%
460-00-4	4-Bromofluorobenzene	93%	94%	74-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-4		
Lab Sample ID:	JB82226-4	**Date Sampled:**	11/18/14
Matrix:	AQ - Ground Water	**Date Received:**	11/19/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	3608 West Chester Pike, Newtown Square, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D139666.D	1	11/24/14	BK	n/a	n/a	V2D5853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Unleaded Gasoline with TMB List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.42	0.50	0.21	ug/l	J
108-88-3	Toluene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.40	ug/l	
1330-20-7	Xylene (total)	0.23	1.0	0.20	ug/l	J
1634-04-4	Methyl Tert Butyl Ether	0.31	1.0	0.26	ug/l	J
91-20-3	Naphthalene	ND	5.0	0.34	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.26	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.19	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	83%		79-120%
17060-07-0	1,2-Dichloroethane-D4	82%		72-123%
2037-26-5	Toluene-D8	90%		78-119%
460-00-4	4-Bromofluorobenzene	85%		74-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	FIELD BLANK		
Lab Sample ID:	JB82226-5	**Date Sampled:**	11/18/14
Matrix:	AQ - Field Blank Water	**Date Received:**	11/19/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	3608 West Chester Pike, Newtown Square, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D139660.D	1	11/24/14	BK	n/a	n/a	V2D5853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Unleaded Gasoline with TMB List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.40	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.20	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.26	ug/l	
91-20-3	Naphthalene	ND	5.0	0.34	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.26	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.19	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	83%		79-120%
17060-07-0	1,2-Dichloroethane-D4	83%		72-123%
2037-26-5	Toluene-D8	90%		78-119%
460-00-4	4-Bromofluorobenzene	84%		74-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JB82226-6	**Date Sampled:**	11/18/14
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/19/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	3608 West Chester Pike, Newtown Square, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D139661.D	1	11/24/14	BK	n/a	n/a	V2D5853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Unleaded Gasoline with TMB List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.40	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.20	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.26	ug/l	
91-20-3	Naphthalene	ND	5.0	0.34	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.26	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.19	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	83%		79-120%
17060-07-0	1,2-Dichloroethane-D4	82%		72-123%
2037-26-5	Toluene-D8	89%		78-119%
460-00-4	4-Bromofluorobenzene	85%		74-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New Jersey ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

PAGE ___ OF ___

2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: JB82226

Client / Reporting Information

Company Name: MIG CONSULTING, LLC
Street Address: 707 RARITAN AVE
City: HIGHLAND PARK State: NJ Zip: 08904
Project Contact: RAVI KUMAR E-mail: migconsultingllc@gmail.com
Phone: 732-543-1149 Fax #: 732-543-1148
Sampler(s) Name(s): RAVI K KOLAVENTI Phone #: 732-543-1149

Project Information

Project Name: NEWTOWN SQUARE, PA
Street: 3608 WEST CHESTER PIKE
City: NEWTOWN SQUARE State: PA
Project #: NEWTOWN SQUARE
Client Purchase Order #:
Project Manager: RAVI K KOLAVENTI

Billing Information (if different from Report to)

Company Name: MIG CONSULTING, LLC
Street Address: 1624 NEW PORT GAP PIKE
P.O. BOX - 5674
City: WILMINGTON State: DE Zip: 19808
Attention: IP SINGH

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

Accutest Sample #	Field ID / Point of Collection	MeOH Vial #	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation: HCl	NaOH	HNO3	H2SO4	NaHSO4	DI Water	MEOH	ENCORE	Benzene	Toluene	Ethyl Benzene	Xylenes (Total)	Cumene (Isopropylbenzene)	MTBE	Naphthalene	1,2,4 - TMB	1,3,5 - TMB		LAB USE ONLY
-1	MW-1		11/18/14	11:39am	RK	GW	3	X								X	X	X	X	X	X	X	X	X		
-2	MW-2		11/18/14	03:45pm	RK	GW	3	X								X	X	X	X	X	X	X	X	X		V379
-3	MW-3		11/18/14	02:10pm	RK	GW	3	X								X	X	X	X	X	X	X	X	X		
-4	MW-4		11/18/14	01:30pm	RK	GW	3	X								X	X	X	X	X	X	X	X	X		
-5	FIELD BLANK		11/18/14	02:20pm	RK	GW										X	X	X	X	X	X	X	X	X		
-6	TRIP BLANK		-	-	-	-	-									X	X	X	X	X	X	X	X	X		

Turnaround Time (Business days)

Approved By (Accutest PM) / Date:

- [x] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available VIA Labnet

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only, Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw Data

Comments / Special Instructions

Analytical Method - EPA 5030B/8260B
@ 524-2

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sample:	Date/Time	Received By:	Relinquished By:	Date/Time	Received By:
1	11/19/14 1410	1	2	11/19/14	2
Relinquished by Sample:		Received By:	Relinquished By:		Received By:
3		3	4		4
Relinquished by:	Date/Time:	Received By:	Custody Seal # 966	Intact	Preserved where applicable
5		5			On Ice ✓ Cooler Temp 3.7°C

TAUM

5.1 5

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB82226 **Client:** **Project:**

Date / Time Received: 11/19/2014 **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (5.3/5.2): 0

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservatio	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

5.1
5

JB82226: Chain of Custody
Page 2 of 2

Internal Sample Tracking Chronicle

MIG Consulting

3608 West Chester Pike, Newtown Square, PA

Job No: JB82226

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB82226-1 MW-1	Collected: 18-NOV-14 11:39 By: RK		Received: 19-NOV-14 By: AM			
JB82226-1	SW846 8260B	26-NOV-14 18:57	VC			V8260PAUGTMB
JB82226-2 MW-2	Collected: 18-NOV-14 15:45 By: RK		Received: 19-NOV-14 By: AM			
JB82226-2	SW846 8260B	24-NOV-14 21:54	BK			V8260PAUGTMB
JB82226-3 MW-3	Collected: 18-NOV-14 14:50 By: RK		Received: 19-NOV-14 By: AM			
JB82226-3	SW846 8260B	26-NOV-14 18:14	VC			V8260PAUGTMB
JB82226-3	SW846 8260B	26-NOV-14 18:36	VC			V8260PAUGTMB
JB82226-4 MW-4	Collected: 18-NOV-14 13:30 By: RK		Received: 19-NOV-14 By: AM			
JB82226-4	SW846 8260B	24-NOV-14 21:24	BK			V8260PAUGTMB
JB82226-5 FIELD BLANK	Collected: 18-NOV-14 14:30 By: RK		Received: 19-NOV-14 By: AM			
JB82226-5	SW846 8260B	24-NOV-14 18:23	BK			V8260PAUGTMB
JB82226-6 TRIP BLANK	Collected: 18-NOV-14 15:45 By: RK		Received: 19-NOV-14 By: AM			
JB82226-6	SW846 8260B	24-NOV-14 18:53	BK			V8260PAUGTMB

Accutest Internal Chain of Custody

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA
Received: 11/19/14

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB82226-1.1	Secured Storage	Bridget Kelly	11/21/14 16:27	Retrieve from Storage
JB82226-1.1	Bridget Kelly	VOA Prep Storage	11/21/14 16:27	Return to Storage
JB82226-1.1	VOA Prep Storage	Bridget Kelly	11/24/14 08:39	Retrieve from Storage
JB82226-1.1	Bridget Kelly	Secured Storage	11/24/14 09:25	Return to Storage
JB82226-1.2	Secured Storage	Bridget Kelly	11/24/14 15:50	Retrieve from Storage
JB82226-1.2	Bridget Kelly	VOA Prep Storage	11/24/14 15:50	Return to Storage
JB82226-1.2	VOA Prep Storage	Bridget Kelly	11/25/14 08:27	Retrieve from Storage
JB82226-1.2	Bridget Kelly	Secured Storage	11/25/14 09:55	Return to Storage
JB82226-1.2	Secured Storage	Carolina Sequeira	11/26/14 11:31	Retrieve from Storage
JB82226-1.2	Carolina Sequeira	Secured Storage	11/26/14 16:19	Return to Storage
JB82226-2.1	Secured Storage	Bridget Kelly	11/21/14 14:22	Retrieve from Storage
JB82226-2.1	Bridget Kelly	GCMS2D	11/21/14 14:22	Load on Instrument
JB82226-2.1	GCMS2D	Bridget Kelly	11/24/14 08:50	Unload from Instrument
JB82226-2.1	Bridget Kelly	Secured Storage	11/24/14 08:50	Return to Storage
JB82226-2.2	Secured Storage	Bridget Kelly	11/24/14 14:35	Retrieve from Storage
JB82226-2.2	Bridget Kelly	GCMS2D	11/24/14 14:35	Load on Instrument
JB82226-2.2	GCMS2D	Bridget Kelly	11/25/14 09:27	Unload from Instrument
JB82226-2.2	Bridget Kelly	Secured Storage	11/25/14 09:27	Return to Storage
JB82226-3.1	Secured Storage	Bridget Kelly	11/21/14 14:22	Retrieve from Storage
JB82226-3.1	Bridget Kelly	GCMS2D	11/21/14 14:22	Load on Instrument
JB82226-3.1	GCMS2D	Bridget Kelly	11/24/14 08:50	Unload from Instrument
JB82226-3.1	Bridget Kelly	Secured Storage	11/24/14 08:50	Return to Storage
JB82226-3.2	Secured Storage	Bridget Kelly	11/24/14 15:50	Retrieve from Storage
JB82226-3.2	Bridget Kelly	VOA Prep Storage	11/24/14 15:50	Return to Storage
JB82226-3.2	VOA Prep Storage	Bridget Kelly	11/25/14 08:27	Retrieve from Storage
JB82226-3.2	Bridget Kelly	Secured Storage	11/25/14 09:55	Return to Storage
JB82226-3.2	Secured Storage	Vianna Chau	11/26/14 16:05	Retrieve from Storage
JB82226-3.2	Vianna Chau	Secured Storage	11/26/14 17:04	Return to Storage
JB82226-4.1	Secured Storage	Bridget Kelly	11/21/14 14:22	Retrieve from Storage
JB82226-4.1	Bridget Kelly	GCMS2D	11/21/14 14:22	Load on Instrument
JB82226-4.1	GCMS2D	Bridget Kelly	11/24/14 08:50	Unload from Instrument
JB82226-4.1	Bridget Kelly	Secured Storage	11/24/14 08:50	Return to Storage
JB82226-4.2	Secured Storage	Bridget Kelly	11/24/14 14:35	Retrieve from Storage
JB82226-4.2	Bridget Kelly	GCMS2D	11/24/14 14:35	Load on Instrument
JB82226-4.2	GCMS2D	Bridget Kelly	11/25/14 09:27	Unload from Instrument
JB82226-4.2	Bridget Kelly	Secured Storage	11/25/14 09:27	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA
Received: 11/19/14

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB82226-5.1	Secured Storage	Bridget Kelly	11/21/14 14:22	Retrieve from Storage
JB82226-5.1	Bridget Kelly	GCMS2D	11/21/14 14:22	Load on Instrument
JB82226-5.1	GCMS2D	Bridget Kelly	11/24/14 08:50	Unload from Instrument
JB82226-5.1	Bridget Kelly	Secured Storage	11/24/14 08:50	Return to Storage
JB82226-5.2	Secured Storage	Bridget Kelly	11/24/14 14:35	Retrieve from Storage
JB82226-5.2	Bridget Kelly	GCMS2D	11/24/14 14:35	Load on Instrument
JB82226-5.2	GCMS2D	Bridget Kelly	11/25/14 09:27	Unload from Instrument
JB82226-5.2	Bridget Kelly	Secured Storage	11/25/14 09:27	Return to Storage
JB82226-6.1	Secured Storage	Bridget Kelly	11/21/14 14:22	Retrieve from Storage
JB82226-6.1	Bridget Kelly	GCMS2D	11/21/14 14:22	Load on Instrument
JB82226-6.1	GCMS2D	Bridget Kelly	11/24/14 08:50	Unload from Instrument
JB82226-6.1	Bridget Kelly	Secured Storage	11/24/14 08:50	Return to Storage
JB82226-6.2	Secured Storage	Bridget Kelly	11/24/14 14:35	Retrieve from Storage
JB82226-6.2	Bridget Kelly	GCMS2D	11/24/14 14:35	Load on Instrument
JB82226-6.2	GCMS2D	Bridget Kelly	11/25/14 09:27	Unload from Instrument
JB82226-6.2	Bridget Kelly	Secured Storage	11/25/14 09:27	Return to Storage

New Jersey ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2D5853-MB	2D139650.D	1	11/24/14	BK	n/a	n/a	V2D5853

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB82226-2, JB82226-4, JB82226-5, JB82226-6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.26	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.26	ug/l	
91-20-3	Naphthalene	ND	5.0	0.34	ug/l	
108-88-3	Toluene	ND	1.0	0.22	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.19	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.17	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.20	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	83%	79-120%
17060-07-0	1,2-Dichloroethane-D4	84%	72-123%
2037-26-5	Toluene-D8	90%	78-119%
460-00-4	4-Bromofluorobenzene	85%	74-119%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VS7786-MB	S189782.D	1	11/26/14	VC	n/a	n/a	VS7786

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB82226-1, JB82226-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.26	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.26	ug/l	
91-20-3	Naphthalene	ND	5.0	0.34	ug/l	
108-88-3	Toluene	ND	1.0	0.22	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.19	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.17	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.20	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	79-120%
17060-07-0	1,2-Dichloroethane-D4	89%	72-123%
2037-26-5	Toluene-D8	103%	78-119%
460-00-4	4-Bromofluorobenzene	92%	74-119%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Blank Spike Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2D5853-BS	2D139651.D	1	11/24/14	BK	n/a	n/a	V2D5853

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB82226-2, JB82226-4, JB82226-5, JB82226-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	45.0	90	80-121
100-41-4	Ethylbenzene	50	44.9	90	82-120
98-82-8	Isopropylbenzene	50	45.2	90	80-124
1634-04-4	Methyl Tert Butyl Ether	100	89.9	90	74-123
91-20-3	Naphthalene	50	48.0	96	65-138
108-88-3	Toluene	50	44.5	89	80-122
95-63-6	1,2,4-Trimethylbenzene	50	48.8	98	81-122
108-67-8	1,3,5-Trimethylbenzene	50	46.7	93	80-122
1330-20-7	Xylene (total)	150	140	93	82-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	84%	79-120%
17060-07-0	1,2-Dichloroethane-D4	83%	72-123%
2037-26-5	Toluene-D8	91%	78-119%
460-00-4	4-Bromofluorobenzene	85%	74-119%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VS7786-BS	S189783.D	1	11/26/14	VC	n/a	n/a	VS7786

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB82226-1, JB82226-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	49.4	99	80-121
100-41-4	Ethylbenzene	50	48.6	97	82-120
98-82-8	Isopropylbenzene	50	48.1	96	80-124
1634-04-4	Methyl Tert Butyl Ether	100	91.0	92	74-123
91-20-3	Naphthalene	50	48.5	97	65-138
108-88-3	Toluene	50	51.8	104	80-122
95-63-6	1,2,4-Trimethylbenzene	50	45.6	91	81-122
108-67-8	1,3,5-Trimethylbenzene	50	48.3	97	80-122
1330-20-7	Xylene (total)	150	150	100	82-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-120%
17060-07-0	1,2-Dichloroethane-D4	87%	72-123%
2037-26-5	Toluene-D8	104%	78-119%
460-00-4	4-Bromofluorobenzene	92%	74-119%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB82232-10MS [a]	2D139656.D	1	11/24/14	BK	n/a	n/a	V2D5853
JB82232-10MSD [a]	2D139657.D	1	11/24/14	BK	n/a	n/a	V2D5853
JB82232-10 [a]	2D139654.D	1	11/24/14	BK	n/a	n/a	V2D5853

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB82226-2, JB82226-4, JB82226-5, JB82226-6

CAS No.	Compound	JB82232-10 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	0.50 U		50	43.6	87	50	45.3	91	4	50-136/12
100-41-4	Ethylbenzene	1.0 U		50	44.5	89	50	46.1	92	4	49-137/13
98-82-8	Isopropylbenzene	1.0 U		50	44.5	89	50	46.1	92	4	57-136/14
1634-04-4	Methyl Tert Butyl Ether	1.0 U		50	45.3	91	50	45.7	91	1	64-134/11
91-20-3	Naphthalene	5.0 U		50	49.6	99	50	50.2	100	1	53-153/14
108-88-3	Toluene	1.0 U		50	43.9	88	50	45.2	90	3	54-137/13
95-63-6	1,2,4-Trimethylbenzene	2.0 U		50	46.5	93	50	47.9	96	3	50-139/13
108-67-8	1,3,5-Trimethylbenzene	2.0 U		50	46.0	92	50	47.6	95	3	56-136/14
1330-20-7	Xylene (total)	0.38		150	139	92	150	143	95	3	53-136/12

CAS No.	Surrogate Recoveries	MS	MSD	JB82232-10	Limits
1868-53-7	Dibromofluoromethane	82%	82%	83%	79-120%
17060-07-0	1,2-Dichloroethane-D4	82%	82%	82%	72-123%
2037-26-5	Toluene-D8	92%	91%	90%	78-119%
460-00-4	4-Bromofluorobenzene	85%	85%	84%	74-119%

(a) (pH= 4)Sample is not acid preservation per method/client criteria. Sample analyzed within 7 days holding time.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB82645-1MS	S189796.D	1	11/26/14	VC	n/a	n/a	VS7786
JB82645-1MSD	S189797.D	1	11/26/14	VC	n/a	n/a	VS7786
JB82645-1	S189785.D	1	11/26/14	VC	n/a	n/a	VS7786

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB82226-1, JB82226-3

CAS No.	Compound	JB82645-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		50	52.3	105	50	51.5	103	2	50-136/12
100-41-4	Ethylbenzene	ND		50	50.8	102	50	50.6	101	0	49-137/13
98-82-8	Isopropylbenzene	ND		50	53.0	106	50	51.7	103	2	57-136/14
1634-04-4	Methyl Tert Butyl Ether	ND		50	54.7	109	50	53.3	107	3	64-134/11
91-20-3	Naphthalene	ND		50	57.4	115	50	57.8	116	1	53-153/14
108-88-3	Toluene	ND		50	55.3	111	50	54.6	109	1	54-137/13
95-63-6	1,2,4-Trimethylbenzene	ND		50	52.2	104	50	51.5	103	1	50-139/13
108-67-8	1,3,5-Trimethylbenzene	ND		50	52.4	105	50	51.5	103	2	56-136/14
1330-20-7	Xylene (total)	0.50		150	159	106	150	158	105	1	53-136/12

CAS No.	Surrogate Recoveries	MS	MSD	JB82645-1	Limits
1868-53-7	Dibromofluoromethane	97%	98%	98%	79-120%
17060-07-0	1,2-Dichloroethane-D4	88%	87%	89%	72-123%
2037-26-5	Toluene-D8	106%	104%	103%	78-119%
460-00-4	4-Bromofluorobenzene	94%	93%	93%	74-119%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample:	V2D5849-BFB	**Injection Date:**	11/20/14
Lab File ID:	2D139562.D	**Injection Time:**	16:42
Instrument ID:	GCMS2D		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	20005	19.5		Pass
75	30.0 - 60.0% of mass 95	50424	49.3		Pass
95	Base peak, 100% relative abundance	102333	100.0		Pass
96	5.0 - 9.0% of mass 95	6689	6.54		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	97296	95.1		Pass
175	5.0 - 9.0% of mass 174	7646	7.47	(7.86) [a]	Pass
176	95.0 - 101.0% of mass 174	95608	93.4	(98.3) [a]	Pass
177	5.0 - 9.0% of mass 176	6186	6.04	(6.47) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V2D5849-IC5849	2D139563.D	11/20/14	17:14	00:32	Initial cal 0.2
V2D5849-IC5849	2D139564.D	11/20/14	17:43	01:01	Initial cal 0.5
V2D5849-IC5849	2D139565.D	11/20/14	18:13	01:31	Initial cal 1
V2D5849-IC5849	2D139566.D	11/20/14	18:43	02:01	Initial cal 2
V2D5849-IC5849	2D139567.D	11/20/14	19:13	02:31	Initial cal 5
V2D5849-IC5849	2D139568.D	11/20/14	19:44	03:02	Initial cal 10
V2D5849-IC5849	2D139569.D	11/20/14	20:14	03:32	Initial cal 20
V2D5849-ICC5849	2D139570.D	11/20/14	20:44	04:02	Initial cal 50
V2D5849-IC5849	2D139571.D	11/20/14	21:14	04:32	Initial cal 100
V2D5849-IC5849	2D139572.D	11/20/14	21:44	05:02	Initial cal 200

Instrument Performance Check (BFB)

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample:	V2D5849-BFB	**Injection Date:**	11/21/14
Lab File ID:	2D139577.D	**Injection Time:**	09:06
Instrument ID:	GCMS2D		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	22018	19.4		Pass
75	30.0 - 60.0% of mass 95	55608	48.9		Pass
95	Base peak, 100% relative abundance	113674	100.0		Pass
96	5.0 - 9.0% of mass 95	7619	6.70		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	104808	92.2		Pass
175	5.0 - 9.0% of mass 174	8263	7.27	(7.88) [a]	Pass
176	95.0 - 101.0% of mass 174	102698	90.3	(98.0) [a]	Pass
177	5.0 - 9.0% of mass 176	6883	6.06	(6.70) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V2D5849-ICV5849	2D139578.D	11/21/14	09:41	00:35	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample:	V2D5853-BFB	**Injection Date:**	11/24/14
Lab File ID:	2D139647.D	**Injection Time:**	11:39
Instrument ID:	GCMS2D		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	19797	18.3		Pass
75	30.0 - 60.0% of mass 95	52202	48.2		Pass
95	Base peak, 100% relative abundance	108298	100.0		Pass
96	5.0 - 9.0% of mass 95	7021	6.48		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	105066	97.0		Pass
175	5.0 - 9.0% of mass 174	8121	7.50	(7.73) [a]	Pass
176	95.0 - 101.0% of mass 174	101746	94.0	(96.8) [a]	Pass
177	5.0 - 9.0% of mass 176	6719	6.20	(6.60) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V2D5853-CC5849	2D139648.D	11/24/14	12:10	00:31	Continuing cal 20
V2D5853-MB	2D139650.D	11/24/14	13:17	01:38	Method Blank
V2D5853-BS	2D139651.D	11/24/14	13:48	02:09	Blank Spike
ZZZZZZ	2D139653.D	11/24/14	14:49	03:10	(unrelated sample)
JB82232-10	2D139654.D	11/24/14	15:20	03:41	(used for QC only; not part of job JB82226)
ZZZZZZ	2D139655.D	11/24/14	15:51	04:12	(unrelated sample)
JB82232-10MS	2D139656.D	11/24/14	16:21	04:42	Matrix Spike
JB82232-10MSD	2D139657.D	11/24/14	16:52	05:13	Matrix Spike Duplicate
ZZZZZZ	2D139659.D	11/24/14	17:52	06:13	(unrelated sample)
JB82226-5	2D139660.D	11/24/14	18:23	06:44	FIELD BLANK
JB82226-6	2D139661.D	11/24/14	18:53	07:14	TRIP BLANK
ZZZZZZ	2D139662.D	11/24/14	19:23	07:44	(unrelated sample)
ZZZZZZ	2D139663.D	11/24/14	19:53	08:14	(unrelated sample)
ZZZZZZ	2D139664.D	11/24/14	20:24	08:45	(unrelated sample)
ZZZZZZ	2D139665.D	11/24/14	20:54	09:15	(unrelated sample)
JB82226-4	2D139666.D	11/24/14	21:24	09:45	MW-4
JB82226-2	2D139667.D	11/24/14	21:54	10:15	MW-2
ZZZZZZ	2D139668.D	11/24/14	22:24	10:45	(unrelated sample)
ZZZZZZ	2D139669.D	11/24/14	22:54	11:15	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample:	VS7633-BFB	**Injection Date:**	07/30/14
Lab File ID:	S185679A.D	**Injection Time:**	12:49
Instrument ID:	GCMSS		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	15066	18.6		Pass
75	30.0 - 60.0% of mass 95	37877	46.8		Pass
95	Base peak, 100% relative abundance	80994	100.0		Pass
96	5.0 - 9.0% of mass 95	5531	6.83		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	75432	93.1		Pass
175	5.0 - 9.0% of mass 174	5767	7.12	(7.65) [a]	Pass
176	95.0 - 101.0% of mass 174	73170	90.3	(97.0) [a]	Pass
177	5.0 - 9.0% of mass 176	5028	6.21	(6.87) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VS7633-IC7633	S185680.D	07/30/14	14:21	01:32	Initial cal 0.2
VS7633-IC7633	S185681.D	07/30/14	14:42	01:53	Initial cal 0.5
VS7633-IC7633	S185682.D	07/30/14	15:03	02:14	Initial cal 1
VS7633-IC7633	S185683.D	07/30/14	15:25	02:36	Initial cal 2
VS7633-IC7633	S185684.D	07/30/14	15:46	02:57	Initial cal 5
VS7633-IC7633	S185685.D	07/30/14	16:08	03:19	Initial cal 20
VS7633-ICC7633	S185686.D	07/30/14	16:29	03:40	Initial cal 50
VS7633-IC7633	S185687.D	07/30/14	16:51	04:02	Initial cal 100
VS7633-IC7633	S185688.D	07/30/14	17:12	04:23	Initial cal 200
VS7633-ICV7633	S185692.D	07/30/14	18:39	05:50	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample:	VS7786-BFB	**Injection Date:**	11/26/14
Lab File ID:	S189779.D	**Injection Time:**	09:48
Instrument ID:	GCMSS		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	13259	16.7		Pass
75	30.0 - 60.0% of mass 95	34541	43.5		Pass
95	Base peak, 100% relative abundance	79493	100.0		Pass
96	5.0 - 9.0% of mass 95	5308	6.68		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	78027	98.2		Pass
175	5.0 - 9.0% of mass 174	5600	7.04	(7.18) [a]	Pass
176	95.0 - 101.0% of mass 174	76083	95.7	(97.5) [a]	Pass
177	5.0 - 9.0% of mass 176	5119	6.44	(6.73) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VS7786-CC7633	S189780.D	11/26/14	10:10	00:22	Continuing cal 50
VS7786-MB	S189782.D	11/26/14	10:55	01:07	Method Blank
VS7786-BS	S189783.D	11/26/14	11:38	01:50	Blank Spike
JB82645-1	S189785.D	11/26/14	12:21	02:33	(used for QC only; not part of job JB82226)
ZZZZZZ	S189786.D	11/26/14	12:48	03:00	(unrelated sample)
ZZZZZZ	S189787.D	11/26/14	13:09	03:21	(unrelated sample)
ZZZZZZ	S189788.D	11/26/14	13:31	03:43	(unrelated sample)
ZZZZZZ	S189789.D	11/26/14	13:52	04:04	(unrelated sample)
ZZZZZZ	S189790.D	11/26/14	14:13	04:25	(unrelated sample)
ZZZZZZ	S189791.D	11/26/14	14:37	04:49	(unrelated sample)
ZZZZZZ	S189792.D	11/26/14	14:59	05:11	(unrelated sample)
ZZZZZZ	S189793.D	11/26/14	15:21	05:33	(unrelated sample)
ZZZZZZ	S189794.D	11/26/14	15:42	05:54	(unrelated sample)
ZZZZZZ	S189795.D	11/26/14	16:03	06:15	(unrelated sample)
JB82645-1MS	S189796.D	11/26/14	16:25	06:37	Matrix Spike
JB82645-1MSD	S189797.D	11/26/14	16:47	06:59	Matrix Spike Duplicate
ZZZZZZ	S189798.D	11/26/14	17:09	07:21	(unrelated sample)
ZZZZZZ	S189799.D	11/26/14	17:30	07:42	(unrelated sample)
ZZZZZZ	S189800.D	11/26/14	17:52	08:04	(unrelated sample)
JB82226-3	S189801.D	11/26/14	18:14	08:26	MW-3
JB82226-3	S189802.D	11/26/14	18:36	08:48	MW-3
JB82226-1	S189803.D	11/26/14	18:57	09:09	MW-1
ZZZZZZ	S189804.D	11/26/14	19:19	09:31	(unrelated sample)
ZZZZZZ	S189806.D	11/26/14	20:03	10:15	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample:	VS7786-BFB	**Injection Date:**	11/26/14
Lab File ID:	S189779.D	**Injection Time:**	09:48
Instrument ID:	GCMSS		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	S189807.D	11/26/14	20:24	10:36	(unrelated sample)
ZZZZZZ	S189808.D	11/26/14	20:46	10:58	(unrelated sample)
ZZZZZZ	S189809.D	11/26/14	21:08	11:20	(unrelated sample)

Volatile Internal Standard Area Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Check Std:	V2D5853-CC5849	**Injection Date:**	11/24/14
Lab File ID:	2D139648.D	**Injection Time:**	12:10
Instrument ID:	GCMS2D	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	160112	7.61	501406	10.35	525508	11.51	453076	15.71	271458	18.45
Upper Limit [a]	320224	8.11	1002812	10.85	1051016	12.01	906152	16.21	542916	18.95
Lower Limit [b]	80056	7.11	250703	9.85	262754	11.01	226538	15.21	135729	17.95

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
V2D5853-MB	159174	7.61	490667	10.35	506849	11.51	437978	15.71	274539	18.46
V2D5853-BS	149888	7.62	478413	10.35	507550	11.51	446375	15.71	266544	18.46
ZZZZZZ	154239	7.61	484824	10.35	499865	11.51	432082	15.71	275424	18.46
JB82232-10	152972	7.62	481713	10.35	495919	11.51	430060	15.71	270817	18.46
ZZZZZZ	152267	7.62	482752	10.35	498177	11.51	436541	15.71	269229	18.45
JB82232-10MS [c]	151533	7.61	474796	10.35	504827	11.51	445819	15.71	266833	18.45
JB82232-10MSD [c]	149087	7.61	471035	10.35	499176	11.51	443280	15.71	266540	18.45
ZZZZZZ	151279	7.61	485357	10.35	496340	11.51	424917	15.71	268490	18.45
JB82226-5	153067	7.61	475278	10.35	491116	11.51	429459	15.71	270292	18.45
JB82226-6	147633	7.61	483442	10.35	497715	11.51	432210	15.71	272280	18.45
ZZZZZZ	151448	7.60	478507	10.35	492844	11.50	423941	15.71	271406	18.45
ZZZZZZ	158659	7.61	481344	10.35	499475	11.51	433584	15.71	269080	18.45
ZZZZZZ	150410	7.60	476821	10.35	497124	11.51	442041	15.71	278051	18.45
ZZZZZZ	150834	7.60	467721	10.35	483760	11.50	430754	15.71	268944	18.45
JB82226-4	144680	7.61	466361	10.35	481207	11.51	418811	15.70	265685	18.45
JB82226-2	150928	7.60	466854	10.35	480458	11.50	426227	15.70	267142	18.45
ZZZZZZ	146064	7.60	451775	10.35	468604	11.50	413512	15.70	261789	18.45
ZZZZZZ	145693	7.60	469212	10.35	486634	11.51	425823	15.70	267206	18.45

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) (pH= 4)Sample is not acid preservation per method/client criteria. Sample analyzed within 7 days holding time.

Volatile Internal Standard Area Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Check Std:	VS7786-CC7633	**Injection Date:**	11/26/14
Lab File ID:	S189780.D	**Injection Time:**	10:10
Instrument ID:	GCMSS	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	60084	5.74	296179	7.33	343074	8.05	324794	10.67	187595	12.61
Upper Limit [a]	120168	6.24	592358	7.83	686148	8.55	649588	11.17	375190	13.11
Lower Limit [b]	30042	5.24	148090	6.83	171537	7.55	162397	10.17	93798	12.11

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VS7786-MB	59765	5.74	289495	7.33	337489	8.05	316129	10.67	185891	12.61
VS7786-BS	59634	5.73	291987	7.32	341688	8.05	317856	10.66	189263	12.61
JB82645-1	57673	5.74	291955	7.33	341349	8.05	321600	10.67	187161	12.62
ZZZZZZ	56893	5.74	296331	7.32	345306	8.05	323593	10.67	186734	12.62
ZZZZZZ	60612	5.75	292266	7.33	340985	8.05	322934	10.67	188278	12.62
ZZZZZZ	57652	5.74	288960	7.33	340606	8.05	323790	10.67	188861	12.62
ZZZZZZ	60389	5.74	289212	7.33	339786	8.05	319734	10.67	186910	12.61
ZZZZZZ	59022	5.74	297735	7.33	350124	8.05	334401	10.67	190519	12.61
ZZZZZZ	60975	5.74	298173	7.33	344846	8.05	329130	10.67	188911	12.62
ZZZZZZ	60235	5.74	305730	7.33	355445	8.05	334632	10.67	190152	12.62
ZZZZZZ	60932	5.74	292213	7.33	340349	8.05	328486	10.67	188983	12.62
ZZZZZZ	56480	5.75	296280	7.33	345381	8.06	326749	10.67	187003	12.62
ZZZZZZ	60261	5.74	288175	7.33	337761	8.05	325421	10.67	189799	12.62
JB82645-1MS	60669	5.75	292329	7.33	341043	8.05	331622	10.67	191337	12.62
JB82645-1MSD	61015	5.75	294948	7.33	343203	8.05	328059	10.67	190589	12.61
ZZZZZZ	65262	5.74	296293	7.33	343712	8.05	329969	10.67	188551	12.62
ZZZZZZ	64793	5.74	293794	7.33	344552	8.05	325704	10.67	186677	12.62
ZZZZZZ	61827	5.75	289985	7.33	336024	8.05	320462	10.67	185557	12.62
JB82226-3	63064	5.74	289787	7.33	336307	8.05	325209	10.67	188180	12.62
JB82226-3	62663	5.75	288205	7.33	335621	8.05	318417	10.67	184270	12.62
JB82226-1	61479	5.74	287165	7.33	331703	8.05	315686	10.67	182101	12.62
ZZZZZZ	63776	5.75	289344	7.33	338185	8.05	319093	10.67	184892	12.62
ZZZZZZ	59912	5.74	283765	7.33	329490	8.05	312980	10.67	180002	12.62
ZZZZZZ	57265	5.74	285702	7.33	330609	8.05	317234	10.67	182584	12.62
ZZZZZZ	62426	5.74	283197	7.33	331012	8.05	311215	10.67	183205	12.62
ZZZZZZ	59618	5.74	288081	7.33	339863	8.05	323400	10.67	184473	12.62

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Surrogate Recovery Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Method: SW846 8260B **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JB82226-1	S189803.D	97	89	104	93
JB82226-2	2D139667.D	82	81	91	85
JB82226-3	S189801.D	99	90	105	93
JB82226-3	S189802.D	98	90	104	94
JB82226-4	2D139666.D	83	82	90	85
JB82226-5	2D139660.D	83	83	90	84
JB82226-6	2D139661.D	83	82	89	85
JB82232-10MS	2D139656.D	82	82	92	85
JB82232-10MSD	2D139657.D	82	82	91	85
JB82645-1MS	S189796.D	97	88	106	94
JB82645-1MSD	S189797.D	98	87	104	93
V2D5853-BS	2D139651.D	84	83	91	85
V2D5853-MB	2D139650.D	83	84	90	85
VS7786-BS	S189783.D	99	87	104	92
VS7786-MB	S189782.D	98	89	103	92

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	79-120%
S2 = 1,2-Dichloroethane-D4	72-123%
S3 = Toluene-D8	78-119%
S4 = 4-Bromofluorobenzene	74-119%

Initial Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: V2D5849-ICC5849
Lab FileID: 2D139570.D

Response Factor Report MS2D

Method : C:\MSDCHEM\1\METHODS\M2D5849.M (RTE Integrator)
Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update : Mon Nov 24 14:30:18 2014
Response via : Initial Calibration

Calibration Files
1 =2d139565.D 2 =2d139566.D 100 =2d139571.D 50 =2d139570.D
20 =2d139569.D 200 =2d139572.D 5 =2d139567.D 0.5 =2d139564.D
10 =2d139568.D 0.2 =2d139563.D = =

Compound	1	2	100	50	20	200	5	0.5	10	0.2	Avg	%RSD
1) I tert butyl alcohol-d9	----------ISTD----------											
2) tertiary butyl alcohol	1.421	1.350	1.060	1.055	1.083	0.999	1.063		1.075		1.138	13.69
3) ethyl alcohol	0.103	0.108	0.107	0.107	0.106	0.091	0.092		0.117		0.104	8.26
4) 1,4-dioxane		0.117	0.107	0.106	0.109	0.098	0.095		0.109		0.106	6.73
5) I pentafluorobenzene	----------ISTD----------											
6) freon 23											0.000	-1.00
7) freon 115											0.000	-1.00
8) freon 143a											0.000	-1.00
9) freon 152a											0.000	-1.00
10) chlorotrifluoroethene											0.000	-1.00
11) chlorodifluoromethane	0.396	0.334	0.353	0.356	0.355	0.324	0.324	0.254	0.328		0.336	11.37
12) dichlorodifluoromethane		0.440	0.505	0.493	0.485	0.487	0.489		0.484		0.483	4.22
13) freon 114											0.000	-1.00
14) freon 142b											0.000	-1.00
15) chloromethane	0.539	0.510	0.529	0.522	0.510	0.481	0.518	0.598	0.528	0.537	0.527	5.66
16) vinyl chloride	0.389	0.435	0.479	0.474	0.461	0.439	0.468	0.447	0.466	0.348	0.441	9.45
17) acetaldehyde											0.000	-1.00
18) bromomethane	0.297	0.293	0.267	0.283	0.300		0.315		0.324		0.297	6.45
19) chloroethane	0.181	0.204	0.204	0.210	0.216	0.148	0.223	0.212	0.223		0.202	11.91
20) trichlorofluoromethane	0.379	0.443	0.536	0.516	0.515	0.497	0.501		0.502		0.486	10.44
21) pentane											0.000	-1.00
22) ethyl ether		0.163	0.168	0.164	0.165	0.159	0.164		0.168		0.164	1.83
23) acrolein												

Initial Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: V2D5849-ICC5849
Lab FileID: 2D139570.D

	0.070	0.073	0.070	0.068	0.066	0.068				0.069	3.30
24)	freon 141b											
										0.000	-1.00
25)	freon 123a											
										0.000	-1.00
26)	freon 123											
										0.000	-1.00
27)	1,1-dichloroethene											
	0.253	0.291	0.314	0.295	0.299	0.287	0.305	0.217	0.307	0.347	0.292	12.09
28)	2-chloropropane											
	0.548	0.515	0.558	0.534	0.530	0.508	0.549	0.512	0.547	0.518	0.532	3.38
29)	acetone											
			0.028	0.030	0.030	0.028	0.031		0.032		0.030	4.68
30)	allyl chloride											
	0.120	0.136	0.159	0.150	0.159	0.150	0.162		0.156		0.149	9.62
31)	acetonitrile											
			0.029	0.029	0.030	0.028	0.033		0.030		0.030	6.05
32)	iodomethane											
	0.466	0.534	0.620	0.601	0.584	0.573	0.593		0.596		0.571	8.60
33)	carbon disulfide											
	0.881	0.921	0.999	0.961	0.947	0.915	0.972		0.966		0.945	3.98
34)	methylene chloride											
	0.292	0.324	0.349	0.337	0.339	0.326	0.343		0.348		0.332	5.62
35)	methyl acetate											
	0.043	0.055	0.055	0.054	0.056	0.052	0.054		0.054		0.053	7.84
36)	1-chloropropane											
			0.028	0.027	0.026	0.027	0.024	0.028		0.029	0.027	5.39
37)	methyl tert butyl ether											
	0.736	0.941	1.011	0.989	0.978	0.924	1.013	0.668	1.016	0.882	0.916	13.31
38)	trans-1,2-dichloroethene											
	0.314	0.311	0.331	0.322	0.326	0.308	0.336	0.280	0.340	0.416	0.328	10.76
39)	di-isopropyl ether											
	1.213	1.129	1.056	1.070	1.095	0.961	1.027	0.905	1.062	1.057	1.057	8.01
40)	2-butanone											
			0.038	0.037	0.035	0.036	0.038		0.037		0.037	3.14
41)	1,1-dichloroethane											
	0.510	0.570	0.610	0.597	0.607	0.564	0.610		0.625		0.587	6.36
42)	chloroprene											
	0.522	0.449	0.464	0.461	0.470	0.434	0.435	0.340	0.459	0.396	0.443	10.90
43)	acrylonitrile											
	0.099	0.115	0.126	0.123	0.123	0.116	0.127	0.092	0.126	0.112	0.116	10.45
44)	vinyl acetate											
			0.050	0.053	0.052	0.052	0.050	0.048		0.049	0.051	3.70
45)	ethyl tert-butyl ether											
	1.180	1.130	1.072	1.072	1.087	0.999	1.029		1.057		1.078	5.23
46)	ethyl acetate											
	0.053	0.053	0.044	0.043	0.045	0.042	0.047		0.044		0.046	9.21
47)	2,2-dichloropropane											
	0.421	0.500	0.488	0.482	0.492	0.436	0.518		0.503		0.480	7.06
48)	cis-1,2-dichloroethene											
	0.335	0.345	0.377	0.365	0.366	0.353	0.377	0.305	0.374	0.485	0.368	12.71
49)	propionitrile											
	0.035	0.044	0.049	0.048	0.047	0.046	0.050	0.032	0.049	0.042	0.044	13.57
50)	tert-Butyl Formate											
	0.343	0.339	0.333	0.329	0.332	0.315	0.318	0.234	0.318		0.318	10.38
51)	bromochloromethane											
	0.146	0.175	0.192	0.186	0.186	0.181	0.195	0.124	0.194	0.174	0.175	13.07
52)	tetrahydrofuran											
			0.111	0.098	0.096	0.099	0.094	0.101		0.105	0.101	5.70
53)	chloroform											

```
      0.494 0.578 0.631 0.614 0.619 0.588 0.624 0.436 0.634 0.551  0.577   11.42
54)  dibromofluoromethane (s)
      0.422 0.327 0.335 0.333 0.339 0.322 0.337       0.362        0.347    9.38
55)  1,2-dichloroethane-d4 (s)
      0.461 0.371 0.403 0.395 0.397 0.383 0.380       0.424        0.402    7.16
56)  freon 113
      0.257 0.249 0.260 0.250 0.261 0.242 0.245       0.242        0.251    3.03
57)  methacrylonitrile
      0.101 0.126 0.139 0.131 0.132 0.134 0.130       0.130        0.128    8.93
58)  1,1,1-trichloroethane
      0.396 0.465 0.539 0.516 0.510 0.500 0.505       0.518        0.493    9.06
59)  cyclohexane
      0.316 0.399 0.439 0.414 0.424 0.407 0.434       0.425        0.408    9.61
60)  isobutyl alcohol
            0.005 0.005 0.004 0.004 0.004 0.004       0.004        0.004    4.28
61)  tert amyl alcohol
                                                                   0.000   -1.00
62)  iso-octane
      1.230 1.148 1.135 1.102 1.172 1.063 1.086 0.717 1.052        1.078   13.58

63) I   1,4-difluorobenzene   ----------------ISTD---------------------
64)  di-isobutylene
                                                                   0.000   -1.00
65)  epichlorohydrin
      0.034 0.035 0.029 0.029 0.029 0.028 0.028 0.026 0.029 0.029  0.030    9.00
66)  n-butyl alcohol
      0.010 0.010 0.008 0.008 0.008 0.008 0.008 0.008 0.008 0.008  0.009    9.20
67)  carbon tetrachloride
      0.327 0.402 0.440 0.428 0.432 0.405 0.435       0.433        0.413    9.05
68)  1,1-dichloropropene
      0.325 0.375 0.412 0.404 0.411 0.387 0.402       0.413        0.391    7.67
69)  hexane    ** Compound failed for this initial calibration
      0.050 0.048 0.047 0.047 0.048 0.045 0.047       0.043        0.047    4.62
70)  benzene
      1.015 1.111 1.189 1.178 1.182 1.108 1.198 0.788 1.210 0.954  1.093   12.51
71)  tert-amyl methyl ether
      0.231 0.239 0.203 0.208 0.216 0.193 0.207       0.216        0.214    7.03
72)  heptane
      0.214 0.183 0.187 0.182 0.194 0.179 0.184 0.128 0.175        0.181   12.63
73)  isopropyl acetate
      0.596 0.639 0.558 0.553 0.558 0.533 0.523 0.525 0.537 0.632  0.565    7.53
74)  1,2-dichloroethane
      0.340 0.417 0.435 0.432 0.438 0.402 0.450 0.296 0.447 0.376  0.403   12.69
75)  trichloroethene
      0.312 0.301 0.336 0.323 0.321 0.317 0.324 0.218 0.325 0.266  0.304   11.86
76)  ethyl acrylate
                                                                   0.000   -1.00
77)  tert amyl ethyl ether
                                                                   0.000   -1.00
78)  2-nitropropane
                  0.007 0.007 0.007 0.006 0.007       0.006        0.007    3.74
79)  2-chloroethyl vinyl ether
      0.191 0.193 0.178 0.178 0.176 0.165 0.165 0.139 0.169 0.167  0.172    8.82
80)  methyl methacrylate
      0.148 0.164 0.193 0.183 0.180 0.186 0.176       0.186        0.177    8.30
81)  1,2-dichloropropane
      0.245 0.288 0.308 0.300 0.295 0.287 0.294       0.305        0.290    6.76
82)  dibromomethane
      0.149 0.193 0.208 0.200 0.198 0.193 0.203       0.207        0.194    9.82
83)  methylcyclohexane
```

Initial Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: V2D5849-ICC5849
Lab FileID: 2D139570.D

0.494 0.459 0.464 0.454 0.476 0.430 0.446 0.433 0.457 4.66

84) bromodichloromethane
0.327 0.398 0.454 0.436 0.426 0.430 0.419 0.435 0.416 9.43

85) cis-1,3-dichloropropene
0.349 0.456 0.514 0.493 0.473 0.490 0.468 0.359 0.482 0.477 0.456 12.29

86) toluene-d8 (s)
1.080 0.913 1.031 1.027 1.013 0.972 0.954 1.071 1.008 5.73

87) 4-methyl-2-pentanone
0.092 0.108 0.118 0.114 0.114 0.113 0.115 0.114 0.111 7.36

88) toluene
0.587 0.657 0.738 0.712 0.704 0.688 0.699 0.482 0.708 0.664 12.18

89) 3-methyl-1-butanol
0.017 0.014 0.014 0.014 0.013 0.013 0.013 0.014 9.87

90) trans-1,3-dichloropropene
0.378 0.424 0.469 0.458 0.431 0.449 0.439 0.344 0.453 0.466 0.431 9.40

91) ethyl methacrylate
0.290 0.332 0.369 0.362 0.347 0.356 0.350 0.354 0.345 7.15

92) 1,1,2-trichloroethane
0.177 0.211 0.234 0.227 0.218 0.223 0.222 0.156 0.226 0.211 12.46

93) 2-hexanone
0.078 0.103 0.101 0.099 0.096 0.099 0.102 0.066 0.098 0.094 13.46

94) I chlorobenzene-d5 ----------ISTD----------

95) 3,3-Dimethyl-1-butanol
0.045 0.038 0.034 0.033 0.033 0.033 0.032 0.029 0.032 0.034 13.40

96) tetrachloroethene
0.252 0.290 0.332 0.314 0.310 0.309 0.305 0.313 0.303 7.80

97) 1,3-dichloropropane
0.360 0.462 0.487 0.474 0.465 0.459 0.475 0.341 0.483 0.441 0.445 11.59

98) butyl acetate
0.251 0.238 0.189 0.190 0.192 0.183 0.193 0.174 0.190 0.200 13.17

99) dibromochloromethane
0.281 0.323 0.402 0.383 0.366 0.378 0.366 0.374 0.359 10.72

100) 1,2-dibromoethane
0.242 0.301 0.330 0.319 0.311 0.313 0.320 0.219 0.322 0.330 0.301 12.78

101) n-butyl ether
1.150 1.264 1.368 1.344 1.353 1.245 1.346 0.977 1.385 1.215 1.265 10.02

102) chlorobenzene
0.756 0.843 0.917 0.897 0.886 0.858 0.891 0.637 0.898 0.828 0.841 10.16

103) 1,1,1,2-tetrachloroethane
0.314 0.336 0.390 0.381 0.373 0.359 0.370 0.242 0.383 0.350 13.53

104) ethylbenzene
1.290 1.446 1.584 1.550 1.542 1.451 1.527 1.040 1.567 1.420 1.442 11.56

105) m,p-xylene
0.484 0.540 0.600 0.590 0.583 0.547 0.580 0.392 0.591 0.503 0.541 12.09

106) o-xylene
0.488 0.572 0.629 0.614 0.614 0.566 0.601 0.419 0.619 0.457 0.558 13.59

107) styrene
0.770 0.910 1.022 1.005 0.993 0.932 0.993 0.700 1.007 0.980 0.931 11.84

108) bromoform
0.215 0.251 0.310 0.295 0.277 0.298 0.276 0.282 0.275 10.95

109) I 1,4-dichlorobenzene-d ----------ISTD----------

110) isopropylbenzene
2.121 2.370 2.889 2.797 2.737 2.575 2.635 2.689 2.602 9.56

111) 4-bromofluorobenzene (s)
1.008 0.782 0.776 0.765 0.759 0.726 0.741 0.803 0.795 11.22

112) cyclohexanone
0.039 0.038 0.036 0.041 0.030 0.044 0.041 0.038 12.03

113) bromobenzene

Initial Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: V2D5849-ICC5849
Lab FileID: 2D139570.D

	0.651	0.665	0.795	0.763	0.740	0.738	0.734	0.566	0.767	0.690	0.711	9.63
114)	1,1,2,2-tetrachloroethane											
	0.664	0.688	0.777	0.747	0.728	0.714	0.739	0.490	0.748	0.630	0.693	12.06
115)	trans-1,4-dichloro-2-butene											
	0.183	0.175	0.208	0.199	0.195	0.195	0.204		0.201		0.195	5.57
116)	1,2,3-trichloropropane											
	0.162	0.191	0.196	0.191	0.192	0.181	0.203		0.189		0.188	6.49
117)	n-propylbenzene											
	2.459	2.702	3.144	3.049	2.998	2.847	2.927	1.978	3.020	2.688	2.781	12.55
118)	4-ethyltoluene											
											0.000	-1.00
119)	2-chlorotoluene											
	0.544	0.616	0.709	0.674	0.661	0.652	0.664	0.453	0.667	0.605	0.625	12.11
120)	4-chlorotoluene											
	1.763	1.806	2.017	1.962	1.911	1.864	1.912	1.500	1.933	2.240	1.891	10.01
121)	1,3,5-trimethylbenzene											
	1.921	2.149	2.493	2.416	2.373	2.221	2.307	1.547	2.379		2.201	13.56
122)	tert-butylbenzene											
	1.611	1.795	2.243	2.147	2.067	1.993	1.959		2.043		1.982	10.08
123)	pentachloroethane											
	0.408	0.446	0.549	0.533	0.496	0.502	0.482		0.507		0.490	9.29
124)	1,2,4-trimethylbenzene											
	1.964	2.111	2.448	2.391	2.349	2.173	2.299	1.570	2.361	2.024	2.169	12.28
125)	1,2,3-trimethylbenzene											
											0.000	-1.00
126)	sec-butylbenzene											
	2.387	2.687	3.276	3.197	3.114	2.910	3.017		3.108		2.962	9.96
127)	1,3-dichlorobenzene											
	1.324	1.389	1.533	1.495	1.473	1.412	1.459	1.235	1.490	1.759	1.457	9.52
128)	p-isopropyltoluene											
	2.160	2.352	2.814	2.735	2.679	2.497	2.570		2.657		2.558	8.44
129)	1,4-dichlorobenzene											
	1.342	1.405	1.541	1.495	1.478	1.427	1.467	1.268	1.487	1.882	1.479	11.01
130)	1,2-dichlorobenzene											
	1.277	1.375	1.559	1.514	1.489	1.414	1.464	1.152	1.519	1.647	1.441	9.97
131)	benzyl chloride											
	1.827	1.657	1.384	1.380	1.379	1.284	1.300		1.336		1.444	13.41
132)	1,4-diethylbenzene											
											0.000	-1.00
133)	n-butylbenzene											
	1.072	1.194	1.410	1.368	1.323	1.268	1.280	0.914	1.320	1.412	1.256	12.57
134)	1,2,4,5-tetramethylbenzene											
											0.000	-1.00
135)	1,2-dibromo-3-chloropropane											
	0.167	0.165	0.213	0.203	0.195	0.197	0.183	0.155	0.192	0.223	0.189	11.51
136)	1,3,5-trichlorobenzene											
	1.182	1.252	1.504	1.467	1.406	1.325	1.340	1.120	1.411		1.334	9.67
137)	hexachlorobutadiene											
	0.619	0.648	0.773	0.758	0.732	0.676	0.698		0.712		0.702	7.56
138)	naphthalene											
	2.260	2.323	2.862	2.771	2.667	2.537	2.510	2.089	2.621		2.516	9.99
139)	1,2,4-trichlorobenzene											
	1.022	1.129	1.350	1.308	1.242	1.194	1.182	1.092	1.227		1.194	8.63
140)	1,2,3-trichlorobenzene											
	0.936	1.013	1.242	1.201	1.145	1.098	1.083	1.022	1.118		1.095	8.74
141)	hexachloroethane											
	0.394	0.435	0.602	0.568	0.530	0.548	0.484		0.521		0.510	13.57

(#) = Out of Range ### Number of calibration levels exceeded format ###

6.7.1

6

Initial Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: V2D5849-ICC5849
Lab FileID: 2D139570.D

M2D5849.M Mon Nov 24 14:37:20 2014 MS2D

Initial Calibration Verification

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: V2D5849-ICV5849
Lab FileID: 2D139578.D

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\2d139578.D Vial: 3
Acq On : 21 Nov 2014 9:41 am Operator: BridgetK
Sample : icv5849-50 Inst : MS2D
Misc : ms77157,v2d5849,w,,,,1 Multiplr: 1.00
MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M2D5849.M (RTE Integrator)
Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update : Mon Nov 24 14:30:18 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	tert butyl alcohol-d9	1.000	1.000	0.0	106	-0.02	7.57
2		tertiary butyl alcohol	1.138	1.087	4.5	110	-0.01	7.71
3		ethyl alcohol	0.104	0.114	-9.6	114	-0.01	6.19
4		1,4-dioxane	0.106	0.106	0.0	107	-0.02	12.41
5	I	pentafluorobenzene	1.000	1.000	0.0	105	-0.02	10.31
6	m	freon 23		----------NA----------				
7	m	freon 115		----------NA----------				
8	m	freon 143a		----------NA----------				
9	m	freon 152a		----------NA----------				
10	m	chlorotrifluoroethene		----------NA----------				
11		chlorodifluoromethane	0.336	0.339	-0.9	100	-0.01	3.96
12		dichlorodifluoromethane	0.483	0.446	7.7	95	0.00	3.94
13	m	freon 114		----------NA----------				
14	m	freon 142b		----------NA----------				
15		chloromethane	0.527	0.503	4.6	101	0.00	4.29
16		vinyl chloride	0.441	0.443	-0.5	98	0.00	4.55
17	m	acetaldehyde		----------NA----------				
18		bromomethane	0.297	0.263	11.4	98	-0.02	5.21
19		chloroethane	0.202	0.204	-1.0	102	-0.01	5.40
20		trichlorofluoromethane	0.486	0.474	2.5	96	-0.01	5.92
21	m	pentane		----------NA----------				
22		ethyl ether	0.164	0.170	-3.7	109	-0.02	6.35
23		acrolein	0.069	0.076	-10.1	114	-0.01	6.63
24	m	freon 141b		----------NA----------				
25	m	freon 123a		----------NA----------				
26	m	freon 123		----------NA----------				
27		1,1-dichloroethene	0.292	0.298	-2.1	105	-0.01	6.80
28	m	2-chloropropane	0.532	0.573	-7.7	112	-0.02	6.56
29		acetone	0.030	0.029	3.3	103	-0.01	6.88
30		allyl chloride	0.149	0.168	-12.8	118	-0.02	7.40
31		acetonitrile	0.030	0.030	0.0	107	-0.01	7.38
32		iodomethane	0.571	0.605	-6.0	105	-0.02	7.10
33		carbon disulfide	0.945	1.007	-6.6	110	-0.02	7.22
34		methylene chloride	0.332	0.331	0.3	103	-0.02	7.60
35		methyl acetate	0.053	0.051	3.8	100	-0.02	7.39
36	m	1-chloropropane	0.027	0.026	3.7	104	-0.02	7.65
37		methyl tert butyl ether	0.916	0.972	-6.1	103	-0.01	8.00
38		trans-1,2-dichloroethene	0.328	0.313	4.6	102	-0.02	8.04
39		di-isopropyl ether	1.057	1.071	-1.3	105	-0.02	8.73
40		2-butanone	0.037	0.037	0.0	105	-0.02	9.61
41		1,1-dichloroethane	0.587	0.593	-1.0	104	-0.02	8.72

Initial Calibration Verification

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: V2D5849-ICV5849
Lab FileID: 2D139578.D

42		chloroprene	0.443	0.518	-16.9	118	-0.02	8.85
43		acrylonitrile	0.116	0.113	2.6	96	-0.02	8.00
44		vinyl acetate	0.051	0.057	-11.8	114	-0.01	8.73
45		ethyl tert-butyl ether	1.078	1.071	0.6	105	-0.02	9.29
46		ethyl acetate	0.046	0.045	2.2	110	-0.01	9.64
47		2,2-dichloropropane	0.480	0.492	-2.5	107	-0.02	9.63
48		cis-1,2-dichloroethene	0.368	0.354	3.8	102	-0.02	9.61
49		propionitrile	0.044	0.049	-11.4	106	-0.02	9.73
50		tert-Butyl Formate	0.318	0.339	-6.6	108	-0.02	10.15
51		bromochloromethane	0.175	0.181	-3.4	102	-0.02	10.00
52		tetrahydrofuran	0.101	0.096	5.0	104	-0.02	10.05
53		chloroform	0.577	0.597	-3.5	102	-0.02	10.08
54	S	dibromofluoromethane (s)	0.347	0.320	7.8	101	-0.02	10.33
55	S	1,2-dichloroethane-d4 (s)	0.402	0.378	6.0	100	-0.02	10.87
56		freon 113	0.251	0.257	-2.4	108	-0.01	6.79
57		methacrylonitrile	0.128	0.132	-3.1	105	-0.02	9.96
58		1,1,1-trichloroethane	0.493	0.497	-0.8	101	-0.02	10.40
59		cyclohexane	0.408	0.396	2.9	100	-0.02	10.49
60		isobutyl alcohol	0.004	0.004	0.0	108	-0.02	10.63
61	m	tert amyl alcohol		----------NA----------				
62	m	iso-octane	1.078	1.127	-4.5	107	-0.02	11.01
63	I	1,4-difluorobenzene	1.000	1.000	0.0	108	-0.02	11.47
64		di-isobutylene		----------NA----------				
65		epichlorohydrin	0.030	0.028	6.7	105	-0.02	13.14
66		n-butyl alcohol	0.009	0.009	0.0	109	-0.02	11.64
67		carbon tetrachloride	0.413	0.407	1.5	102	-0.02	10.65
68		1,1-dichloropropene	0.391	0.397	-1.5	106	-0.02	10.63
69		hexane	0.047	0.036	23.4#	83	-0.02	8.41
70		benzene	1.093	1.126	-3.0	103	-0.02	10.97
71		tert-amyl methyl ether	0.214	0.200	6.5	103	-0.02	11.04
72		heptane	0.181	0.183	-1.1	108	-0.02	11.23
73		isopropyl acetate	0.565	0.549	2.8	107	-0.02	10.93
74		1,2-dichloroethane	0.403	0.410	-1.7	102	-0.02	10.98
75		trichloroethene	0.304	0.307	-1.0	102	-0.02	11.90
76	m	ethyl acrylate		----------NA----------				
77	m	tert amyl ethyl ether		----------NA----------				
78		2-nitropropane	0.007	0.006	14.3	106	0.00	12.98
79		2-chloroethyl vinyl ether	0.172	0.171	0.6	103	-0.02	13.00
80		methyl methacrylate	0.177	0.178	-0.6	104	-0.02	12.31
81		1,2-dichloropropane	0.290	0.285	1.7	102	-0.02	12.26
82		dibromomethane	0.194	0.189	2.6	102	-0.02	12.45
83		methylcyclohexane	0.457	0.464	-1.5	110	-0.02	12.20
84		bromodichloromethane	0.416	0.408	1.9	101	-0.02	12.63
85		cis-1,3-dichloropropene	0.456	0.468	-2.6	102	-0.02	13.27
86	S	toluene-d8 (s)	1.008	0.944	6.3	99	-0.02	13.66
87		4-methyl-2-pentanone	0.111	0.110	0.9	104	-0.02	13.44
88		toluene	0.664	0.672	-1.2	102	-0.02	13.76
89		3-methyl-1-butanol	0.014	0.013	7.1	104	-0.02	13.46
90		trans-1,3-dichloropropene	0.431	0.426	1.2	100	-0.02	14.03
91		ethyl methacrylate	0.345	0.338	2.0	101	-0.02	14.07
92		1,1,2-trichloroethane	0.211	0.213	-0.9	101	-0.02	14.31
93		2-hexanone	0.094	0.096	-2.1	104	-0.02	14.60
94	I	chlorobenzene-d5	1.000	1.000	0.0	108	-0.02	15.68
95		3,3-Dimethyl-1-butanol	0.034	0.032	5.9	103	-0.02	14.82
96		tetrachloroethene	0.303	0.294	3.0	101	-0.02	14.53
97		1,3-dichloropropane	0.445	0.446	-0.2	101	-0.02	14.56
98		butyl acetate	0.200	0.188	6.0	107	-0.02	14.72
99		dibromochloromethane	0.359	0.358	0.3	101	-0.02	14.89

Initial Calibration Verification

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: V2D5849-ICV5849
Lab FileID: 2D139578.D

100		1,2-dibromoethane	0.301	0.299	0.7	101	-0.02	15.08
101	m	n-butyl ether	1.265	1.171	7.4	94	-0.02	15.69
102		chlorobenzene	0.841	0.839	0.2	101	-0.02	15.72
103		1,1,1,2-tetrachloroethane	0.350	0.351	-0.3	99	-0.02	15.80
104		ethylbenzene	1.442	1.435	0.5	100	-0.02	15.82
105		m,p-xylene	0.541	0.549	-1.5	100	-0.02	15.96
106		o-xylene	0.558	0.572	-2.5	100	-0.02	16.50
107		styrene	0.931	0.936	-0.5	100	-0.02	16.51
108		bromoform	0.275	0.278	-1.1	101	-0.01	16.81
109	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	106	-0.02	18.43
110		isopropylbenzene	2.602	2.604	-0.1	99	-0.02	16.94
111	S	4-bromofluorobenzene (s)	0.795	0.712	10.4	99	-0.02	17.15
112	m	cyclohexanone	0.038	0.040	-5.3	117	-0.02	17.12
113		bromobenzene	0.711	0.732	-3.0	102	-0.02	17.37
114		1,1,2,2-tetrachloroethane	0.693	0.684	1.3	97	-0.01	17.29
115		trans-1,4-dichloro-2-bute	0.195	0.199	-2.1	106	-0.02	17.35
116		1,2,3-trichloropropane	0.188	0.179	4.8	99	-0.02	17.37
117		n-propylbenzene	2.781	3.004	-8.0	104	-0.01	17.42
118	m	4-ethyltoluene		----------NA----------				
119		2-chlorotoluene	0.625	0.638	-2.1	100	-0.01	17.56
120		4-chlorotoluene	1.891	1.835	3.0	99	-0.01	17.68
121		1,3,5-trimethylbenzene	2.201	2.261	-2.7	99	-0.02	17.59
122		tert-butylbenzene	1.982	2.017	-1.8	100	-0.01	17.98
123		pentachloroethane	0.490	0.511	-4.3	102	-0.02	18.03
124		1,2,4-trimethylbenzene	2.169	2.365	-9.0	105	-0.02	18.02
125	m	1,2,3-trimethylbenzene		----------NA----------				
126		sec-butylbenzene	2.962	2.962	0.0	98	-0.02	18.20
127		1,3-dichlorobenzene	1.457	1.379	5.4	98	-0.01	18.37
128		p-isopropyltoluene	2.558	2.601	-1.7	101	-0.01	18.33
129		1,4-dichlorobenzene	1.479	1.399	5.4	99	-0.01	18.45
130		1,2-dichlorobenzene	1.441	1.428	0.9	100	-0.01	18.84
131		benzyl chloride	1.444	1.676	-16.1	129	-0.02	18.58
132	m	1,4-diethylbenzene		----------NA----------				
133		n-butylbenzene	1.256	1.309	-4.2	101	-0.02	18.74
134	m	1,2,4,5-tetramethylbenzen		----------NA----------				
135		1,2-dibromo-3-chloropropa	0.189	0.194	-2.6	101	-0.02	19.61
136		1,3,5-trichlorobenzene	1.334	1.361	-2.0	98	-0.01	19.80
137		hexachlorobutadiene	0.702	0.703	-0.1	98	-0.02	20.54
138		naphthalene	2.516	2.622	-4.2	100	-0.02	20.70
139		1,2,4-trichlorobenzene	1.194	1.238	-3.7	100	-0.02	20.42
140	m	1,2,3-trichlorobenzene	1.095	1.119	-2.2	99	-0.02	20.94
141		hexachloroethane	0.510	0.550	-7.8	103	-0.01	19.10

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2d139570.D M2D5849.M Mon Nov 24 14:33:01 2014 MS2D

Continuing Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: V2D5853-CC5849
Lab FileID: 2D139648.D

Evaluate Continuing Calibration Report

Data File : C:\MSDChem\1\DATA\2d139648.D Vial: 2
Acq On : 24 Nov 2014 12:10 pm Operator: BridgetK
Sample : cc5849-20 Inst : MS2D
Misc : ms77336,v2d5853,w,,,,1 Multiplr: 1.00
MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M2D5849.M (RTE Integrator)
Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update : Mon Nov 24 14:30:18 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	tert butyl alcohol-d9	1.000	1.000	0.0	108	0.02	7.61
2		tertiary butyl alcohol	1.138	1.002	12.0	100	0.03	7.75
3		ethyl alcohol	0.104	0.097	6.7	100	0.03	6.23
4		1,4-dioxane	0.106	0.098	7.5	98	0.03	12.46
5	I	pentafluorobenzene	1.000	1.000	0.0	120	0.03	10.35
6	m	freon 23		----------NA----------				
7	m	freon 115		----------NA----------				
8	m	freon 143a		----------NA----------				
9	m	freon 152a		----------NA----------				
10	m	chlorotrifluoroethene		----------NA----------				
11		chlorodifluoromethane	0.336	0.243	27.7#	82	0.03	3.99
12		dichlorodifluoromethane	0.483	0.380	21.3#	94	0.03	3.97
13	m	freon 114		----------NA----------				
14	m	freon 142b		----------NA----------				
15		chloromethane	0.527	0.401	23.9#	94	0.02	4.31
16		vinyl chloride	0.441	0.359	18.6	93	0.02	4.58
17	m	acetaldehyde		----------NA----------				
18		bromomethane	0.297	0.258	13.1	103	0.03	5.26
19		chloroethane	0.202	0.176	12.9	97	0.03	5.45
20		trichlorofluoromethane	0.486	0.424	12.8	98	0.03	5.95
21	m	pentane		----------NA----------				
22		ethyl ether	0.164	0.143	12.8	103	0.03	6.40
23		acrolein	0.069	0.060	13.0	105	0.03	6.67
24	m	freon 141b		----------NA----------				
25	m	freon 123a		----------NA----------				
26	m	freon 123		----------NA----------				
27		1,1-dichloroethene	0.292	0.261	10.6	104	0.03	6.85
28	m	2-chloropropane	0.532	0.446	16.2	101	0.03	6.60
29		acetone	0.030	0.027	10.0	105	0.03	6.92
30		allyl chloride	0.149	0.136	8.7	102	0.03	7.44
31		acetonitrile	0.030	0.025	16.7	99	0.04	7.43
32		iodomethane	0.571	0.527	7.7	108	0.03	7.14
33		carbon disulfide	0.945	0.880	6.9	111	0.03	7.27
34		methylene chloride	0.332	0.290	12.7	102	0.03	7.65
35		methyl acetate	0.053	0.046	13.2	98	0.03	7.44
36	m	1-chloropropane	0.027	0.023	14.8	104	0.03	7.70
37		methyl tert butyl ether	0.916	0.839	8.4	103	0.03	8.05
38		trans-1,2-dichloroethene	0.328	0.275	16.2	101	0.03	8.08
39		di-isopropyl ether	1.057	0.888	16.0	97	0.02	8.77
40		2-butanone	0.037	0.030	18.9	104	0.02	9.65
41		1,1-dichloroethane	0.587	0.498	15.2	98	0.03	8.76

Continuing Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: V2D5853-CC5849
Lab FileID: 2D139648.D

42		chloroprene	0.443	0.378	14.7	96	0.03	8.89
43		acrylonitrile	0.116	0.104	10.3	101	0.03	8.04
44		vinyl acetate	0.051	0.044	13.7	101	0.03	8.77
45		ethyl tert-butyl ether	1.078	0.892	17.3	98	0.02	9.34
46		ethyl acetate	0.046	0.036	21.7#	95	0.03	9.68
47		2,2-dichloropropane	0.480	0.429	10.6	104	0.02	9.67
48		cis-1,2-dichloroethene	0.368	0.310	15.8	101	0.02	9.66
49		propionitrile	0.044	0.040	9.1	102	0.03	9.77
50		tert-Butyl Formate	0.318	0.274	13.8	99	0.03	10.20
51		bromochloromethane	0.175	0.164	6.3	105	0.02	10.04
52		tetrahydrofuran	0.101	0.083	17.8	100	0.03	10.10
53		chloroform	0.577	0.515	10.7	99	0.03	10.12
54	S	dibromofluoromethane (s)	0.347	0.288	17.0	102	0.02	10.37
55	S	1,2-dichloroethane-d4 (s)	0.402	0.336	16.4	101	0.03	10.91
56		freon 113	0.251	0.214	14.7	98	0.03	6.83
57		methacrylonitrile	0.128	0.113	11.7	102	0.03	10.00
58		1,1,1-trichloroethane	0.493	0.426	13.6	100	0.03	10.44
59		cyclohexane	0.408	0.366	10.3	103	0.03	10.53
60		isobutyl alcohol	0.004	0.004	0.0	96	0.02	10.67
61	m	tert amyl alcohol		----------NA----------				
62	m	iso-octane	1.078	0.968	10.2	99	0.02	11.05
63	I	1,4-difluorobenzene	1.000	1.000	0.0	116	0.03	11.51
64		di-isobutylene		----------NA----------				
65		epichlorohydrin	0.030	0.026	13.3	104	0.02	13.18
66		n-butyl alcohol	0.009	0.007	22.2#	97	0.02	11.69
67		carbon tetrachloride	0.413	0.378	8.5	101	0.03	10.69
68		1,1-dichloropropene	0.391	0.357	8.7	100	0.03	10.67
69		hexane	0.047	0.042	10.6	101	0.03	8.46
70		benzene	1.093	1.043	4.6	102	0.03	11.01
71		tert-amyl methyl ether	0.214	0.188	12.1	101	0.02	11.08
72		heptane	0.181	0.168	7.2	100	0.03	11.28
73		isopropyl acetate	0.565	0.475	15.9	99	0.03	10.97
74		1,2-dichloroethane	0.403	0.372	7.7	98	0.03	11.03
75		trichloroethene	0.304	0.281	7.6	101	0.03	11.94
76	m	ethyl acrylate		----------NA----------				
77	m	tert amyl ethyl ether		----------NA----------				
78		2-nitropropane	0.007	0.005	28.6#	89	0.03	13.02
79		2-chloroethyl vinyl ether	0.172	0.150	12.8	99	0.02	13.04
80		methyl methacrylate	0.177	0.152	14.1	98	0.02	12.35
81		1,2-dichloropropane	0.290	0.246	15.2	96	0.03	12.30
82		dibromomethane	0.194	0.173	10.8	101	0.02	12.48
83		methylcyclohexane	0.457	0.415	9.2	101	0.03	12.24
84		bromodichloromethane	0.416	0.368	11.5	100	0.03	12.68
85		cis-1,3-dichloropropene	0.456	0.409	10.3	100	0.02	13.30
86	S	toluene-d8 (s)	1.008	0.913	9.4	104	0.02	13.70
87		4-methyl-2-pentanone	0.111	0.097	12.6	99	0.02	13.48
88		toluene	0.664	0.607	8.6	100	0.02	13.79
89		3-methyl-1-butanol	0.014	0.012	14.3	98	0.02	13.49
90		trans-1,3-dichloropropene	0.431	0.374	13.2	101	0.02	14.07
91		ethyl methacrylate	0.345	0.293	15.1	98	0.02	14.11
92		1,1,2-trichloroethane	0.211	0.188	10.9	100	0.02	14.34
93		2-hexanone	0.094	0.083	11.7	100	0.02	14.63
94	I	chlorobenzene-d5	1.000	1.000	0.0	111	0.02	15.71
95		3,3-Dimethyl-1-butanol	0.034	0.029	14.7	96	0.02	14.86
96		tetrachloroethene	0.303	0.284	6.3	102	0.02	14.56
97		1,3-dichloropropane	0.445	0.405	9.0	97	0.02	14.60
98		butyl acetate	0.200	0.175	12.5	102	0.02	14.75
99		dibromochloromethane	0.359	0.333	7.2	101	0.02	14.93

Continuing Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: V2D5853-CC5849
Lab FileID: 2D139648.D

100		1,2-dibromoethane	0.301	0.278	7.6	99	0.02	15.12
101	m	n-butyl ether	1.265	1.181	6.6	97	0.02	15.72
102		chlorobenzene	0.841	0.787	6.4	99	0.02	15.75
103		1,1,1,2-tetrachloroethane	0.350	0.337	3.7	101	0.02	15.84
104		ethylbenzene	1.442	1.367	5.2	99	0.02	15.85
105		m,p-xylene	0.541	0.527	2.6	101	0.02	16.00
106		o-xylene	0.558	0.550	1.4	100	0.02	16.54
107		styrene	0.931	0.864	7.2	97	0.02	16.55
108		bromoform	0.275	0.258	6.2	104	0.02	16.83
109	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	110	0.01	18.45
110		isopropylbenzene	2.602	2.482	4.6	100	0.02	16.97
111	S	4-bromofluorobenzene (s)	0.795	0.685	13.8	99	0.02	17.19
112	m	cyclohexanone	0.038	0.050	-31.6#	133	0.02	17.15
113		bromobenzene	0.711	0.677	4.8	101	0.01	17.40
114		1,1,2,2-tetrachloroethane	0.693	0.659	4.9	100	0.02	17.32
115		trans-1,4-dichloro-2-bute	0.195	0.168	13.8	95	0.02	17.38
116		1,2,3-trichloropropane	0.188	0.174	7.4	100	0.02	17.40
117		n-propylbenzene	2.781	2.693	3.2	99	0.02	17.45
118	m	4-ethyltoluene		----------NA----------				
119		2-chlorotoluene	0.625	0.587	6.1	98	0.02	17.59
120		4-chlorotoluene	1.891	1.715	9.3	99	0.02	17.70
121		1,3,5-trimethylbenzene	2.201	2.137	2.9	99	0.02	17.63
122		tert-butylbenzene	1.982	1.843	7.0	98	0.02	18.00
123		pentachloroethane	0.490	0.469	4.3	104	0.02	18.07
124		1,2,4-trimethylbenzene	2.169	2.131	1.8	100	0.01	18.05
125	m	1,2,3-trimethylbenzene		----------NA----------				
126		sec-butylbenzene	2.962	2.773	6.4	98	0.01	18.23
127		1,3-dichlorobenzene	1.457	1.320	9.4	99	0.02	18.40
128		p-isopropyltoluene	2.558	2.403	6.1	99	0.02	18.36
129		1,4-dichlorobenzene	1.479	1.335	9.7	99	0.02	18.48
130		1,2-dichlorobenzene	1.441	1.348	6.5	100	0.02	18.87
131		benzyl chloride	1.444	1.431	0.9	114	0.01	18.61
132	m	1,4-diethylbenzene		----------NA----------				
133		n-butylbenzene	1.256	1.181	6.0	98	0.01	18.77
134	m	1,2,4,5-tetramethylbenzen		----------NA----------				
135		1,2-dibromo-3-chloropropa	0.189	0.176	6.9	99	0.02	19.64
136		1,3,5-trichlorobenzene	1.334	1.280	4.0	100	0.02	19.82
137		hexachlorobutadiene	0.702	0.666	5.1	100	0.02	20.57
138		naphthalene	2.516	2.401	4.6	99	0.02	20.73
139		1,2,4-trichlorobenzene	1.194	1.147	3.9	102	0.01	20.45
140	m	1,2,3-trichlorobenzene	1.095	1.038	5.2	100	0.02	20.98
141		hexachloroethane	0.510	0.493	3.3	102	0.02	19.13

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2d139569.D M2D5849.M Mon Nov 24 15:22:20 2014 MS2D

6.7.3

6

Initial Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: VS7633-ICC7633
Lab FileID: S185686.D

Response Factor Report MSDS

Method : C:\MSDCHEM\1\METHODS\MS7633.M (RTE Integrator)
Title : Method 8260, ZB624 60mX0.25mmX1.4um
Last Update : Fri Aug 01 12:03:24 2014
Response via : Initial Calibration

Calibration Files
0.2 =S185680.D 0.5 =S185681.D 1 =S185682.D 2 =S185683.D
5 =S185684.D 20 =S185685.D 50 =S185686.D 100 =S185687.D
200 =S185688.D =

Compound	0.2	0.5	1	2	5	20	50	100	200	Avg	%RSD
1) I Tert Butyl Alcohol-d9 ----------ISTD----------											
2) tertiary butyl alcohol											
			1.285	1.002	0.978	1.159	1.167	1.138		1.121	10.19
3) I pentafluorobenzene ----------ISTD----------											
4) methyl tert butyl ether											
	1.134	0.925	0.873	0.770	0.739	0.722	0.847	0.856	0.845	0.857	14.39
5) di-isopropyl ether											
	1.248	1.255	1.119	1.121	1.078	1.031	1.233	1.243	1.230	1.173	7.32
6) ethyl tert-butyl ether											
	0.942	1.028	0.943	0.934	0.911	0.912	1.067	1.053	1.077	0.985	7.07
7) dibromofluoromethane (s)											
		0.288	0.283	0.310	0.285	0.330	0.313	0.327	0.322	0.307	6.31
8) 1,2-dichloroethane-d4 (s)											
		0.292	0.279	0.335	0.265	0.326	0.327	0.340	0.329	0.312	9.21
9) I 1,4-difluorobenzene ----------ISTD----------											
10) benzene											
	1.348	1.208	1.223	1.103	1.066	1.009	1.196	1.244	1.256	1.184	8.91
11) tert-amyl methyl ether											
	0.901	0.938	0.820	0.736	0.706	0.664	0.788	0.814	0.823	0.799	11.03
12) 1,2-dichloroethane											
	0.262	0.317	0.295	0.296	0.280	0.281	0.330	0.339	0.338	0.304	9.17
13) toluene-d8 (s)											
		1.002	0.990	1.058	0.960	1.063	1.033	1.069	1.061	1.030	3.97
14) toluene											
	0.667	0.707	0.688	0.699	0.653	0.632	0.720	0.776	0.765	0.701	6.87
15) I chlorobenzene-d5 ----------ISTD----------											
16) 1,2-dibromoethane											
		0.213	0.218	0.222	0.211	0.203	0.243	0.247	0.252	0.226	8.12
17) chlorobenzene											
	0.928	0.891	0.960	0.871	0.796	0.778	0.931	0.948	0.966	0.897	7.73
18) ethylbenzene											
	1.712	1.475	1.613	1.467	1.357	1.335	1.555	1.613	1.658	1.532	8.59
19) m,p-xylene											
	0.624	0.560	0.621	0.549	0.531	0.505	0.602	0.623	0.645	0.585	8.42
20) o-xylene											
	0.618	0.564	0.645	0.558	0.515	0.499	0.601	0.628	0.646	0.586	9.29
21) I 1,4-dichlorobenzene-d ----------ISTD----------											
22) isopropylbenzene											
	2.755	2.421	2.819	2.537	2.419	2.376	2.812	2.870	2.801	2.645	7.69
23) 4-bromofluorobenzene (s)											

Initial Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: VS7633-ICC7633
Lab FileID: S185686.D

```
                  0.825 0.898 0.945 0.752 0.791 0.762 0.750 0.739   0.808     9.45
24)  n-propylbenzene
          0.752 0.627 0.816 0.667 0.622 0.611 0.725 0.760 0.721   0.700    10.27
25)  1,3,5-trimethylbenzene
          2.411 2.245 2.480 2.157 2.052 1.977 2.334 2.418 2.406   2.276     7.84
26)  tert-butylbenzene
          0.551 0.426 0.503 0.385 0.374 0.382 0.448 0.470 0.472   0.446    13.49
27)  1,2,4-trimethylbenzene
          2.684 2.419 2.596 2.248 2.143 2.095 2.388 2.530 2.561   2.407     8.62
28)  sec-butylbenzene
          2.960 2.736 3.262 2.777 2.518 2.495 2.953 3.025 3.150   2.875     9.21
29)  1,3-dichlorobenzene
          1.529 1.383 1.652 1.387 1.204 1.203 1.417 1.437 1.495   1.412    10.25
30)  p-isopropyltoluene
          2.626 2.338 2.793 2.461 2.171 2.167 2.557 2.631 2.692   2.493     9.03
31)  1,4-dichlorobenzene
          1.461 1.495 1.818 1.460 1.275 1.223 1.460 1.490 1.511   1.466    11.38
32)  1,2-dichlorobenzene
          1.303 1.326 1.806 1.371 1.155 1.131 1.360 1.392 1.422   1.363    14.27
33)  n-butylbenzene
          1.348 1.133 1.313 1.164 1.082 1.065 1.277 1.337 1.336   1.228     9.48
34)  naphthalene
                        1.493 1.141 1.213 1.471 1.521 1.515   1.393    12.17
-------------------------------------------------------------------------------
(#) = Out of Range  ###  Number of calibration levels exceeded format  ###

          MS7633.M          Fri Aug 01 14:22:26 2014   MSDS
```

Initial Calibration Verification

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: VS7633-ICV7633
Lab FileID: S185692.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\S185692.D Vial: 14
Acq On : 30 Jul 2014 6:39 pm Operator: viannac
Sample : icv7633-50 Inst : MSDS
Misc : MS71275,VS7633,5,,,,1 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MS7633.M (RTE Integrator)
Title : Method 8260, ZB624 60mX0.25mmX1.4um
Last Update : Fri Aug 01 12:03:24 2014
Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	96	0.00	5.75
2	M	tertiary butyl alcohol	1.121	1.270	-13.3	105	0.00	5.82
3	I	pentafluorobenzene	1.000	1.000	0.0	98	0.00	7.33
4	M	methyl tert butyl ether	0.857	0.875	-2.1	101	0.00	6.08
5	M	di-isopropyl ether	1.173	1.222	-4.2	97	0.00	6.45
6	M	ethyl tert-butyl ether	0.985	1.068	-8.4	98	0.00	6.78
7	S	dibromofluoromethane (s)	0.307	0.337	-9.8	106	0.00	7.39
8	S	1,2-dichloroethane-d4 (s)	0.312	0.342	-9.6	103	0.00	7.73
9	I	1,4-difluorobenzene	1.000	1.000	0.0	96	0.00	8.05
10	M	benzene	1.184	1.291	-9.0	103	0.00	7.82
11	M	tert-amyl methyl ether	0.799	0.832	-4.1	101	0.00	7.82
12	M	1,2-dichloroethane	0.304	0.354	-16.4	103	0.00	7.80
13	S	toluene-d8 (s)	1.030	1.152	-11.8	107	0.00	9.40
14	M	toluene	0.701	0.792	-13.0	105	0.00	9.46
15	I	chlorobenzene-d5	1.000	1.000	0.0	95	0.00	10.67
16	M	1,2-dibromoethane	0.226	0.268	-18.6	105	0.00	10.31
17	M	chlorobenzene	0.897	0.971	-8.2	99	0.00	10.70
18	M	ethylbenzene	1.532	1.687	-10.1	103	0.00	10.75
19	M	m,p-xylene	0.585	0.647	-10.6	102	0.00	10.84
20	M	o-xylene	0.586	0.673	-14.8	106	0.00	11.19
21	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	100	0.00	12.62
22	M	isopropylbenzene	2.645	2.890	-9.3	102	0.00	11.48
23	S	4-bromofluorobenzene (s)	0.808	0.775	4.1	101	0.00	11.64
24	M	n-propylbenzene	0.700	0.706	-0.9	97	0.00	11.83
25	M	1,3,5-trimethylbenzene	2.276	2.397	-5.3	102	0.00	11.95
26	M	tert-butylbenzene	0.446	0.446	0.0	99	0.00	12.25
27	M	1,2,4-trimethylbenzene	2.407	2.393	0.6	100	0.00	12.28
28	M	sec-butylbenzene	2.875	3.121	-8.6	105	0.00	12.42
29	M	1,3-dichlorobenzene	1.412	1.464	-3.7	103	0.00	12.57
30	M	p-isopropyltoluene	2.493	2.660	-6.7	104	0.00	12.52
31	M	1,4-dichlorobenzene	1.466	1.526	-4.1	104	0.00	12.64
32	M	1,2-dichlorobenzene	1.363	1.424	-4.5	104	0.00	12.97
33	M	n-butylbenzene	1.228	1.304	-6.2	102	0.00	12.86
34	M	naphthalene	1.393	1.563	-12.2	106	0.00	14.60

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Initial Calibration Verification

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: VS7633-ICV7633
Lab FileID: S185692.D

S185686.D MS7633.M Fri Aug 01 14:23:15 2014 MSDS

Continuing Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: VS7786-CC7633
Lab FileID: S189780.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\S core\vs7786\S189780.D Vial: 2
Acq On : 26 Nov 2014 10:10 am Operator: viannac
Sample : cc7633-50 Inst : MSDS
Misc : MS77438,VS7786,5,,,,1 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MS7633.M (RTE Integrator)
Title : Method 8260, ZB624 60mX0.25mmX1.4um
Last Update : Fri Aug 01 12:03:24 2014
Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	127	0.00	5.74
2	M	tertiary butyl alcohol	1.121	1.050	6.3	115	0.00	5.82
3	I	pentafluorobenzene	1.000	1.000	0.0	120	0.00	7.33
4	M	methyl tert butyl ether	0.857	0.766	10.6	109	0.00	6.08
5	M	di-isopropyl ether	1.173	1.108	5.5	108	0.00	6.45
6	M	ethyl tert-butyl ether	0.985	0.968	1.7	109	0.00	6.78
7	S	dibromofluoromethane (s)	0.307	0.304	1.0	117	0.00	7.39
8	S	1,2-dichloroethane-d4 (s)	0.312	0.269	13.8	99	0.00	7.72
9	I	1,4-difluorobenzene	1.000	1.000	0.0	119	0.00	8.05
10	M	benzene	1.184	1.031	12.9	102	0.00	7.81
11	M	tert-amyl methyl ether	0.799	0.733	8.3	110	0.00	7.81
12	M	1,2-dichloroethane	0.304	0.279	8.2	100	0.00	7.79
13	S	toluene-d8 (s)	1.030	1.063	-3.2	122	0.00	9.40
14	M	toluene	0.701	0.640	8.7	106	0.00	9.46
15	I	chlorobenzene-d5	1.000	1.000	0.0	123	0.00	10.67
16	M	1,2-dibromoethane	0.226	0.211	6.6	107	0.00	10.30
17	M	chlorobenzene	0.897	0.817	8.9	108	0.00	10.69
18	M	ethylbenzene	1.532	1.322	13.7	105	0.00	10.74
19	M	m,p-xylene	0.585	0.515	12.0	105	0.00	10.83
20	M	o-xylene	0.586	0.530	9.6	109	0.00	11.19
21	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	125	0.00	12.61
22	M	isopropylbenzene	2.645	2.361	10.7	105	0.00	11.48
23	S	4-bromofluorobenzene (s)	0.808	0.750	7.2	123	0.00	11.64
24	M	n-propylbenzene	0.700	0.646	7.7	111	0.00	11.82
25	M	1,3,5-trimethylbenzene	2.276	1.993	12.4	107	0.00	11.94
26	M	tert-butylbenzene	0.446	0.429	3.8	120	0.00	12.24
27	M	1,2,4-trimethylbenzene	2.407	2.121	11.9	111	0.00	12.27
28	M	sec-butylbenzene	2.875	2.549	11.3	108	0.00	12.42
29	M	1,3-dichlorobenzene	1.412	1.264	10.5	111	0.00	12.57
30	M	p-isopropyltoluene	2.493	2.216	11.1	108	0.00	12.52
31	M	1,4-dichlorobenzene	1.466	1.305	11.0	112	0.00	12.64
32	M	1,2-dichlorobenzene	1.363	1.227	10.0	113	0.00	12.96
33	M	n-butylbenzene	1.228	1.089	11.3	106	0.00	12.85
34	M	naphthalene	1.393	1.377	1.1	117	0.00	14.60

(#) = Out of Range SPCC's out = 0 CCC's out = 0

6.7.6

6

Continuing Calibration Summary

Job Number: JB82226
Account: MIGNJHP MIG Consulting
Project: 3608 West Chester Pike, Newtown Square, PA

Sample: VS7786-CC7633
Lab FileID: S189780.D

S185686.D MS7633.M Wed Nov 26 15:04:44 2014 ACC-VOA-DP

New Jersey ACCUTEST LABORATORIES

GC/MS Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\S core\vs7786\
Data File : S189803.D
Acq On : 26 Nov 2014 6:57 pm
Operator : viannac
Sample : jb82226-1
Misc : MS77398,VS7786,5,,,,50
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Dec 01 11:03:39 2014
Quant Method : C:\MSDCHEM\1\METHODS\MS7633.M
Quant Title : Method 8260, ZB624 60mX0.25mmX1.4um
QLast Update : Fri Aug 01 12:03:24 2014
Response via : Initial Calibration

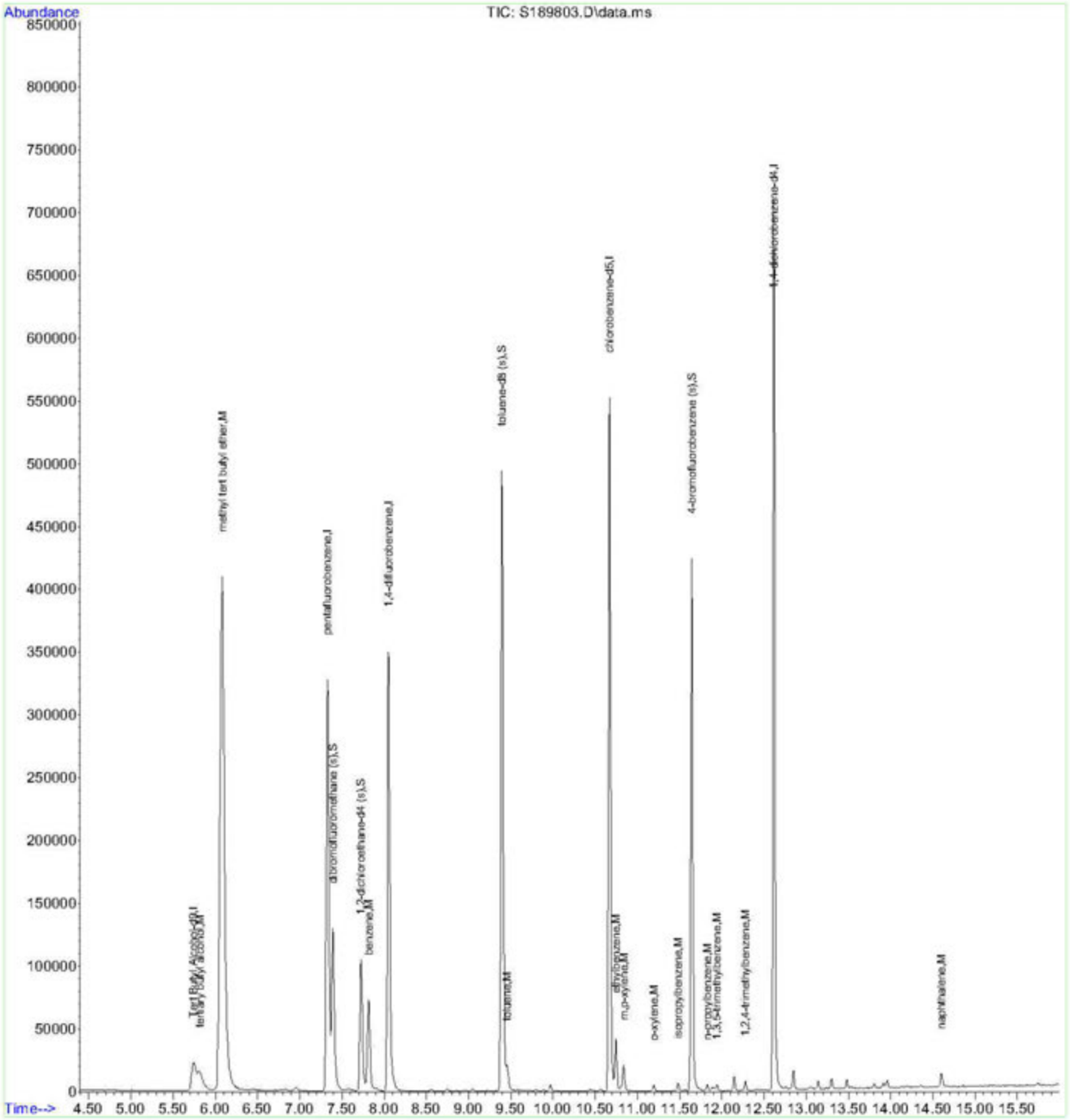
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Tert Butyl Alcohol-d9	5.738	65	61479	500.00 ug/L	0.00
3) pentafluorobenzene	7.328	168	287165	50.00 ug/L	0.00
9) 1,4-difluorobenzene	8.050	114	331703	50.00 ug/L	0.00
15) chlorobenzene-d5	10.670	117	315686	50.00 ug/L	0.00
21) 1,4-dichlorobenzene-d4	12.616	152	182101	50.00 ug/L	0.00
System Monitoring Compounds					
7) dibromofluoromethane (s)	7.391	113	85516	48.45 ug/L	0.00
Spiked Amount 50.000	Range 79 - 120		Recovery = 96.90%		
8) 1,2-dichloroethane-d4 (s)	7.726	65	79771	44.56 ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 89.12%		
13) toluene-d8 (s)	9.394	98	355374	52.03 ug/L	0.00
Spiked Amount 50.000	Range 78 - 119		Recovery = 104.06%		
23) 4-bromofluorobenzene (s)	11.643	95	137212	46.64 ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery = 93.28%		
Target Compounds					Qvalue
2) tertiary butyl alcohol	5.822	59	30456	220.89 ug/L	95
4) methyl tert butyl ether	6.084	73	769376	156.33 ug/L	98
10) benzene	7.815	78	73668	9.38 ug/L	99
14) toluene	9.457	92	6037	1.30 ug/L	96
18) ethylbenzene	10.744	91	28126	2.91 ug/L	98
19) m,p-xylene	10.838	106	6375	1.73 ug/L	90
20) o-xylene	11.193	106	1339	0.36 ug/L	90
22) isopropylbenzene	11.481	105	3727	0.39 ug/L	98
24) n-propylbenzene	11.831	120	920	0.36 ug/L	95
25) 1,3,5-trimethylbenzene	11.947	105	2723	0.33 ug/L	98
27) 1,2,4-trimethylbenzene	12.276	105	4341	0.50 ug/L	97
34) naphthalene	14.603	128	10558	2.08 ug/L	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

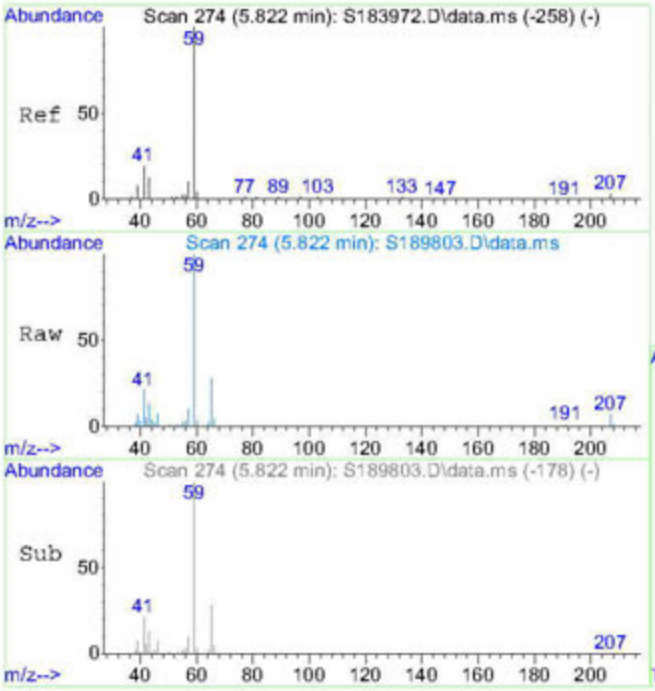
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\S core\vs7786\
Data File : S189803.D
Acq On : 26 Nov 2014 6:57 pm
Operator : viannac
Sample : jb82226-1
Misc : MS77398,VS7786,5,,,,50
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Dec 01 11:03:39 2014
Quant Method : C:\MSDCHEM\1\METHODS\MS7633.M
Quant Title : Method 8260, ZB624 60mX0.25mmX1.4um
QLast Update : Fri Aug 01 12:03:24 2014
Response via : Initial Calibration



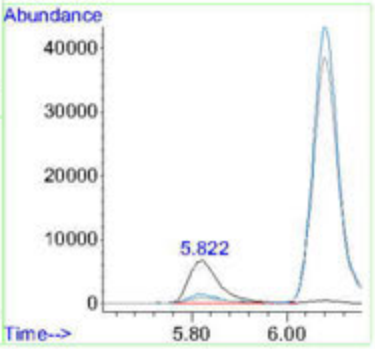
MS7633.M Mon Dec 01 11:07:44 2014 ACC-VOA-DP

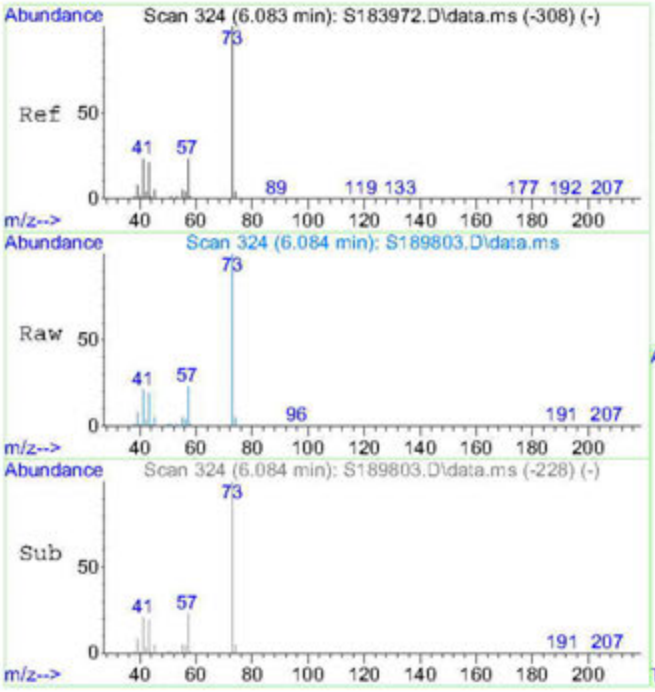


#2
tertiary butyl alcohol
Concen: 220.89 ug/L
RT: 5.822 min Scan# 274
Delta R.T. 0.000 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion: 59 Resp: 30456

Ion	Ratio	Lower	Upper
59	100		
41	21.2	0.0	48.5
43	12.7	0.0	44.4

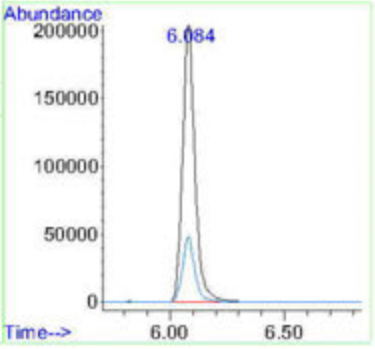


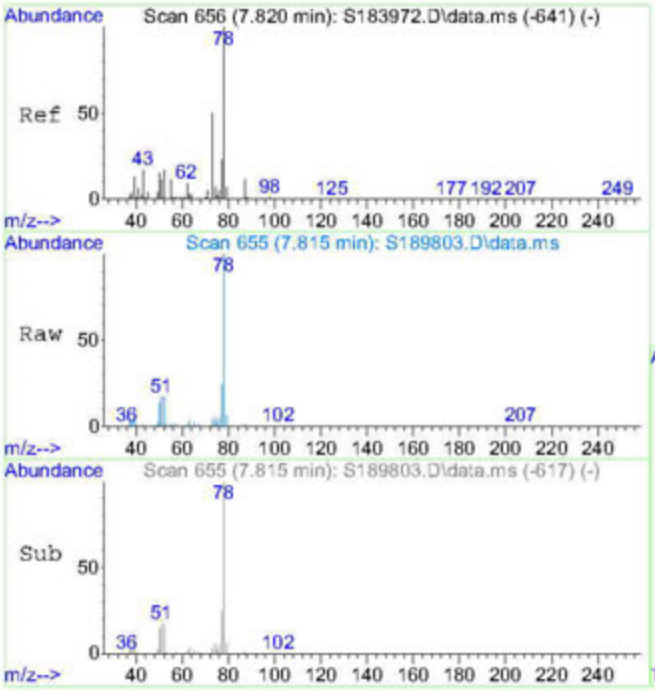


#4
methyl tert butyl ether
Concen: 156.33 ug/L
RT: 6.084 min Scan# 324
Delta R.T. -0.000 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion: 73 Resp: 769376

Ion	Ratio	Lower	Upper
73	100		
57	23.3	0.0	52.2

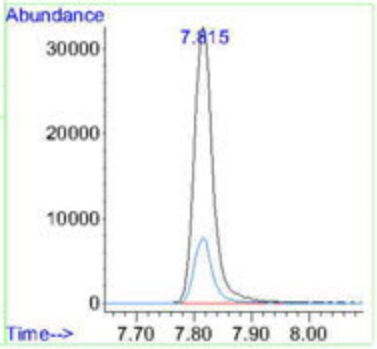


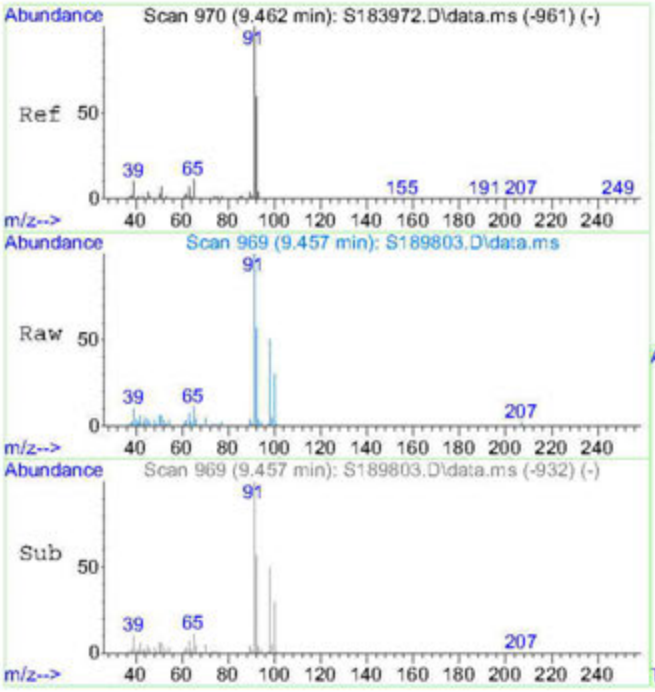


#10
benzene
Concen: 9.38 ug/L
RT: 7.815 min Scan# 655
Delta R.T. 0.000 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion: 78 Resp: 73668

Ion	Ratio	Lower	Upper
78	100		
77	23.7	0.0	53.4

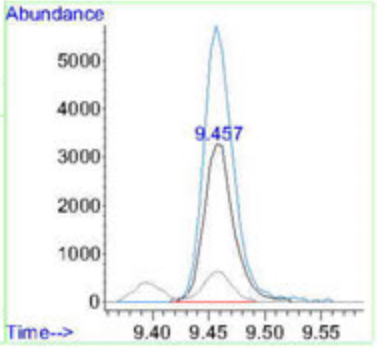


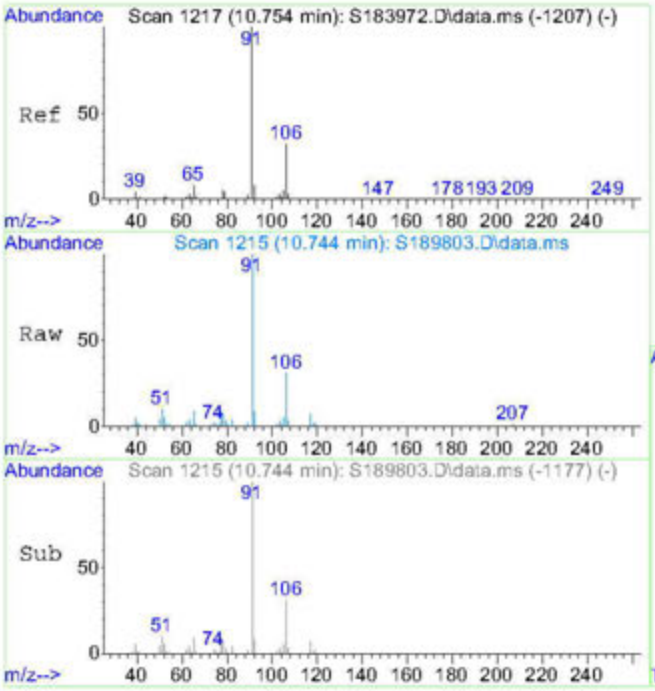


#14
toluene
Concen: 1.30 ug/L
RT: 9.457 min Scan# 969
Delta R.T. -0.004 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion: 92 Resp: 6037

Ion	Ratio	Lower	Upper
92	100		
91	176.1	140.8	200.8
65	19.6	0.0	49.1

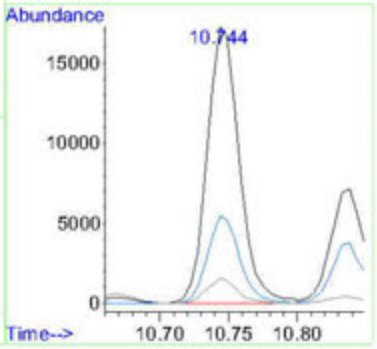


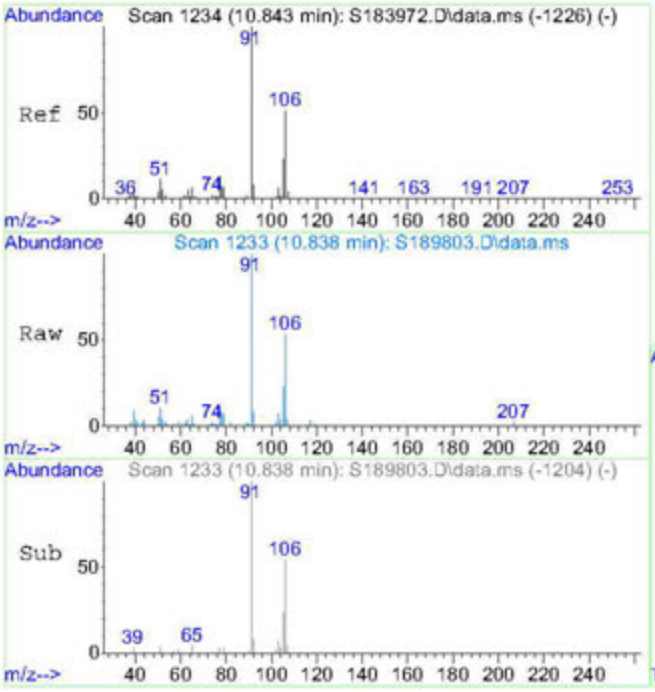


#18
ethylbenzene
Concen: 2.91 ug/L
RT: 10.744 min Scan# 1215
Delta R.T. -0.004 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion: 91 Resp: 28126

Ion	Ratio	Lower	Upper
91	100		
106	31.5	0.5	60.5
65	9.0	0.0	38.4

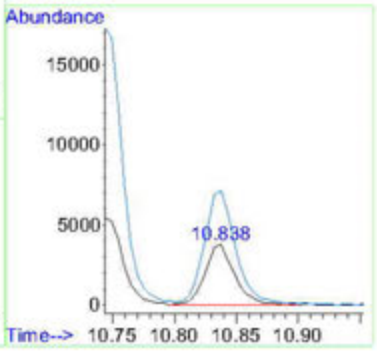


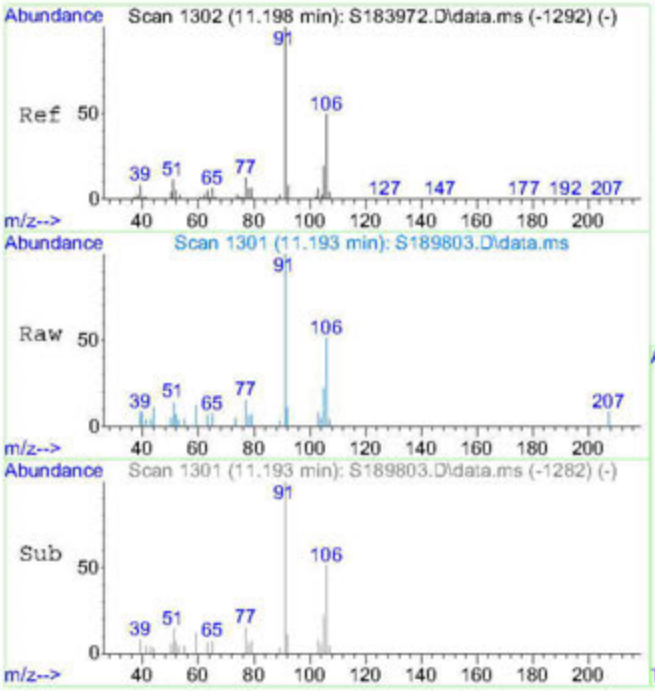


#19
m,p-xylene
Concen: 1.73 ug/L
RT: 10.838 min Scan# 1233
Delta R.T. 0.001 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion:106 Resp: 6375

Ion	Ratio	Lower	Upper
106	100		
91	184.4	169.4	229.4

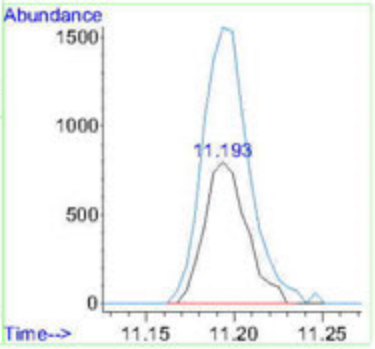


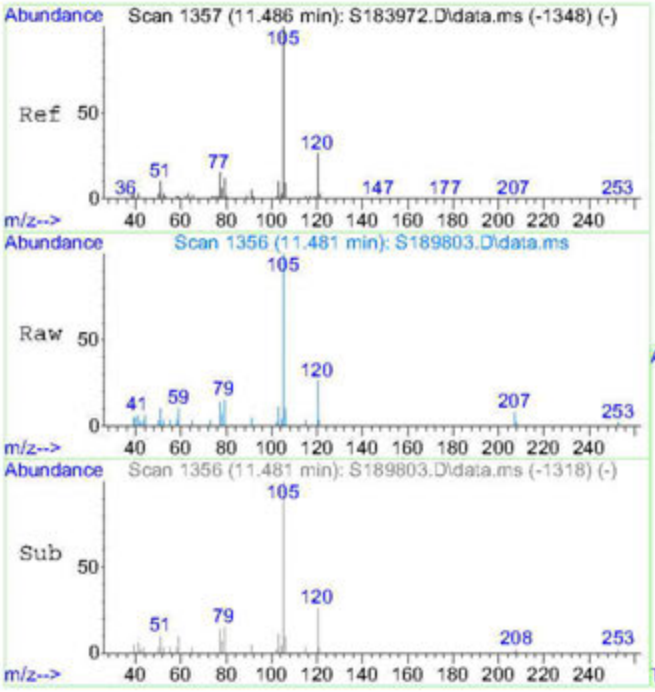


#20
o-xylene
Concen: 0.36 ug/L
RT: 11.193 min Scan# 1301
Delta R.T. 0.002 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion:106 Resp: 1339

Ion	Ratio	Lower	Upper
106	100		
91	196.0	182.4	242.4

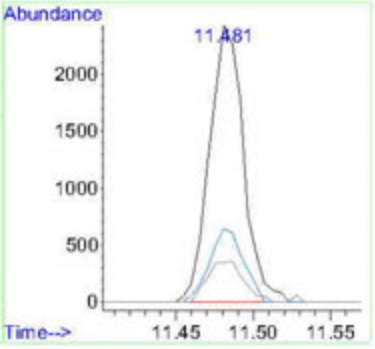


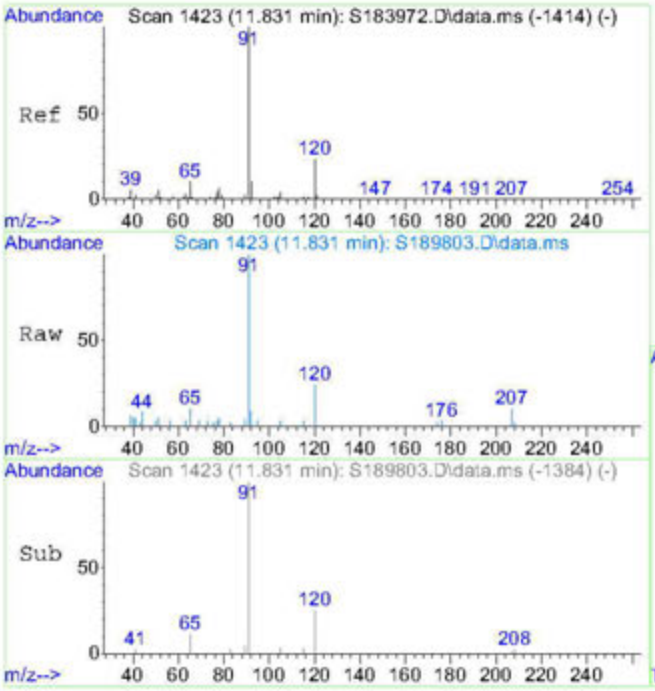


#22
isopropylbenzene
Concen: 0.39 ug/L
RT: 11.481 min Scan# 1356
Delta R.T. -0.003 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion:105 Resp: 3727

Ion	Ratio	Lower	Upper
105	100		
120	26.4	0.0	55.4
77	14.1	0.0	45.1

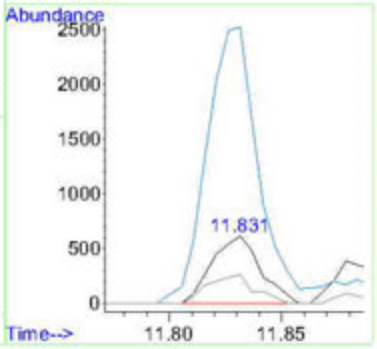


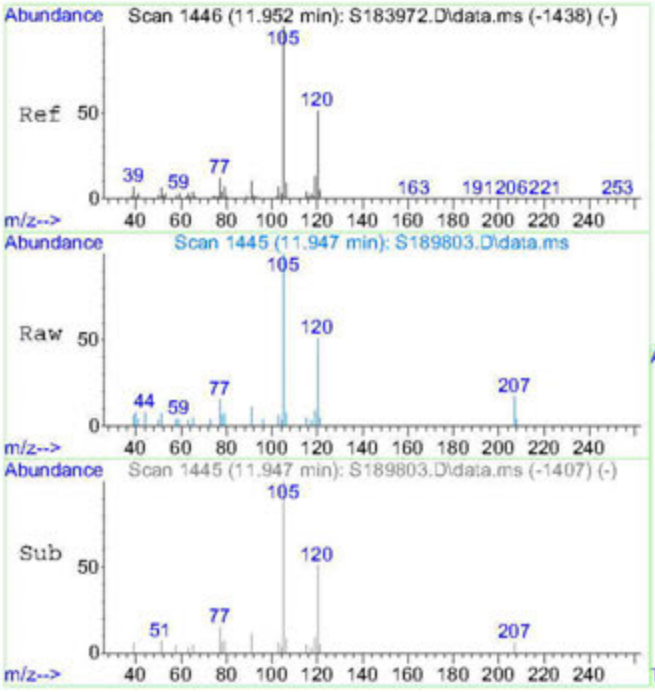


#24
n-propylbenzene
Concen: 0.36 ug/L
RT: 11.831 min Scan# 1423
Delta R.T. 0.002 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion:120 Resp: 920

Ion	Ratio	Lower	Upper
120	100		
91	438.4	430.2	470.2
65	41.0	25.0	65.0

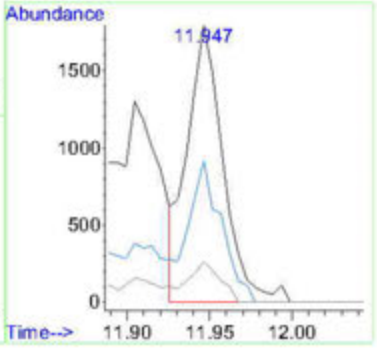


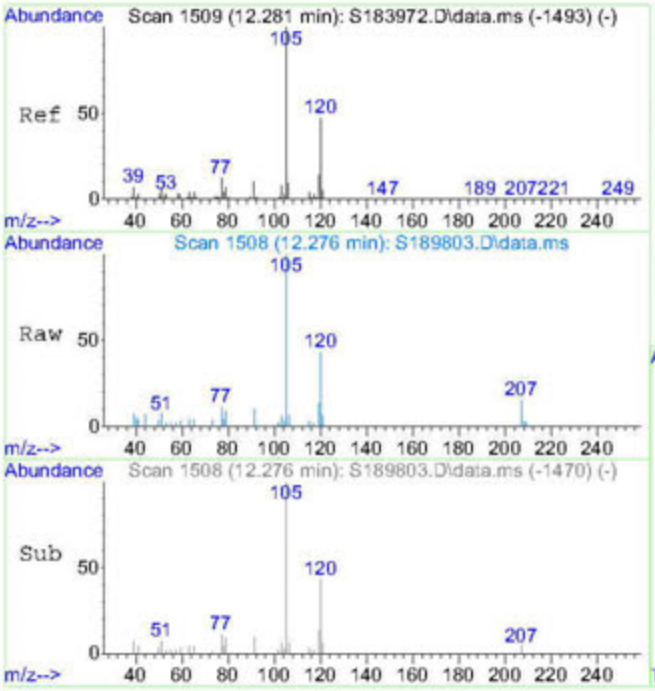


#25
1,3,5-trimethylbenzene
Concen: 0.33 ug/L
RT: 11.947 min Scan# 1445
Delta R.T. -0.003 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion:105 Resp: 2723

Ion	Ratio	Lower	Upper
105	100		
120	50.8	21.3	81.3
77	14.6	0.0	41.8

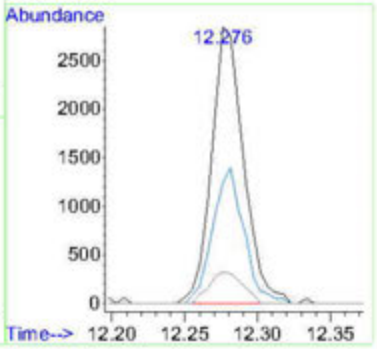


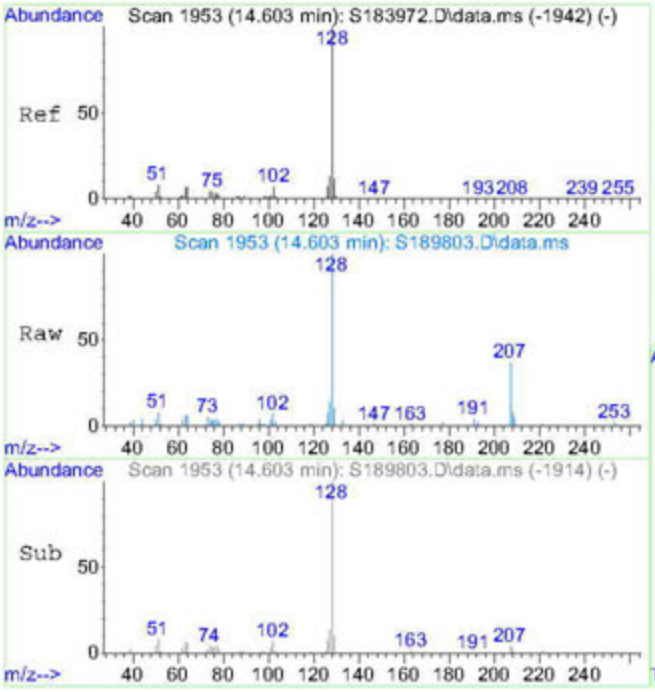


#27
1,2,4-trimethylbenzene
Concen: 0.50 ug/L
RT: 12.276 min Scan# 1508
Delta R.T. -0.003 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion:105 Resp: 4341

Ion	Ratio	Lower	Upper
105	100		
120	43.4	15.9	75.9
77	11.4	0.0	42.1

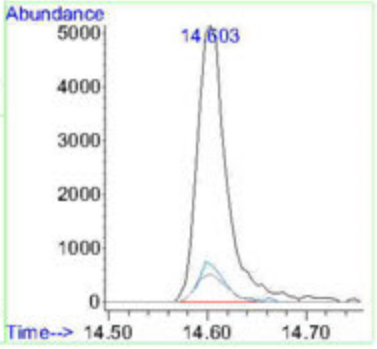




#34
naphthalene
Concen: 2.08 ug/L
RT: 14.603 min Scan# 1953
Delta R.T. 0.003 min
Lab File: S189803.D
Acq: 26 Nov 2014 6:57 pm

Tgt Ion:128 Resp: 10558

Ion	Ratio	Lower	Upper
128	100		
127	13.5	0.0	42.9
129	10.2	0.0	40.9



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2D\v2d5853-5854\
Data File : 2d139667.D
Acq On : 24 Nov 2014 9:54 pm
Operator : BridgetK
Sample : jb82226-2
Misc : ms77398,v2d5853,w,,,,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Nov 25 10:08:51 2014
Quant Method : C:\MSDCHEM\1\METHODS\M2D5849.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 24 14:30:18 2014
Response via : Initial Calibration

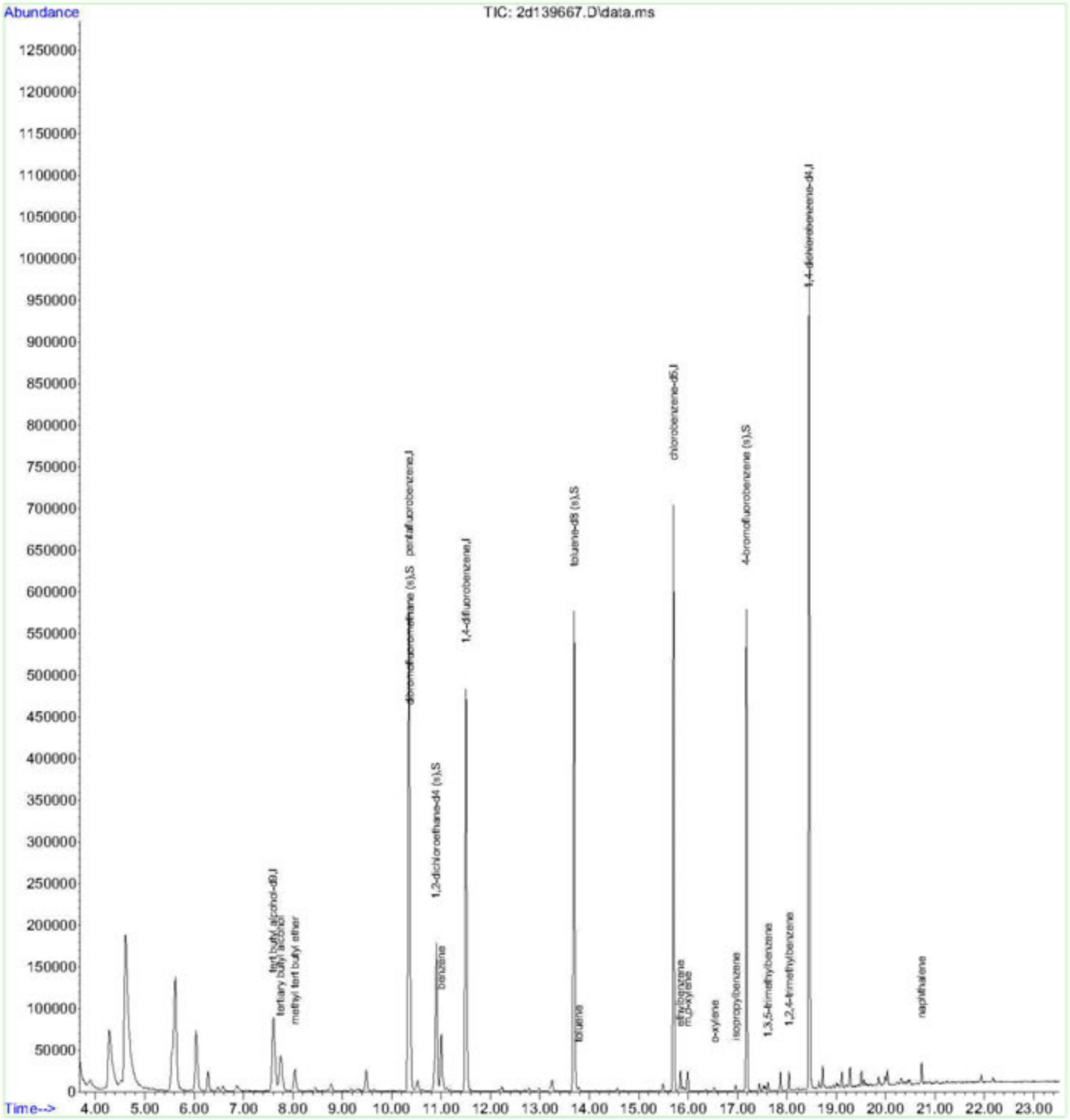
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert butyl alcohol-d9	7.601	65	150928	500.00	ug/L	0.01
5) pentafluorobenzene	10.349	168	466854	50.00	ug/L	0.02
63) 1,4-difluorobenzene	11.502	114	480458	50.00	ug/L	0.02
94) chlorobenzene-d5	15.702	117	426227	50.00	ug/L	0.01
109) 1,4-dichlorobenzene-d4	18.454	152	267142	50.00	ug/L	0.01
System Monitoring Compounds						
54) dibromofluoromethane (s)	10.364	113	132569	40.91	ug/L	0.02
Spiked Amount 50.000	Range 79 - 120		Recovery = 81.82%			
55) 1,2-dichloroethane-d4 (s)	10.904	65	152484	40.66	ug/L	0.02
Spiked Amount 50.000	Range 72 - 123		Recovery = 81.32%			
86) toluene-d8 (s)	13.694	98	438371	45.27	ug/L	0.02
Spiked Amount 50.000	Range 78 - 119		Recovery = 90.54%			
111) 4-bromofluorobenzene (s)	17.180	95	179754	42.32	ug/L	0.01
Spiked Amount 50.000	Range 74 - 119		Recovery = 84.64%			
Target Compounds						Qvalue
2) tertiary butyl alcohol	7.737	59	43712	127.23	ug/L	61
37) methyl tert butyl ether	8.042	73	19248	2.25	ug/L #	1
70) benzene	11.004	78	71359	6.79	ug/L	99
88) toluene	13.793	92	1868	0.29	ug/L	90
104) ethylbenzene	15.848	91	19835	1.61	ug/L	97
105) m,p-xylene	15.990	106	7343	1.59	ug/L	94
106) o-xylene	16.530	106	1231	0.26	ug/L	98
110) isopropylbenzene	16.965	105	4479	0.32	ug/L	96
121) 1,3,5-trimethylbenzene	17.621	105	5528	0.47	ug/L	93
124) 1,2,4-trimethylbenzene	18.045	105	11440	0.99	ug/L	99
138) naphthalene	20.730	128	20449	1.52	ug/L	98

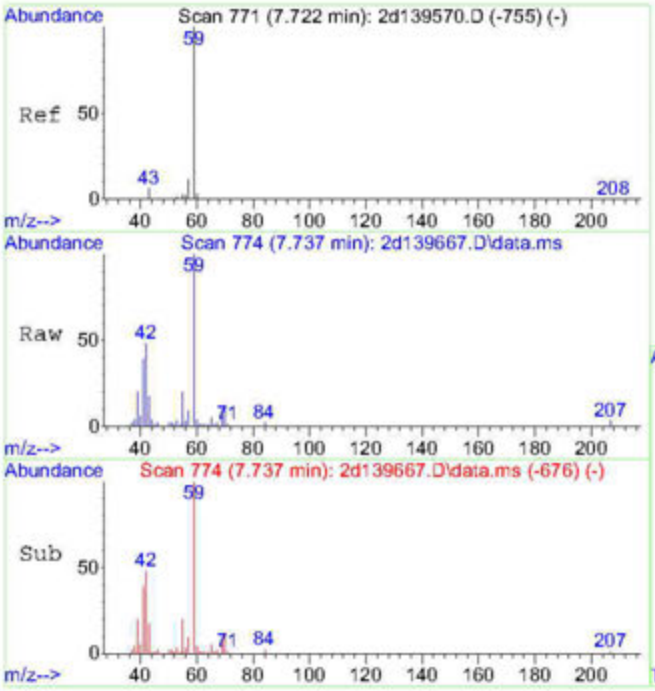
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2D\v2d5853-5854\
Data File : 2d139667.D
Acq On : 24 Nov 2014 9:54 pm
Operator : BridgetK
Sample : jb82226-2
Misc : ms77398,v2d5853,w,,,,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Nov 25 10:08:51 2014
Quant Method : C:\MSDCHEM\1\METHODS\M2D5849.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 24 14:30:18 2014
Response via : Initial Calibration

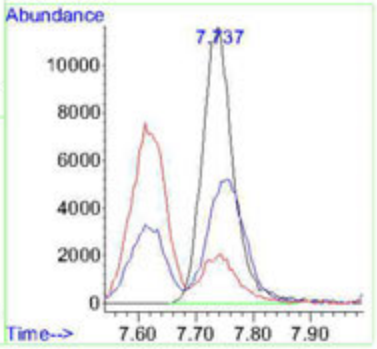


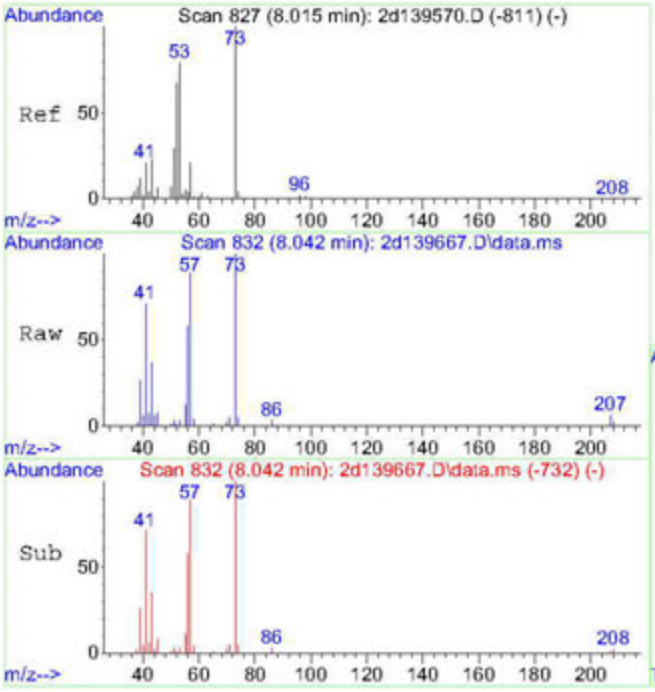


#2
tertiary butyl alcohol
Concen: 127.23 ug/L
RT: 7.737 min Scan# 774
Delta R.T. 0.016 min
Lab File: 2d139667.D
Acq: 24 Nov 2014 9:54 pm

Tgt Ion: 59 Resp: 43712

Ion	Ratio	Lower	Upper
59	100		
41	32.6	0.0	41.0
43	3.1	0.0	41.8

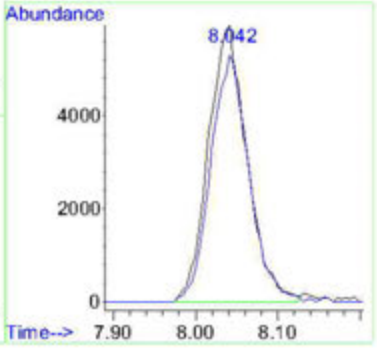


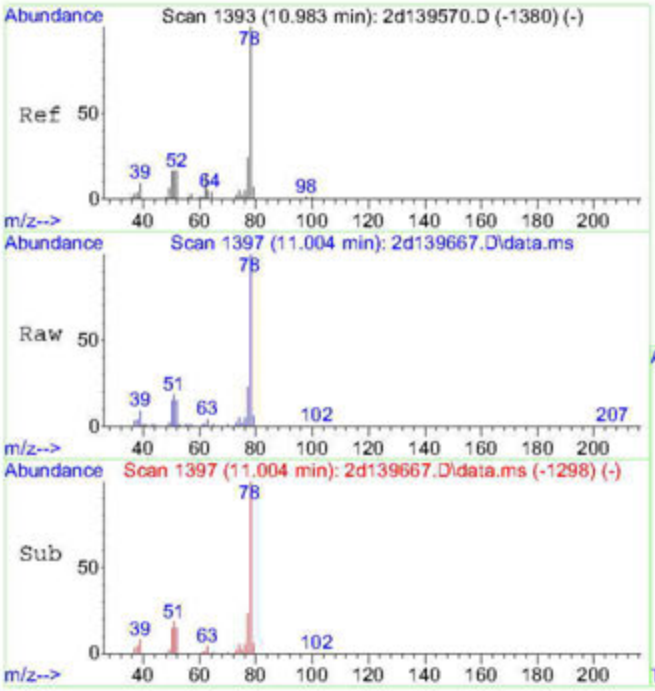


#37
methyl tert butyl ether
Concen: 2.25 ug/L
RT: 8.042 min Scan# 832
Delta R.T. 0.026 min
Lab File: 2d139667.D
Acq: 24 Nov 2014 9:54 pm

Tgt Ion: 73 Resp: 19248

Ion	Ratio	Lower	Upper
73	100		
57	89.0	0.0	51.4#

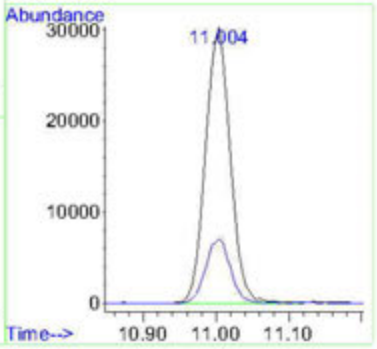


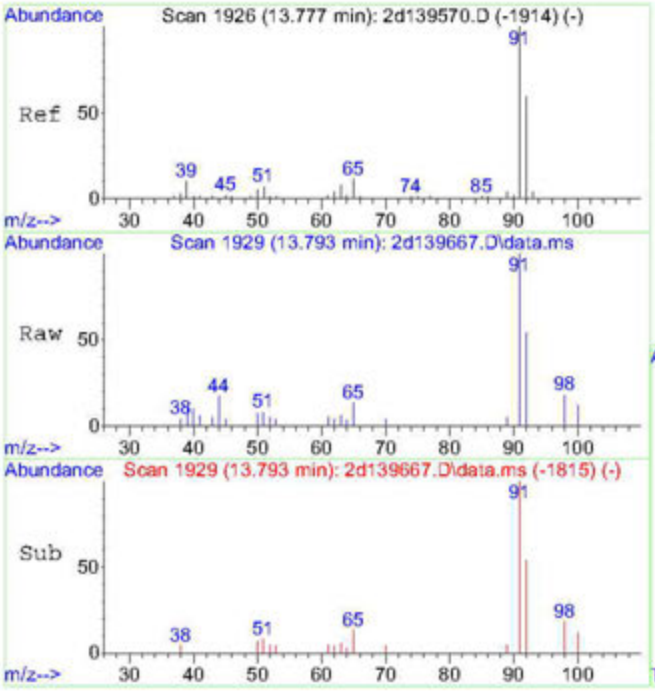


#70
benzene
Concen: 6.79 ug/L
RT: 11.004 min Scan# 1397
Delta R.T. 0.021 min
Lab File: 2d139667.D
Acq: 24 Nov 2014 9:54 pm

Tgt Ion: 78 Resp: 71359

Ion	Ratio	Lower	Upper
78	100		
77	23.2	0.0	53.7

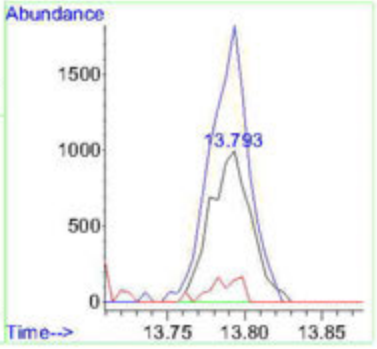


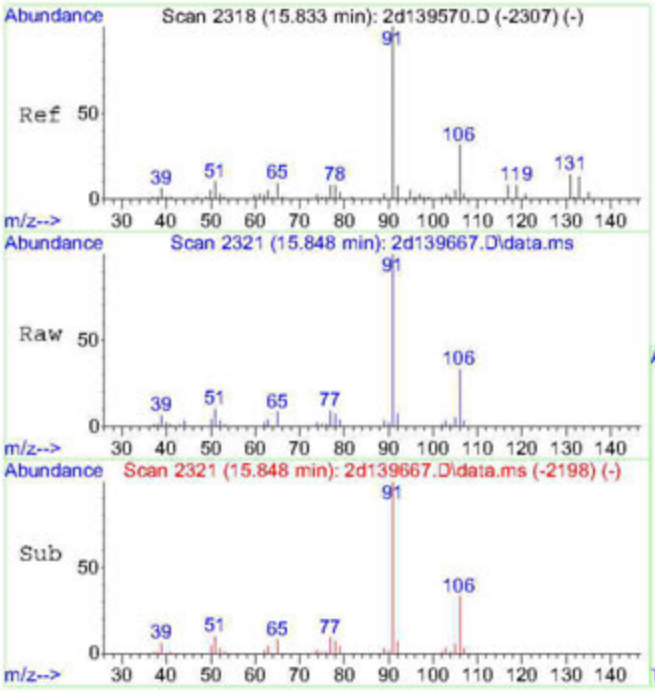


#88
toluene
Concen: 0.29 ug/L
RT: 13.793 min Scan# 1929
Delta R.T. 0.016 min
Lab File: 2d139667.D
Acq: 24 Nov 2014 9:54 pm

Tgt Ion: 92 Resp: 1868

Ion	Ratio	Lower	Upper
92	100		
91	183.8	140.7	200.7
51	15.0	0.0	41.4

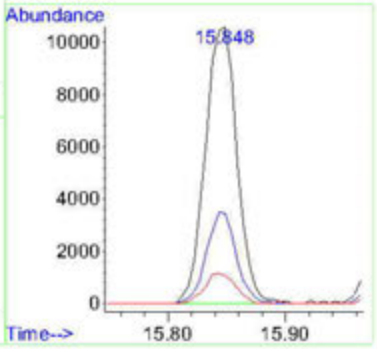


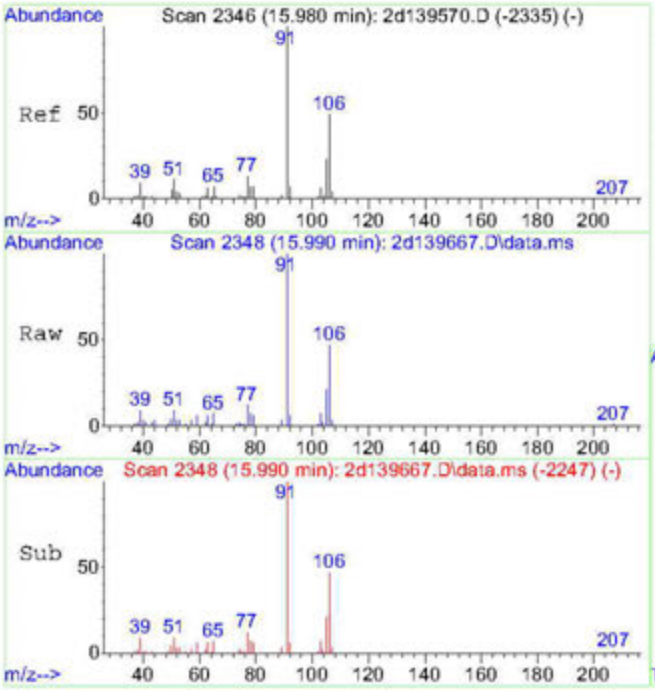


#104
ethylbenzene
Concen: 1.61 ug/L
RT: 15.848 min Scan# 2321
Delta R.T. 0.016 min
Lab File: 2d139667.D
Acq: 24 Nov 2014 9:54 pm

Tgt Ion: 91 Resp: 19835

Ion	Ratio	Lower	Upper
91	100		
106	32.6	0.8	60.8
51	10.2	0.0	40.3

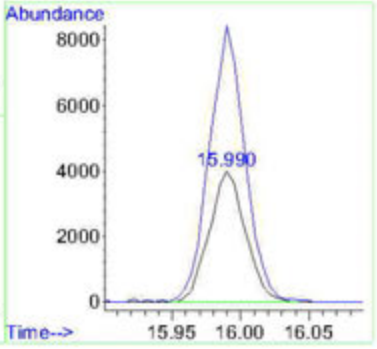


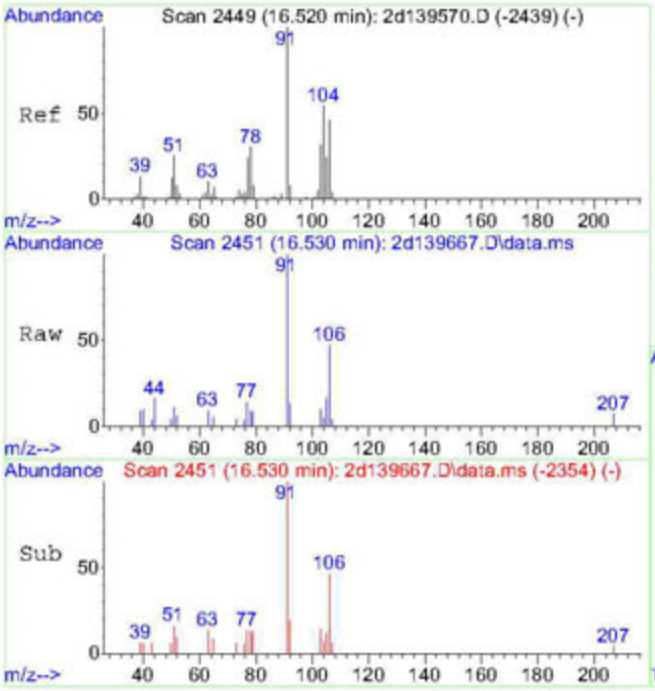


#105
m,p-xylene
Concen: 1.59 ug/L
RT: 15.990 min Scan# 2348
Delta R.T. 0.010 min
Lab File: 2d139667.D
Acq: 24 Nov 2014 9:54 pm

Tgt Ion:106 Resp: 7343

Ion	Ratio	Lower	Upper
106	100		
91	211.8	172.5	232.5

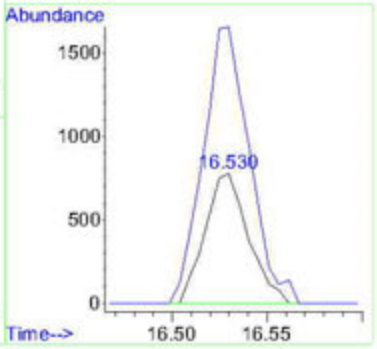


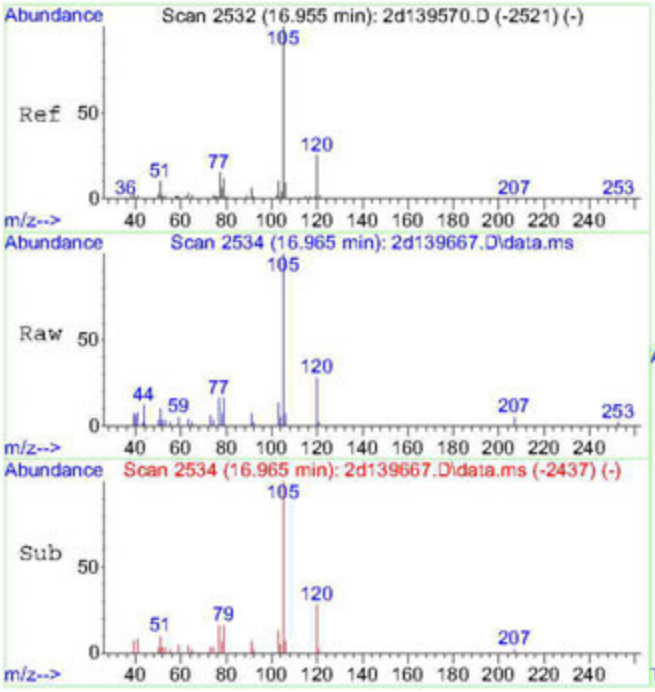


#106
o-xylene
Concen: 0.26 ug/L
RT: 16.530 min Scan# 2451
Delta R.T. 0.010 min
Lab File: 2d139667.D
Acq: 24 Nov 2014 9:54 pm

Tgt Ion:106 Resp: 1231

Ion	Ratio	Lower	Upper
106	100		
91	213.1	185.6	245.6

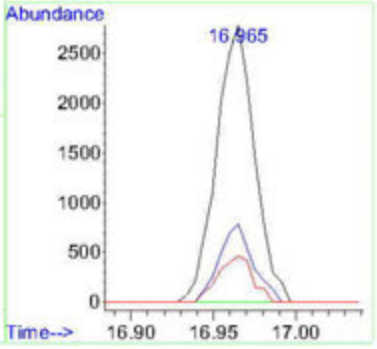




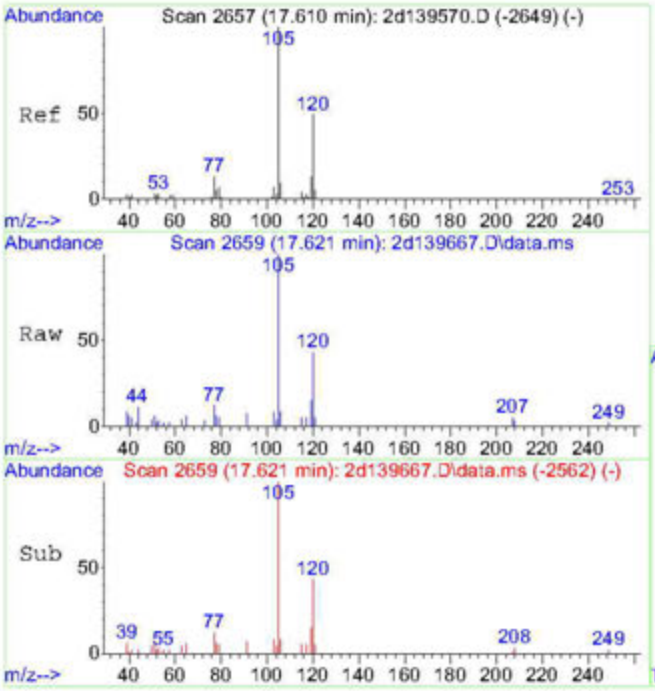
#110
isopropylbenzene
Concen: 0.32 ug/L
RT: 16.965 min Scan# 2534
Delta R.T. 0.010 min
Lab File: 2d139667.D
Acq: 24 Nov 2014 9:54 pm

Tgt Ion:105 Resp: 4479

Ion	Ratio	Lower	Upper
105	100		
120	28.1	0.0	55.5
77	16.5	0.0	45.3



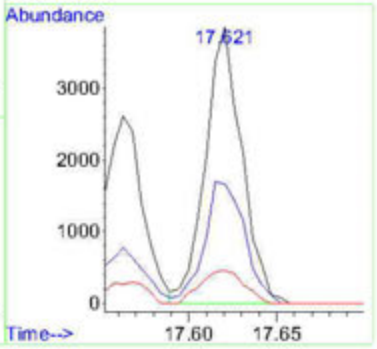
7.1.2
7

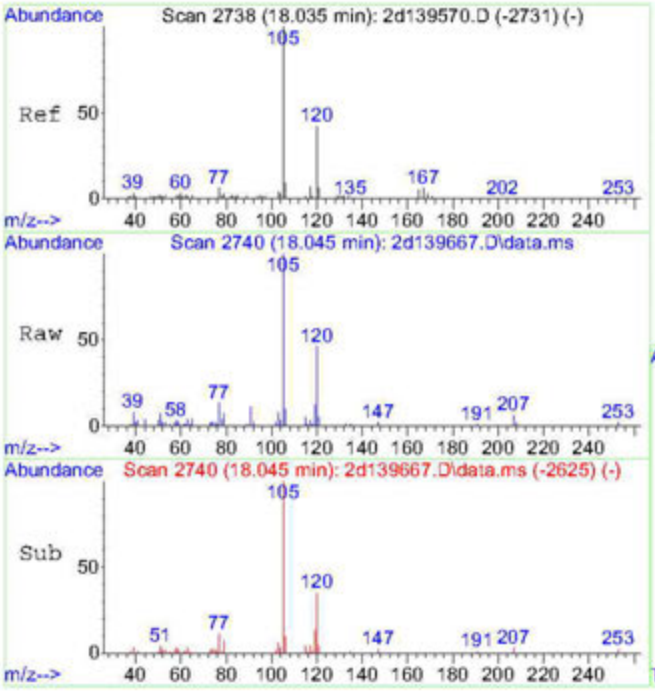


#121
1,3,5-trimethylbenzene
Concen: 0.47 ug/L
RT: 17.621 min Scan# 2659
Delta R.T. 0.010 min
Lab File: 2d139667.D
Acq: 24 Nov 2014 9:54 pm

Tgt Ion:105 Resp: 5528

Ion	Ratio	Lower	Upper
105	100		
120	43.1	18.8	78.8
77	11.7	0.0	42.6

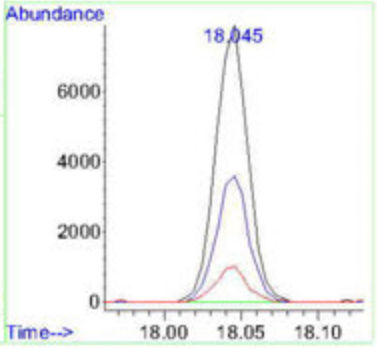


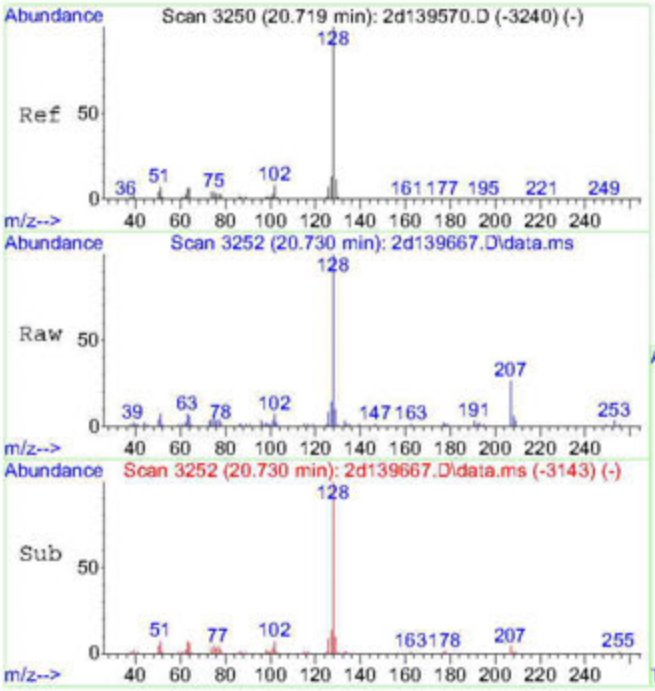


#124
1,2,4-trimethylbenzene
Concen: 0.99 ug/L
RT: 18.045 min Scan# 2740
Delta R.T. 0.010 min
Lab File: 2d139667.D
Acq: 24 Nov 2014 9:54 pm

Tgt Ion:105 Resp: 11440

Ion	Ratio	Lower	Upper
105	100		
120	45.6	16.4	76.4
77	12.9	0.0	41.9

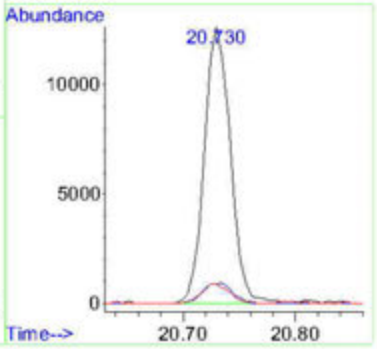




#138
naphthalene
Concen: 1.52 ug/L
RT: 20.730 min Scan# 3252
Delta R.T. 0.010 min
Lab File: 2d139667.D
Acq: 24 Nov 2014 9:54 pm

Tgt Ion:128 Resp: 20449

Ion	Ratio	Lower	Upper
128	100		
102	7.1	0.0	38.2
51	7.2	0.0	37.2



7.1.2
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\S core\vs7786\
Data File : S189801.D
Acq On : 26 Nov 2014 6:14 pm
Operator : viannac
Sample : jb82226-3
Misc : MS77398,VS7786,5,,,,4
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Dec 01 11:02:35 2014
Quant Method : C:\MSDCHEM\1\METHODS\MS7633.M
Quant Title : Method 8260, ZB624 60mX0.25mmX1.4um
QLast Update : Fri Aug 01 12:03:24 2014
Response via : Initial Calibration

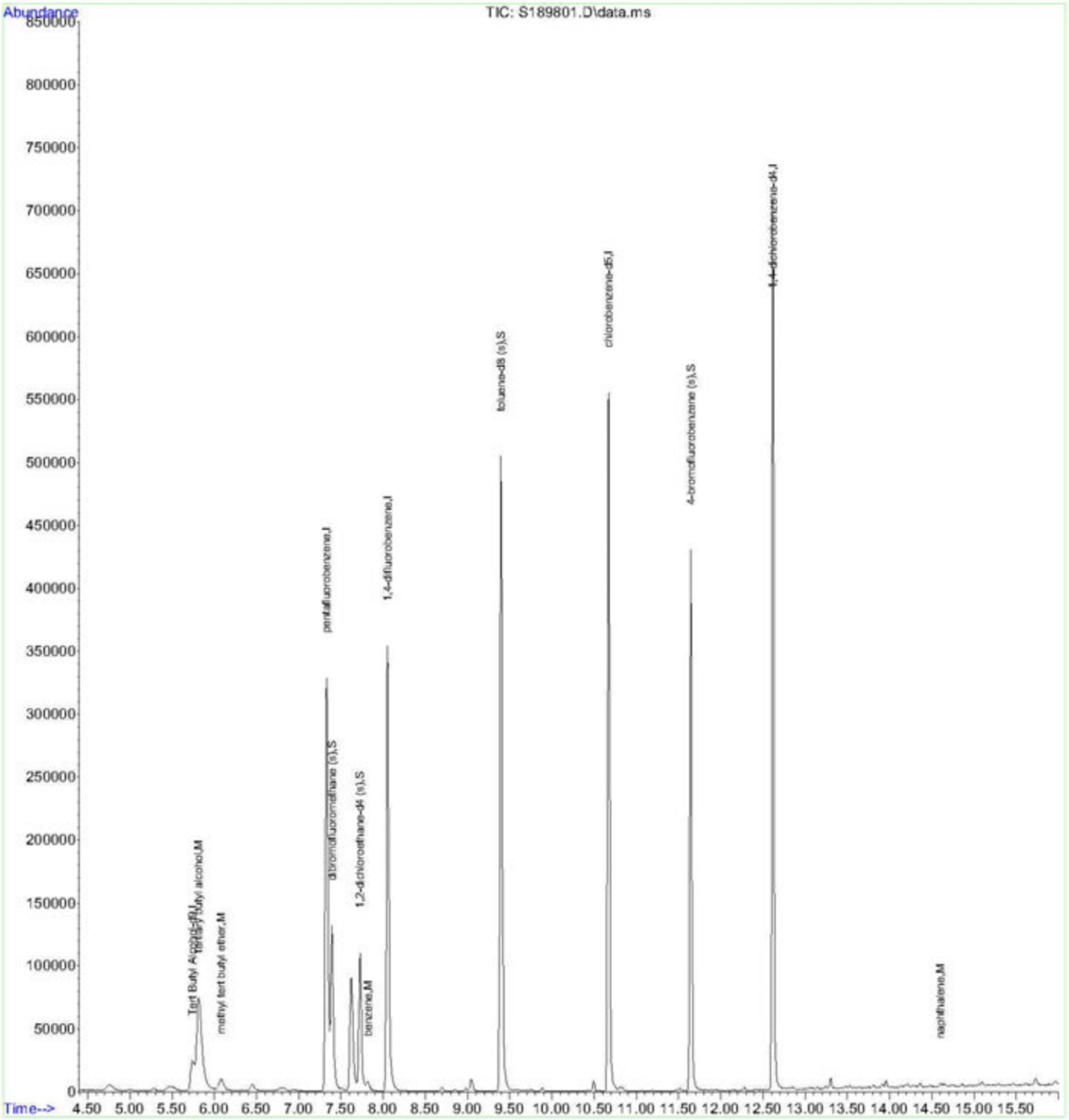
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	5.739	65	63064	500.00	ug/L	0.00
3) pentafluorobenzene	7.329	168	289787	50.00	ug/L	0.00
9) 1,4-difluorobenzene	8.051	114	336307	50.00	ug/L	0.00
15) chlorobenzene-d5	10.671	117	325209	50.00	ug/L	0.00
21) 1,4-dichlorobenzene-d4	12.617	152	188180	50.00	ug/L	0.00
System Monitoring Compounds						
7) dibromofluoromethane (s)	7.392	113	87971	49.39	ug/L	0.00
Spiked Amount 50.000	Range 79 - 120		Recovery = 98.78%			
8) 1,2-dichloroethane-d4 (s)	7.727	65	81565	45.15	ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 90.30%			
13) toluene-d8 (s)	9.395	98	362194	52.30	ug/L	0.00
Spiked Amount 50.000	Range 78 - 119		Recovery = 104.60%			
23) 4-bromofluorobenzene (s)	11.644	95	141705	46.61	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery = 93.22%			
Target Compounds						Qvalue
2) tertiary butyl alcohol	5.813	59	185305	1310.20	ug/L	97
4) methyl tert butyl ether	6.079	73	16094	3.24	ug/L	98
10) benzene	7.816	78	2674	0.34	ug/L	93
34) naphthalene	14.605	128	2224	0.42	ug/L	99

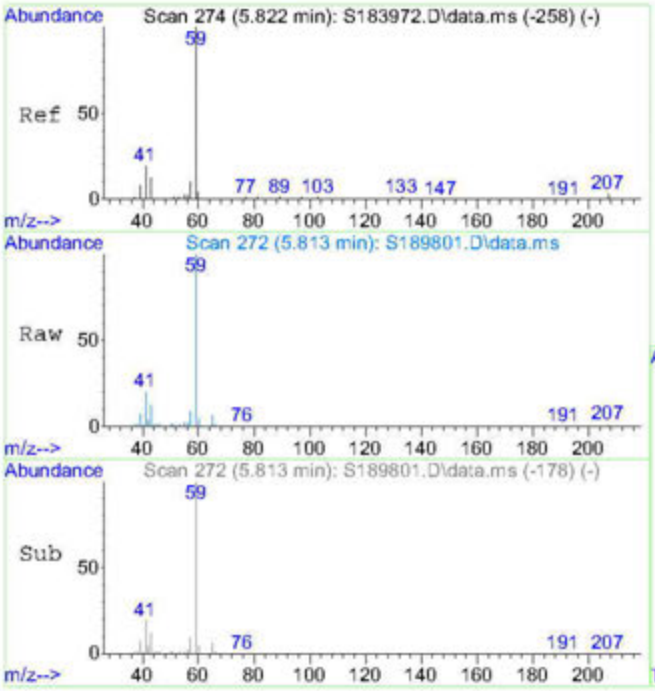
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\S core\vs7786\
Data File : S189801.D
Acq On : 26 Nov 2014 6:14 pm
Operator : viannac
Sample : jb82226-3
Misc : MS77398,VS7786,5,,,,4
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Dec 01 11:02:35 2014
Quant Method : C:\MSDCHEM\1\METHODS\MS7633.M
Quant Title : Method 8260, ZB624 60mX0.25mmX1.4um
QLast Update : Fri Aug 01 12:03:24 2014
Response via : Initial Calibration

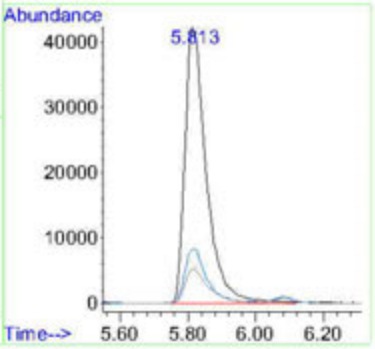


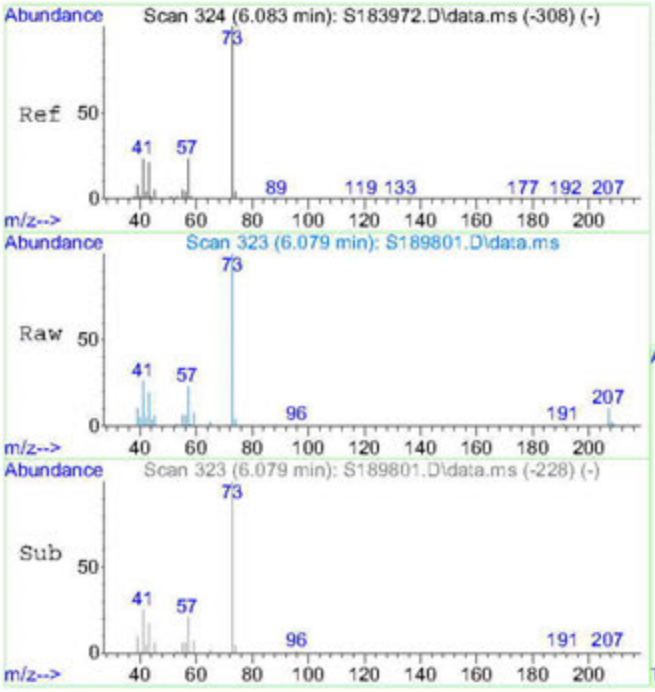


#2
tertiary butyl alcohol
Concen: 1310.20 ug/L
RT: 5.813 min Scan# 272
Delta R.T. -0.009 min
Lab File: S189801.D
Acq: 26 Nov 2014 6:14 pm

Tgt Ion: 59 Resp: 185305

Ion	Ratio	Lower	Upper
59	100		
41	19.4	0.0	48.5
43	12.2	0.0	44.4

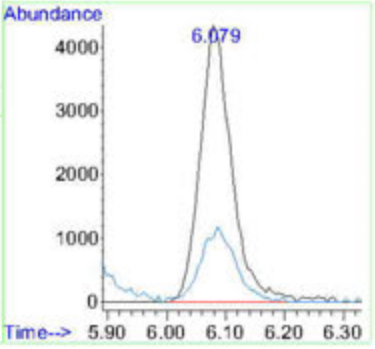


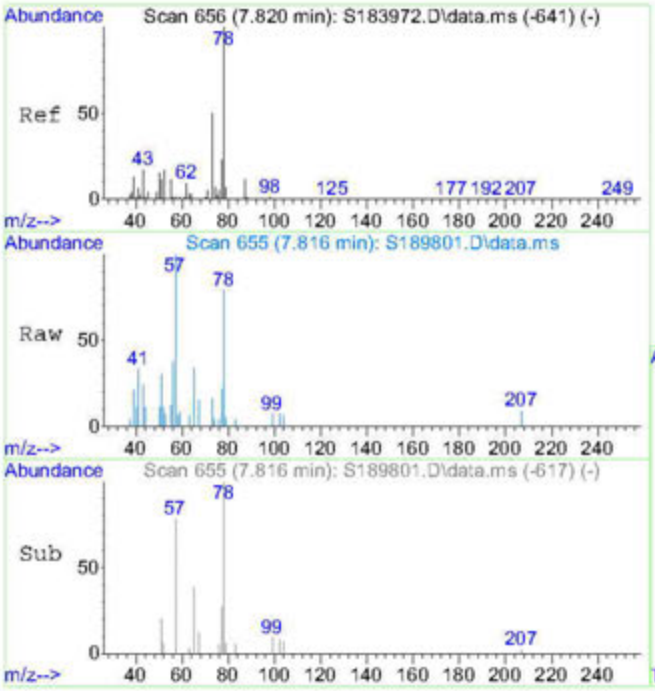


#4
methyl tert butyl ether
Concen: 3.24 ug/L
RT: 6.079 min Scan# 323
Delta R.T. -0.005 min
Lab File: S189801.D
Acq: 26 Nov 2014 6:14 pm

Tgt Ion: 73 Resp: 16094

Ion	Ratio	Lower	Upper
73	100		
57	23.0	0.0	52.2

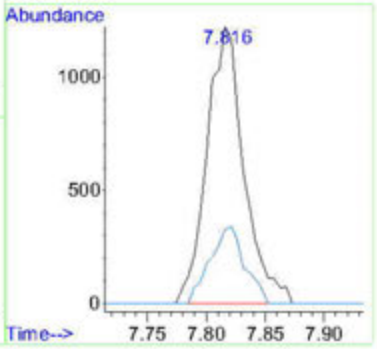


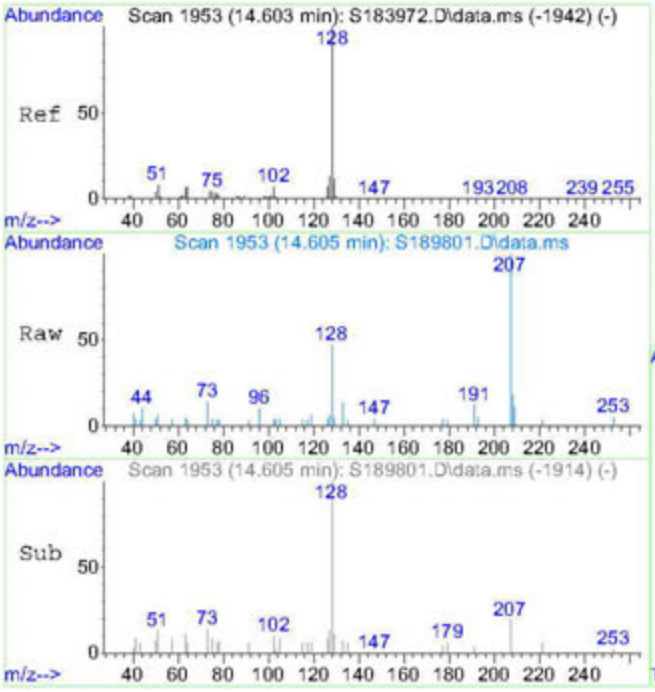


#10
benzene
Concen: 0.34 ug/L
RT: 7.816 min Scan# 655
Delta R.T. 0.001 min
Lab File: S189801.D
Acq: 26 Nov 2014 6:14 pm

Tgt Ion: 78 Resp: 2674

Ion	Ratio	Lower	Upper
78	100		
77	26.9	0.0	53.4

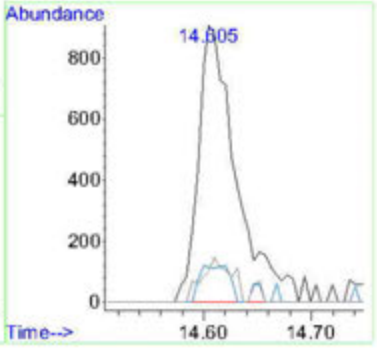




#34
naphthalene
Concen: 0.42 ug/L
RT: 14.605 min Scan# 1953
Delta R.T. 0.004 min
Lab File: S189801.D
Acq: 26 Nov 2014 6:14 pm

Tgt Ion:128 Resp: 2224

Ion	Ratio	Lower	Upper
128	100		
127	12.7	0.0	42.9
129	11.2	0.0	40.9



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\S core\vs7786\
Data File : S189802.D
Acq On : 26 Nov 2014 6:36 pm
Operator : viannac
Sample : jb82226-3
Misc : MS77398,VS7786,5,,,,40
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Nov 29 08:16:31 2014
Quant Method : C:\MSDCHEM\1\METHODS\MS7633.M
Quant Title : Method 8260, ZB624 60mX0.25mmX1.4um
QLast Update : Fri Aug 01 12:03:24 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	5.745	65	62663	500.00	ug/L	0.00
3) pentafluorobenzene	7.330	168	288205	50.00	ug/L	0.00
9) 1,4-difluorobenzene	8.052	114	335621	50.00	ug/L	0.00
15) chlorobenzene-d5	10.672	117	318417	50.00	ug/L	0.00
21) 1,4-dichlorobenzene-d4	12.618	152	184270	50.00	ug/L	0.00
System Monitoring Compounds						
7) dibromofluoromethane (s)	7.393	113	87198	49.22	ug/L	0.00
Spiked Amount 50.000	Range 79 - 120		Recovery = 98.44%			
8) 1,2-dichloroethane-d4 (s)	7.728	65	80654	44.89	ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 89.78%			
13) toluene-d8 (s)	9.396	98	359941	52.08	ug/L	0.00
Spiked Amount 50.000	Range 78 - 119		Recovery = 104.16%			
23) 4-bromofluorobenzene (s)	11.640	95	140024	47.04	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery = 94.08%			
Target Compounds						Qvalue
2) tertiary butyl alcohol	5.824	59	20593	146.53	ug/L	95
4) methyl tert butyl ether	6.085	73	1781	0.36	ug/L	85

(#) = qualifier out of range (m) = manual integration (+) = signals summed

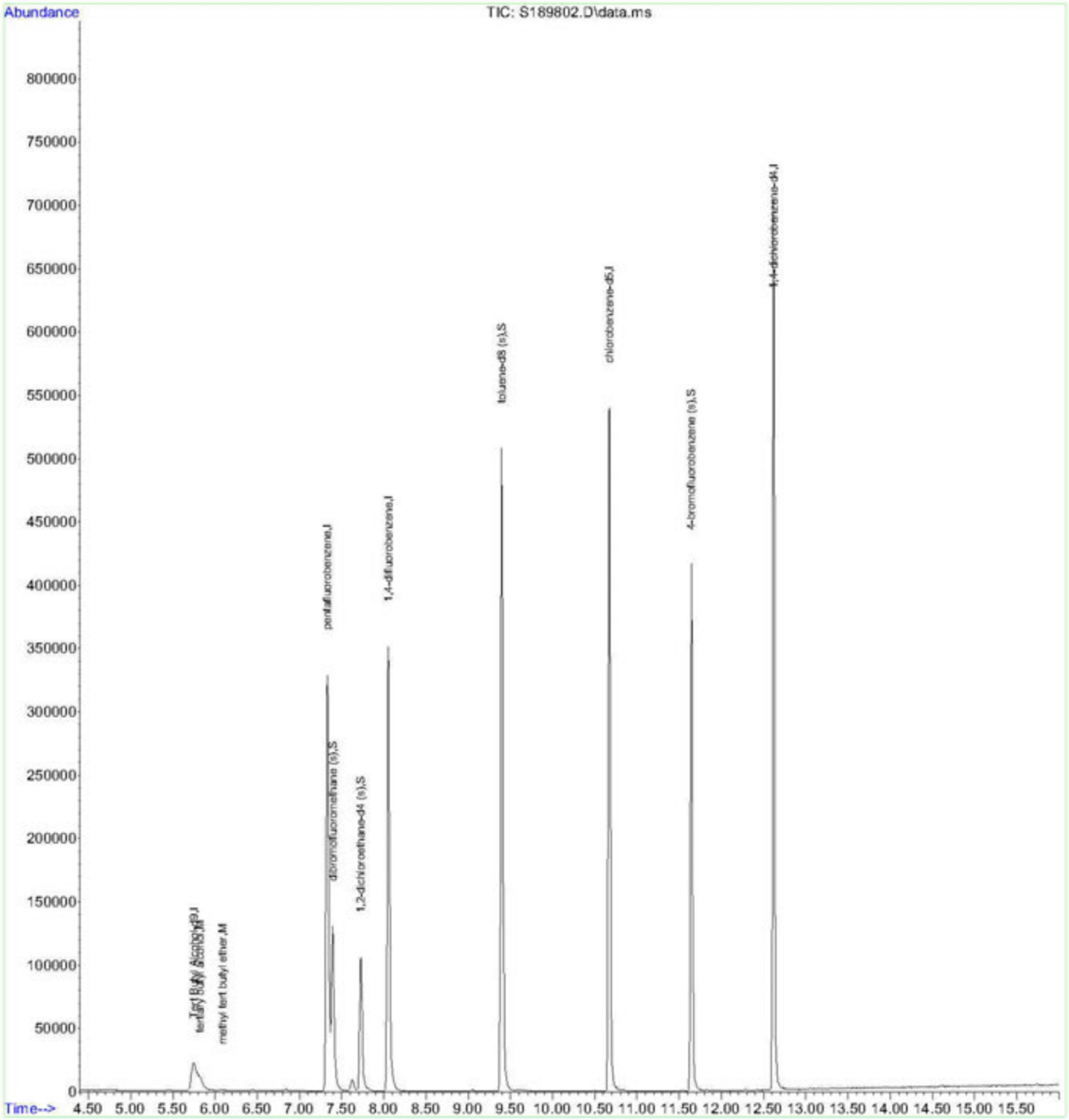
7.1.4

7

Quantitation Report (QT Reviewed)

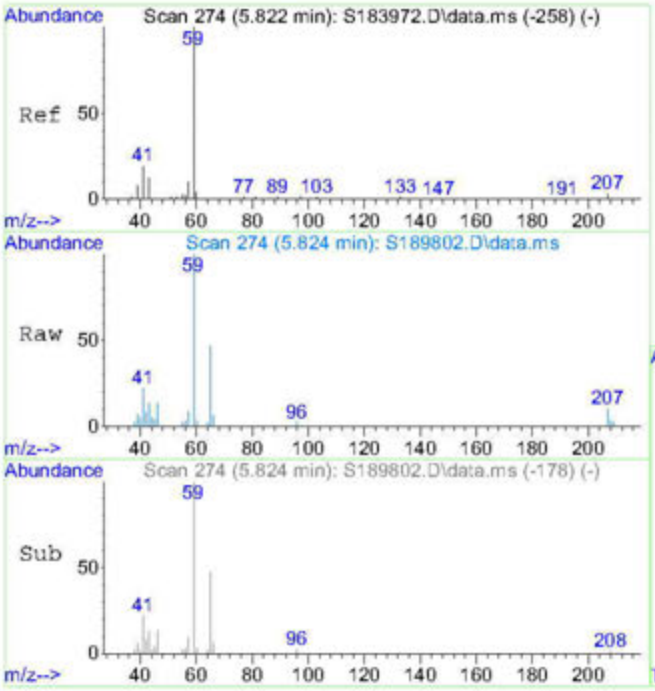
Data Path : C:\msdchem\1\DATA\S core\vs7786\
Data File : S189802.D
Acq On : 26 Nov 2014 6:36 pm
Operator : viannac
Sample : jb82226-3
Misc : MS77398,VS7786,5,,,,40
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Nov 29 08:16:31 2014
Quant Method : C:\MSDCHEM\1\METHODS\MS7633.M
Quant Title : Method 8260, ZB624 60mX0.25mmX1.4um
QLast Update : Fri Aug 01 12:03:24 2014
Response via : Initial Calibration



7.1.4

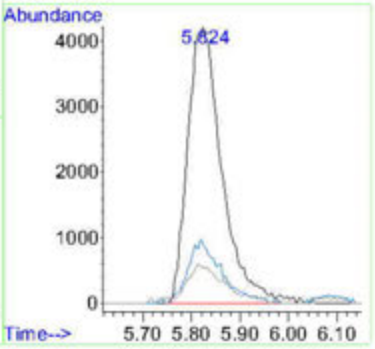
7

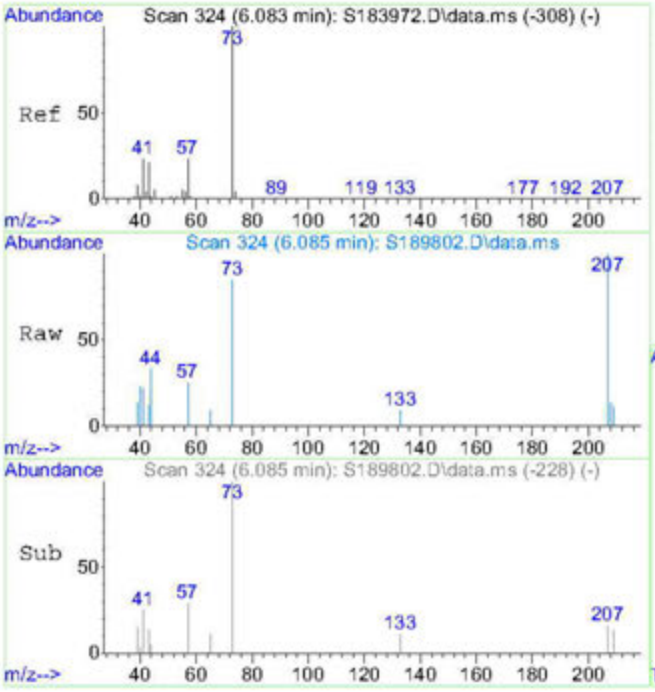


#2
tertiary butyl alcohol
Concen: 146.53 ug/L
RT: 5.824 min Scan# 274
Delta R.T. 0.002 min
Lab File: S189802.D
Acq: 26 Nov 2014 6:36 pm

Tgt Ion: 59 Resp: 20593

Ion	Ratio	Lower	Upper
59	100		
41	21.7	0.0	48.5
43	13.2	0.0	44.4

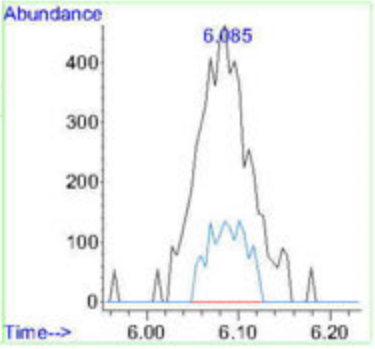




#4
methyl tert butyl ether
Concen: 0.36 ug/L
RT: 6.085 min Scan# 324
Delta R.T. 0.001 min
Lab File: S189802.D
Acq: 26 Nov 2014 6:36 pm

Tgt Ion: 73 Resp: 1781

Ion	Ratio	Lower	Upper
73	100		
57	29.2	0.0	52.2



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2D\v2d5853-5854\
Data File : 2d139666.D
Acq On : 24 Nov 2014 9:24 pm
Operator : BridgetK
Sample : jb82226-4
Misc : ms77398,v2d5853,w,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Nov 25 10:08:11 2014
Quant Method : C:\MSDCHEM\1\METHODS\M2D5849.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 24 14:30:18 2014
Response via : Initial Calibration

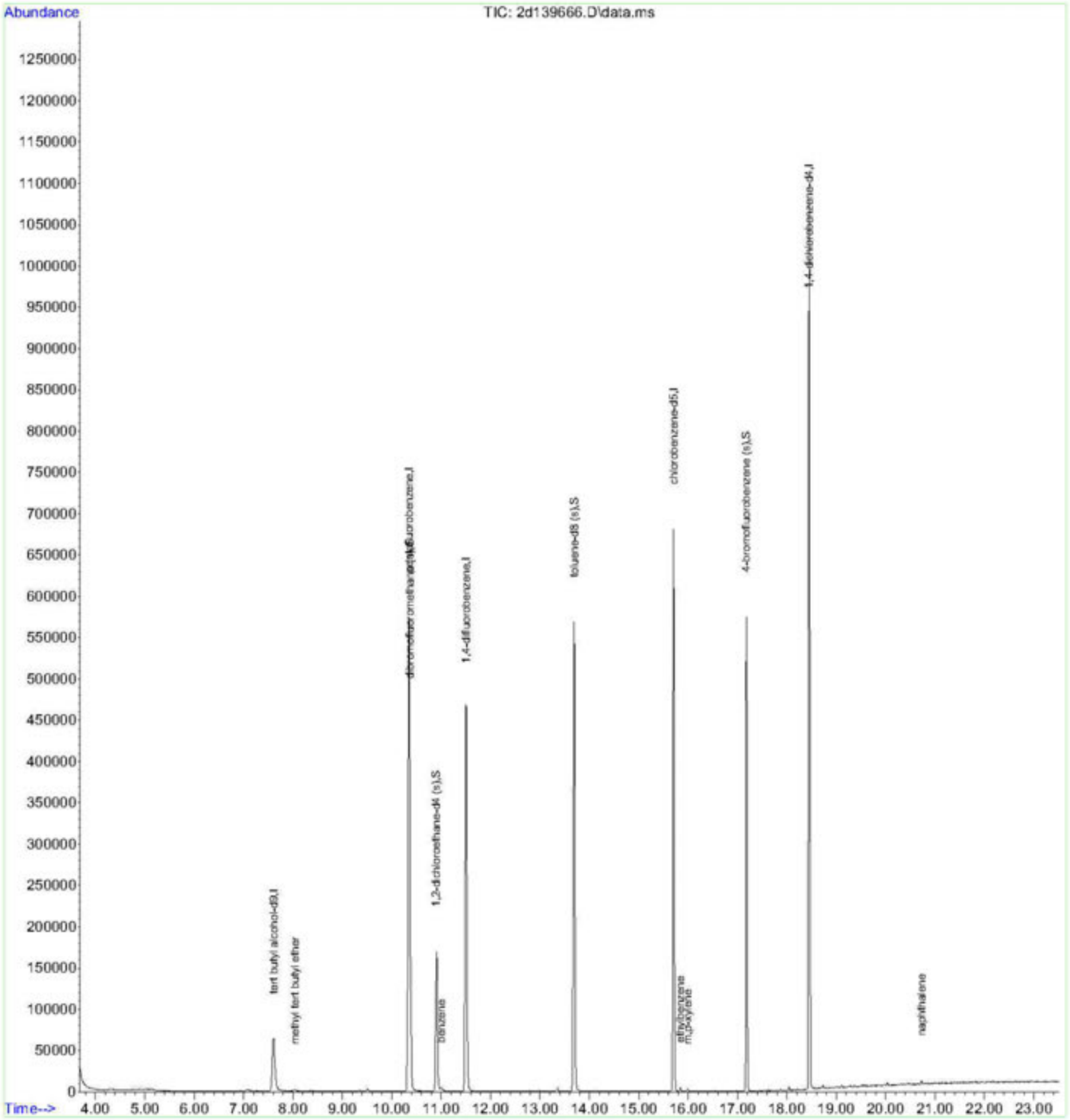
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert butyl alcohol-d9	7.606	65	144680	500.00	ug/L	0.02
5) pentafluorobenzene	10.348	168	466361	50.00	ug/L	0.02
63) 1,4-difluorobenzene	11.507	114	481207	50.00	ug/L	0.02
94) chlorobenzene-d5	15.702	117	418811	50.00	ug/L	0.01
109) 1,4-dichlorobenzene-d4	18.449	152	265685	50.00	ug/L	0.00
System Monitoring Compounds						
54) dibromofluoromethane (s)	10.364	113	135144	41.75	ug/L	0.02
Spiked Amount 50.000	Range 79 - 120		Recovery = 83.50%			
55) 1,2-dichloroethane-d4 (s)	10.904	65	154038	41.11	ug/L	0.02
Spiked Amount 50.000	Range 72 - 123		Recovery = 82.22%			
86) toluene-d8 (s)	13.693	98	436142	44.97	ug/L	0.02
Spiked Amount 50.000	Range 78 - 119		Recovery = 89.94%			
111) 4-bromofluorobenzene (s)	17.180	95	178914	42.35	ug/L	0.01
Spiked Amount 50.000	Range 74 - 119		Recovery = 84.70%			
Target Compounds						Qvalue
37) methyl tert butyl ether	8.036	73	2613	0.31	ug/L	91
70) benzene	11.009	78	4431	0.42	ug/L	98
104) ethylbenzene	15.848	91	3523	0.29	ug/L	85
105) m,p-xylene	15.990	106	1032	0.23	ug/L	84
138) naphthalene	20.730	128	2949	0.22	ug/L	92

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

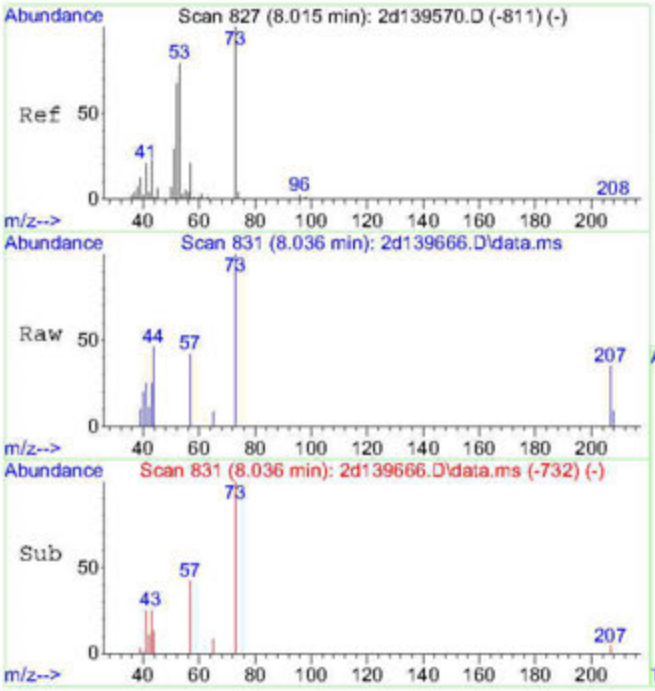
Data Path : C:\msdchem\1\DATA\2D\v2d5853-5854\
Data File : 2d139666.D
Acq On : 24 Nov 2014 9:24 pm
Operator : BridgetK
Sample : jb82226-4
Misc : ms77398,v2d5853,w,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Nov 25 10:08:11 2014
Quant Method : C:\MSDCHEM\1\METHODS\M2D5849.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 24 14:30:18 2014
Response via : Initial Calibration



M2D5849.M Tue Nov 25 10:25:49 2014 T

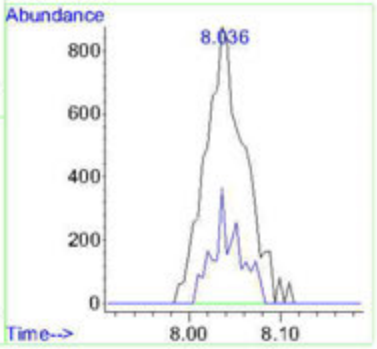
Page: 2

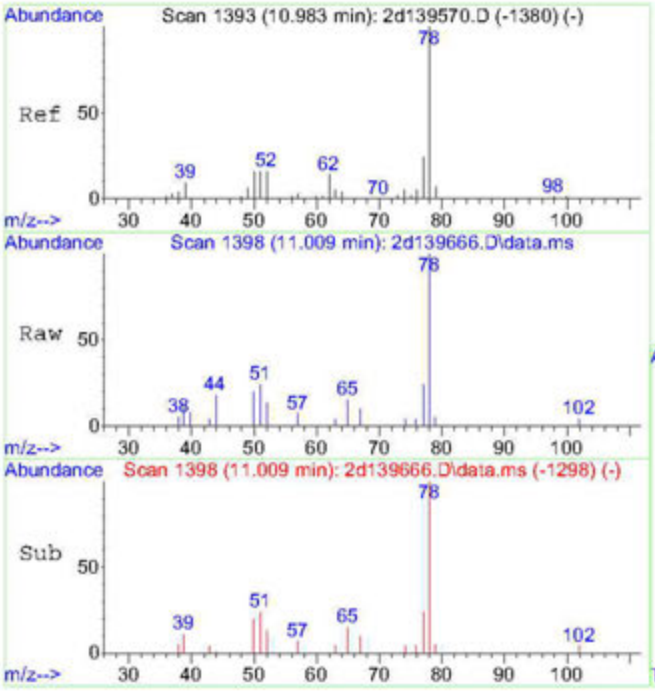


#37
methyl tert butyl ether
Concen: 0.31 ug/L
RT: 8.036 min Scan# 831
Delta R.T. 0.021 min
Lab File: 2d139666.D
Acq: 24 Nov 2014 9:24 pm

Tgt Ion: 73 Resp: 2613

Ion	Ratio	Lower	Upper
73	100		
57	25.5	0.0	51.4

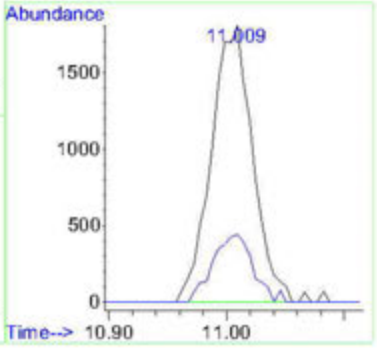


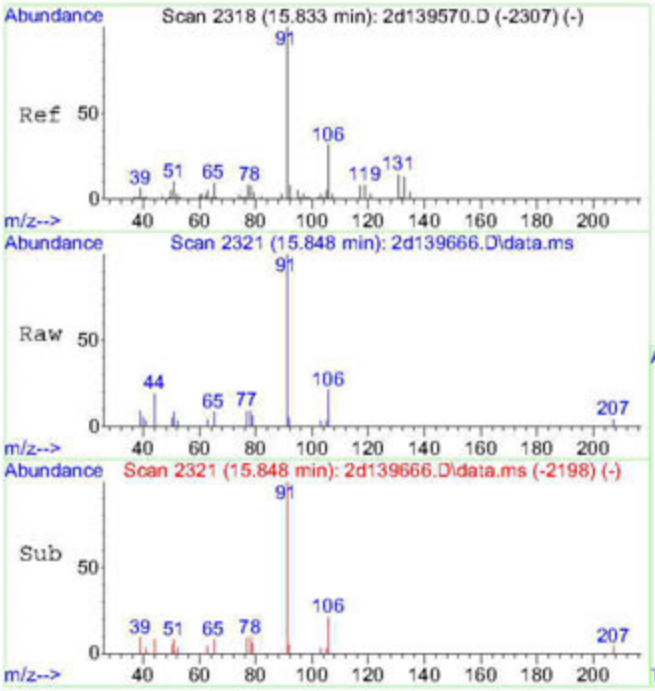


#70
benzene
Concen: 0.42 ug/L
RT: 11.009 min Scan# 1398
Delta R.T. 0.026 min
Lab File: 2d139666.D
Acq: 24 Nov 2014 9:24 pm

Tgt Ion: 78 Resp: 4431

Ion	Ratio	Lower	Upper
78	100		
77	24.5	0.0	53.7

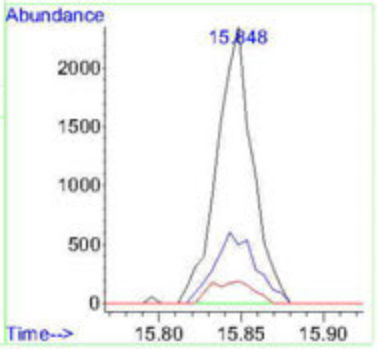


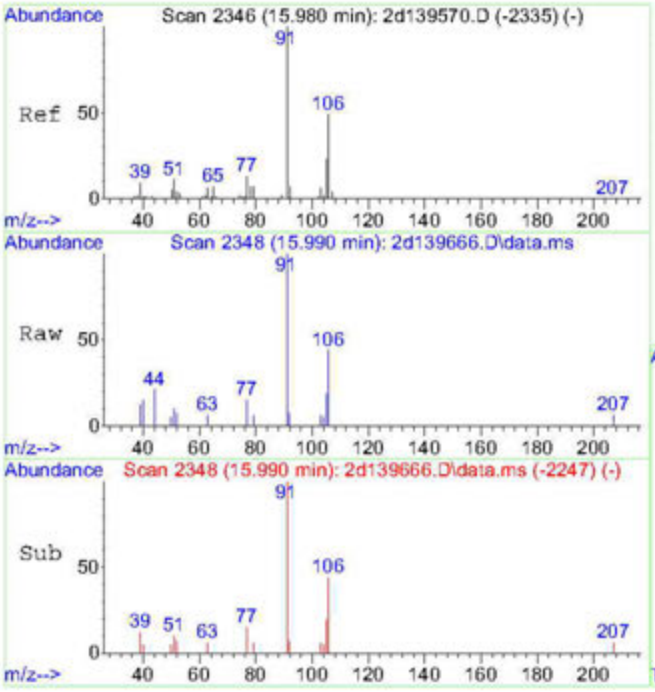


#104
ethylbenzene
Concen: 0.29 ug/L
RT: 15.848 min Scan# 2321
Delta R.T. 0.016 min
Lab File: 2d139666.D
Acq: 24 Nov 2014 9:24 pm

Tgt Ion: 91 Resp: 3523

Ion	Ratio	Lower	Upper
91	100		
106	21.1	0.8	60.8
51	8.0	0.0	40.3

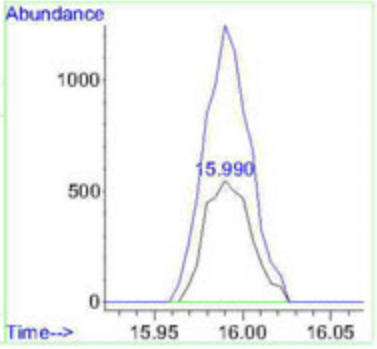


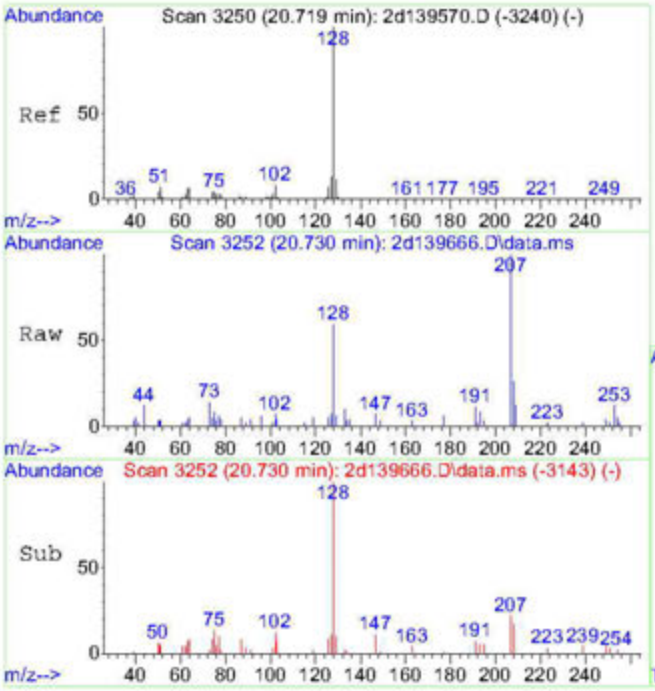


#105
m,p-xylene
Concen: 0.23 ug/L
RT: 15.990 min Scan# 2348
Delta R.T. 0.010 min
Lab File: 2d139666.D
Acq: 24 Nov 2014 9:24 pm

Tgt Ion:106 Resp: 1032

Ion	Ratio	Lower	Upper
106	100		
91	227.7	172.5	232.5

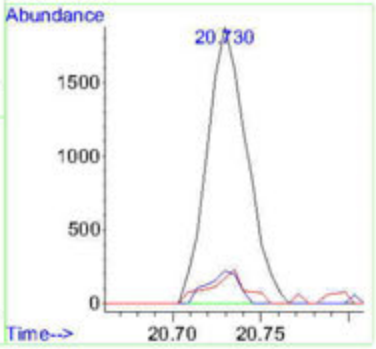




#138
naphthalene
Concen: 0.22 ug/L
RT: 20.730 min Scan# 3252
Delta R.T. 0.010 min
Lab File: 2d139666.D
Acq: 24 Nov 2014 9:24 pm

Tgt Ion:128 Resp: 2949

Ion	Ratio	Lower	Upper
128	100		
102	11.7	0.0	38.2
51	8.9	0.0	37.2



7.1.5

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2D\v2d5853-5854\
Data File : 2d139660.D
Acq On : 24 Nov 2014 6:23 pm
Operator : BridgetK
Sample : jb82226-5
Misc : ms77398,v2d5853,w,,,,1
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 25 10:04:19 2014
Quant Method : C:\MSDCHEM\1\METHODS\M2D5849.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 24 14:30:18 2014
Response via : Initial Calibration

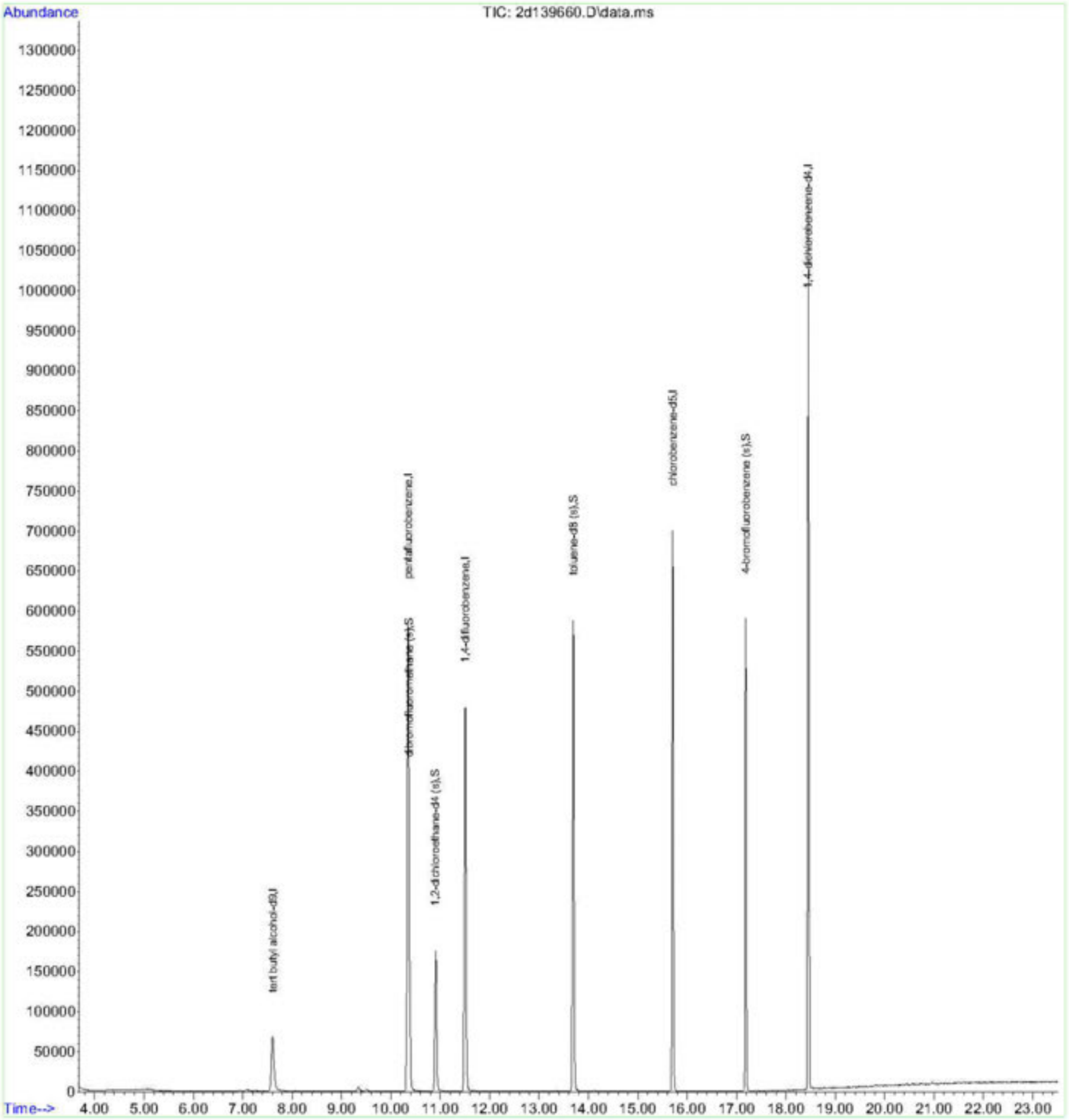
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert butyl alcohol-d9	7.606	65	153067	500.00	ug/L	0.02
5) pentafluorobenzene	10.348	168	475278	50.00	ug/L	0.02
63) 1,4-difluorobenzene	11.507	114	491116	50.00	ug/L	0.02
94) chlorobenzene-d5	15.707	117	429459	50.00	ug/L	0.02
109) 1,4-dichlorobenzene-d4	18.454	152	270292	50.00	ug/L	0.01
System Monitoring Compounds						
54) dibromofluoromethane (s)	10.369	113	136776	41.46	ug/L	0.02
Spiked Amount 50.000	Range 79 - 120		Recovery = 82.92%			
55) 1,2-dichloroethane-d4 (s)	10.904	65	157685	41.30	ug/L	0.02
Spiked Amount 50.000	Range 72 - 123		Recovery = 82.60%			
86) toluene-d8 (s)	13.693	98	446492	45.11	ug/L	0.02
Spiked Amount 50.000	Range 78 - 119		Recovery = 90.22%			
111) 4-bromofluorobenzene (s)	17.185	95	181460	42.22	ug/L	0.02
Spiked Amount 50.000	Range 74 - 119		Recovery = 84.44%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2D\v2d5853-5854\
Data File : 2d139660.D
Acq On : 24 Nov 2014 6:23 pm
Operator : BridgetK
Sample : jb82226-5
Misc : ms77398,v2d5853,w,,,,1
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 25 10:04:19 2014
Quant Method : C:\MSDCHEM\1\METHODS\M2D5849.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 24 14:30:18 2014
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2D\v2d5853-5854\
Data File : 2d139661.D
Acq On : 24 Nov 2014 6:53 pm
Operator : BridgetK
Sample : jb82226-6
Misc : ms77398,v2d5853,w,,,,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Nov 25 10:04:33 2014
Quant Method : C:\MSDCHEM\1\METHODS\M2D5849.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 24 14:30:18 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert butyl alcohol-d9	7.606	65	147633	500.00	ug/L	0.02
5) pentafluorobenzene	10.349	168	483442	50.00	ug/L	0.02
63) 1,4-difluorobenzene	11.507	114	497715	50.00	ug/L	0.02
94) chlorobenzene-d5	15.707	117	432210	50.00	ug/L	0.02
109) 1,4-dichlorobenzene-d4	18.454	152	272280	50.00	ug/L	0.01
System Monitoring Compounds						
54) dibromofluoromethane (s)	10.370	113	139756	41.65	ug/L	0.02
Spiked Amount 50.000	Range 79 - 120		Recovery = 83.30%			
55) 1,2-dichloroethane-d4 (s)	10.910	65	159227	41.00	ug/L	0.02
Spiked Amount 50.000	Range 72 - 123		Recovery = 82.00%			
86) toluene-d8 (s)	13.694	98	446120	44.48	ug/L	0.02
Spiked Amount 50.000	Range 78 - 119		Recovery = 88.96%			
111) 4-bromofluorobenzene (s)	17.180	95	183390	42.36	ug/L	0.01
Spiked Amount 50.000	Range 74 - 119		Recovery = 84.72%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

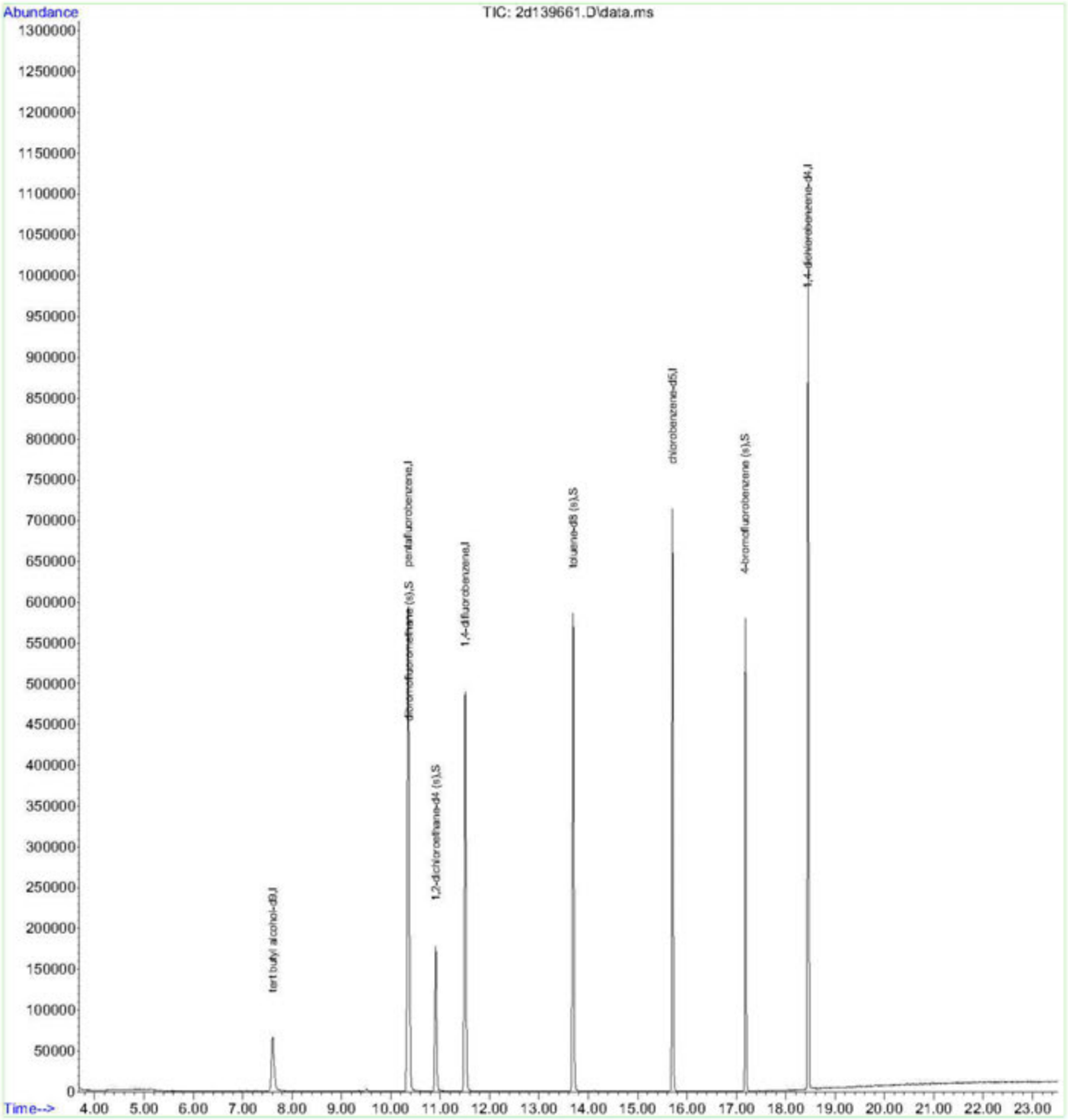
7.1.7

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2D\v2d5853-5854\
Data File : 2d139661.D
Acq On : 24 Nov 2014 6:53 pm
Operator : BridgetK
Sample : jb82226-6
Misc : ms77398,v2d5853,w,,,,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Nov 25 10:04:33 2014
Quant Method : C:\MSDCHEM\1\METHODS\M2D5849.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 24 14:30:18 2014
Response via : Initial Calibration



M2D5849.M Tue Nov 25 10:25:34 2014 T

Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : 2D139650.D
Acq On : 24 Nov 2014 1:17 pm
Operator : BridgetK
Sample : mb
Misc : ms77501,v2d5853,w,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 24 15:22:25 2014
Quant Method : C:\MSDCHEM\1\METHODS\M2D5849.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 21 14:12:15 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) tert butyl alcohol-d9	7.61	65	159174	500.00	ug/L	0.02
5) pentafluorobenzene	10.35	168	490667	50.00	ug/L	0.03
63) 1,4-difluorobenzene	11.51	114	506849	50.00	ug/L	0.03
94) chlorobenzene-d5	15.71	117	437978	50.00	ug/L	0.02
109) 1,4-dichlorobenzene-d4	18.46	152	274539	50.00	ug/L	0.02
System Monitoring Compounds						
54) dibromofluoromethane (s)	10.37	113	141901	41.66	ug/L	0.03
Spiked Amount 50.000	Range 79 - 120		Recovery = 83.32%			
55) 1,2-dichloroethane-d4 (s)	10.91	65	164961	41.85	ug/L	0.03
Spiked Amount 50.000	Range 72 - 123		Recovery = 83.70%			
86) toluene-d8 (s)	13.70	98	460838	45.12	ug/L	0.02
Spiked Amount 50.000	Range 78 - 119		Recovery = 90.24%			
111) 4-bromofluorobenzene (s)	17.19	95	185032	42.39	ug/L	0.02
Spiked Amount 50.000	Range 74 - 119		Recovery = 84.78%			

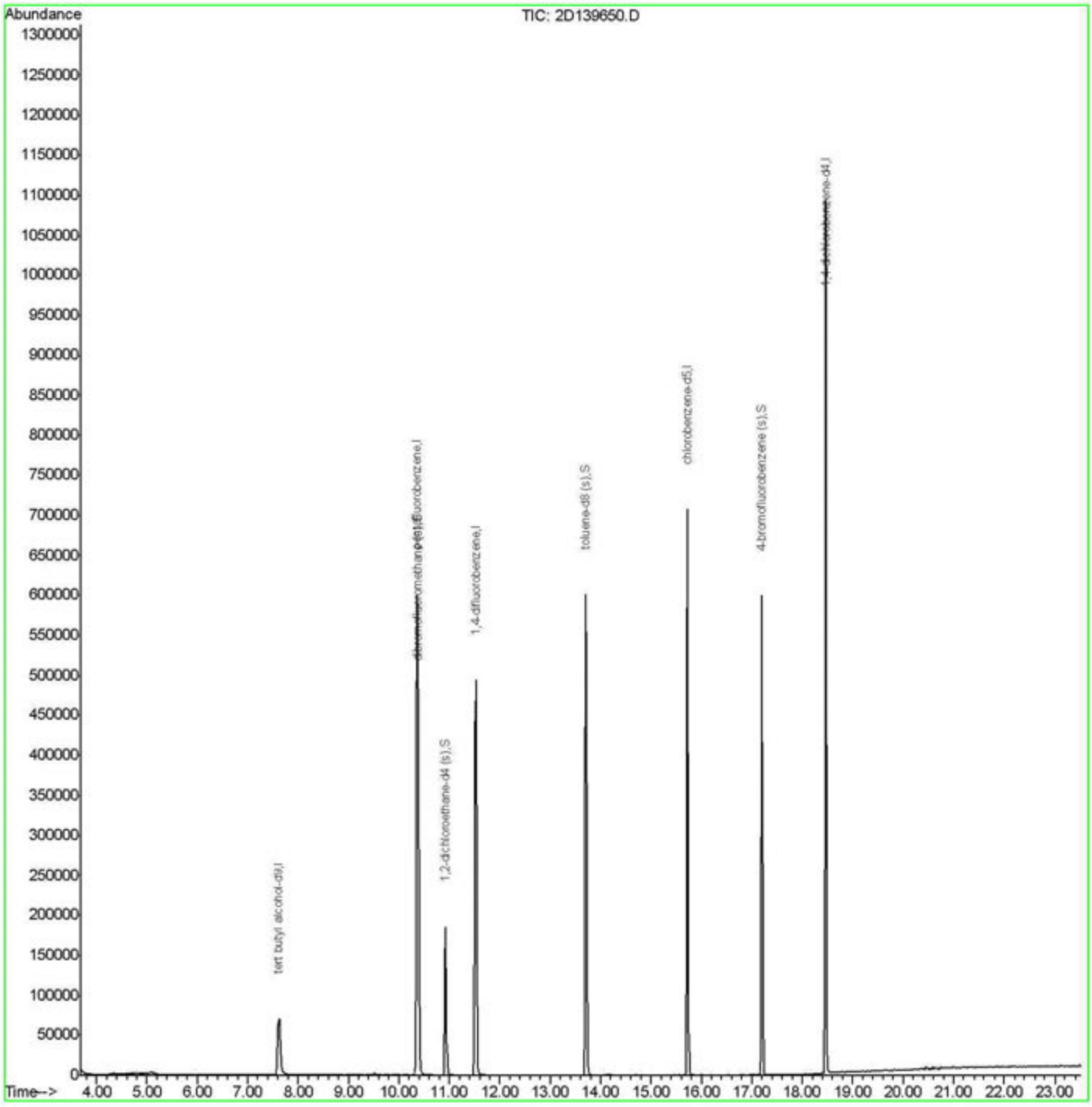
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : 2D139650.D
Acq On : 24 Nov 2014 1:17 pm
Operator : BridgetK
Sample : mb
Misc : ms77501,v2d5853,w,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 24 15:22:25 2014
Quant Method : C:\MSDCHEM\1\METHODS\M2D5849.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 21 14:12:15 2014
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\S core\vs7786\
Data File : S189782.D
Acq On : 26 Nov 2014 10:55 am
Operator : viannac
Sample : mb
Misc : MS77162,VS7786,5,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 26 11:14:27 2014
Quant Method : C:\MSDCHEM\1\METHODS\MS7633.M
Quant Title : Method 8260, ZB624 60mX0.25mmX1.4um
QLast Update : Fri Aug 01 12:03:24 2014
Response via : Initial Calibration

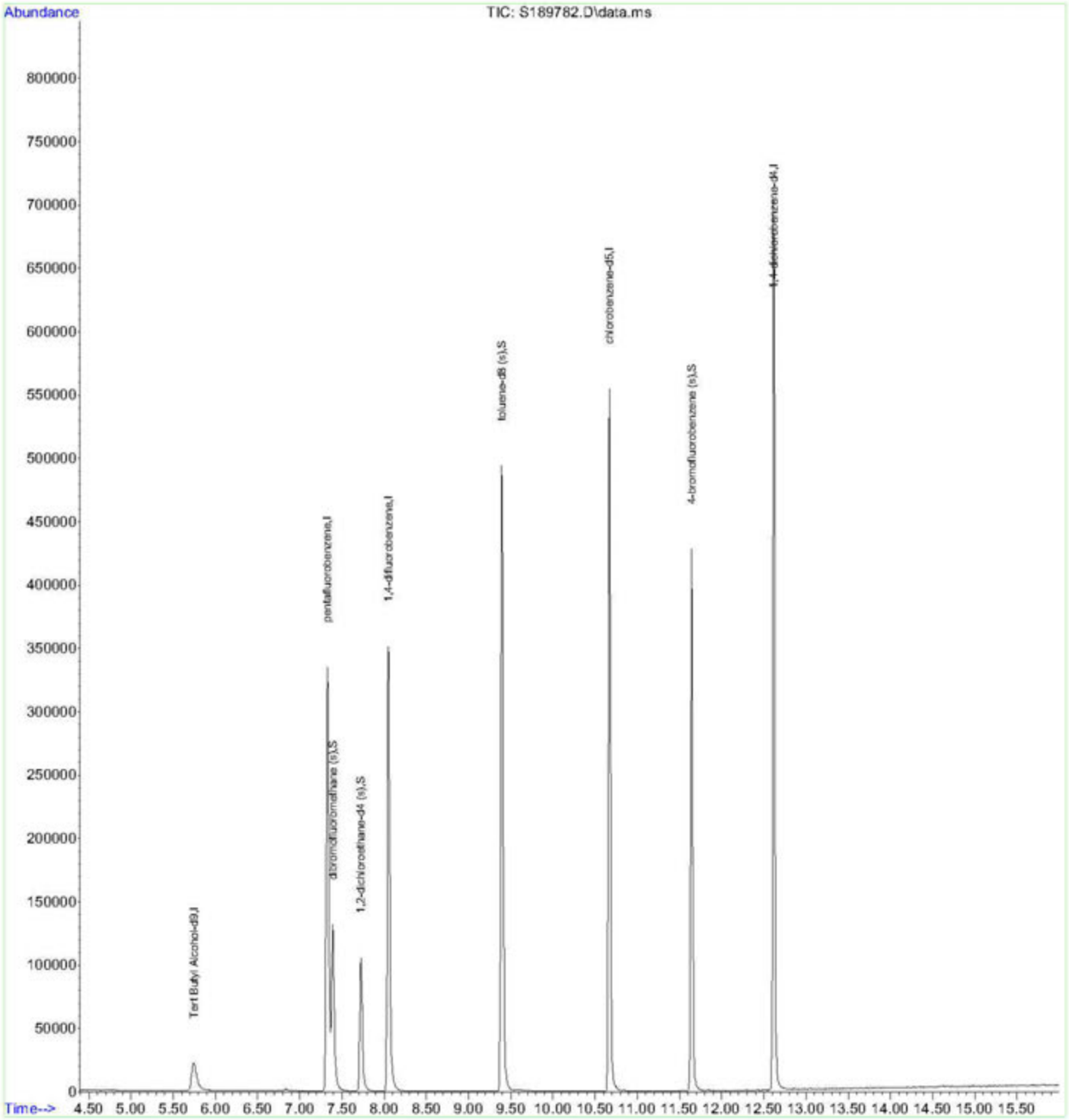
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	5.743	65	59765	500.00	ug/L	0.00
3) pentafluorobenzene	7.327	168	289495	50.00	ug/L	0.00
9) 1,4-difluorobenzene	8.049	114	337489	50.00	ug/L	0.00
15) chlorobenzene-d5	10.669	117	316129	50.00	ug/L	0.00
21) 1,4-dichlorobenzene-d4	12.615	152	185891	50.00	ug/L	0.00
System Monitoring Compounds						
7) dibromofluoromethane (s)	7.390	113	87292	49.06	ug/L	0.00
Spiked Amount 50.000	Range 79 - 120		Recovery = 98.12%			
8) 1,2-dichloroethane-d4 (s)	7.725	65	80546	44.63	ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 89.26%			
13) toluene-d8 (s)	9.393	98	358035	51.52	ug/L	0.00
Spiked Amount 50.000	Range 78 - 119		Recovery = 103.04%			
23) 4-bromofluorobenzene (s)	11.642	95	138639	46.17	ug/L	0.00
Spiked Amount 50.000	Range 74 - 119		Recovery = 92.34%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\S core\vs7786\
Data File : S189782.D
Acq On : 26 Nov 2014 10:55 am
Operator : viannac
Sample : mb
Misc : MS77162,VS7786,5,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 26 11:14:27 2014
Quant Method : C:\MSDCHEM\1\METHODS\MS7633.M
Quant Title : Method 8260, ZB624 60mX0.25mmX1.4um
QLast Update : Fri Aug 01 12:03:24 2014
Response via : Initial Calibration



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-101047-1

Client Project/Site: 3608 West Chester Pike Newtown Square,PA

For:

MIG Consulting LLC
707 Raritan Ave
Suite 203
Highland Park, New Jersey 08904

Attn: Ravi Kolaventi

Authorized for release by:
9/30/2015 4:21:58 PM
Jannel Franklin, Project Manager I
(732)593-2551
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Designee for

Sapna Nayyar, Project Manager I
(732)549-3900
sapna.nayyar@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

LINKS

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Definitions/Glossary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Pike Newtown Square,PA

TestAmerica Job ID: 460-101047-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 460-101047-1

Laboratory: TestAmerica Edison

Narrative

CASE NARRATIVE

Client: MIG Consulting LLC

Project: 3608 West Chester Pike Newtown Square,PA

Report Number: 460-101047-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 9/11/2015 4:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

Receipt Exceptions

The following samples was submitted for analysis; however, it was not listed on the Chain-of-Custody (COC): MW-1 (460-101047-1), MW-2 (460-101047-2), MW-3 (460-101047-3), MW-4 (460-101047-4), SS1 (460-101047-5), SS2 (460-101047-6), SS3 (460-101047-7) and Trip Blank (460-101047-8) Tests on hold.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples MW-1 (460-101047-1), MW-2 (460-101047-2), MW-3 (460-101047-3), MW-4 (460-101047-4) and Trip Blank (460-101047-8) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 09/22/2015 and 09/23/2015.

Methyl tert-butyl ether failed the recovery criteria high for the MS of sample MW-1MS (460-101047-1) in batch 460-324131. The presence of the '4' qualifier in the data indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Refer to the QC report for details.

Sample MW-1 (460-101047-1)[25X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-1 (460-101047-1). Elevated reporting limits (RLs) are provided.

No other difficulties were encountered during the volatiles analysis.

Job ID: 460-101047-1 (Continued)

Laboratory: TestAmerica Edison (Continued)

All other quality control parameters were within the acceptance limits.

Detection Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Pike Newtown Square,PA

TestAmerica Job ID: 460-101047-1

Client Sample ID: MW-1 — Lab Sample ID: 460-101047-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	330		25	2.3	ug/L	25		8260B	Total/NA
Toluene	11	J	25	6.3	ug/L	25		8260B	Total/NA
Ethylbenzene	94		25	7.5	ug/L	25		8260B	Total/NA
Xylenes, Total	14	J	50	7.0	ug/L	25		8260B	Total/NA
Methyl tert-butyl ether	5100		25	3.3	ug/L	25		8260B	Total/NA
Naphthalene	91		25	6.5	ug/L	25		8260B	Total/NA
1,2,4-Trimethylbenzene	9.0	J	25	5.8	ug/L	25		8260B	Total/NA
Isopropylbenzene	17	J	25	8.0	ug/L	25		8260B	Total/NA

Client Sample ID: MW-2 — Lab Sample ID: 460-101047-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	27		1.0	0.090	ug/L	1		8260B	Total/NA
Xylenes, Total	0.95	J	2.0	0.28	ug/L	1		8260B	Total/NA
Methyl tert-butyl ether	5.4		1.0	0.13	ug/L	1		8260B	Total/NA
1,3,5-Trimethylbenzene	0.30	J	1.0	0.25	ug/L	1		8260B	Total/NA

Client Sample ID: MW-3 — Lab Sample ID: 460-101047-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.7		1.0	0.090	ug/L	1		8260B	Total/NA
Methyl tert-butyl ether	3.1		1.0	0.13	ug/L	1		8260B	Total/NA

Client Sample ID: MW-4 — Lab Sample ID: 460-101047-4

No Detections.

Client Sample ID: Trip Blank — Lab Sample ID: 460-101047-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-1
Date Collected: 09/10/15 19:00
Date Received: 09/11/15 16:45

Lab Sample ID: 460-101047-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	330		25	2.3	ug/L			09/23/15 07:17	25
Toluene	11	J	25	6.3	ug/L			09/23/15 07:17	25
Ethylbenzene	94		25	7.5	ug/L			09/23/15 07:17	25
Xylenes, Total	14	J	50	7.0	ug/L			09/23/15 07:17	25
Methyl tert-butyl ether	5100		25	3.3	ug/L			09/23/15 07:17	25
Naphthalene	91		25	6.5	ug/L			09/23/15 07:17	25
1,2,4-Trimethylbenzene	9.0	J	25	5.8	ug/L			09/23/15 07:17	25
1,3,5-Trimethylbenzene	6.3	U	25	6.3	ug/L			09/23/15 07:17	25
Isopropylbenzene	17	J	25	8.0	ug/L			09/23/15 07:17	25

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 137*		*09/23/15 07:17*	*25*
Toluene-d8 (Surr)	*98*		*74 - 120*		*09/23/15 07:17*	*25*
Bromofluorobenzene	*101*		*70 - 131*		*09/23/15 07:17*	*25*
Dibromofluoromethane (Surr)	*104*		*72 - 136*		*09/23/15 07:17*	*25*

Client Sample ID: MW-2
Date Collected: 09/10/15 19:15
Date Received: 09/11/15 16:45

Lab Sample ID: 460-101047-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	27		1.0	0.090	ug/L			09/22/15 15:12	1
Toluene	0.25	U	1.0	0.25	ug/L			09/22/15 15:12	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			09/22/15 15:12	1
Xylenes, Total	0.95	J	2.0	0.28	ug/L			09/22/15 15:12	1
Methyl tert-butyl ether	5.4		1.0	0.13	ug/L			09/22/15 15:12	1
Naphthalene	0.26	U	1.0	0.26	ug/L			09/22/15 15:12	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			09/22/15 15:12	1
1,3,5-Trimethylbenzene	0.30	J	1.0	0.25	ug/L			09/22/15 15:12	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			09/22/15 15:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 137*		*09/22/15 15:12*	*1*
Toluene-d8 (Surr)	*97*		*74 - 120*		*09/22/15 15:12*	*1*
Bromofluorobenzene	*97*		*70 - 131*		*09/22/15 15:12*	*1*
Dibromofluoromethane (Surr)	*101*		*72 - 136*		*09/22/15 15:12*	*1*

Client Sample ID: MW-3
Date Collected: 09/10/15 19:25
Date Received: 09/11/15 16:45

Lab Sample ID: 460-101047-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.7		1.0	0.090	ug/L			09/22/15 15:40	1
Toluene	0.25	U	1.0	0.25	ug/L			09/22/15 15:40	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			09/22/15 15:40	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			09/22/15 15:40	1
Methyl tert-butyl ether	3.1		1.0	0.13	ug/L			09/22/15 15:40	1
Naphthalene	0.26	U	1.0	0.26	ug/L			09/22/15 15:40	1

Client Sample ID: MW-3

Lab Sample ID: 460-101047-3
Matrix: Water
Date Collected: 09/10/15 19:25
Date Received: 09/11/15 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			09/22/15 15:40	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			09/22/15 15:40	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			09/22/15 15:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 137*		*09/22/15 15:40*	*1*
Toluene-d8 (Surr)	*100*		*74 - 120*		*09/22/15 15:40*	*1*
Bromofluorobenzene	*101*		*70 - 131*		*09/22/15 15:40*	*1*
Dibromofluoromethane (Surr)	*104*		*72 - 136*		*09/22/15 15:40*	*1*

Client Sample ID: MW-4

Lab Sample ID: 460-101047-4
Matrix: Water
Date Collected: 09/10/15 19:40
Date Received: 09/11/15 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			09/22/15 16:35	1
Toluene	0.25	U	1.0	0.25	ug/L			09/22/15 16:35	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			09/22/15 16:35	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			09/22/15 16:35	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			09/22/15 16:35	1
Naphthalene	0.26	U	1.0	0.26	ug/L			09/22/15 16:35	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			09/22/15 16:35	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			09/22/15 16:35	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			09/22/15 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 137*		*09/22/15 16:35*	*1*
Toluene-d8 (Surr)	*102*		*74 - 120*		*09/22/15 16:35*	*1*
Bromofluorobenzene	*104*		*70 - 131*		*09/22/15 16:35*	*1*
Dibromofluoromethane (Surr)	*105*		*72 - 136*		*09/22/15 16:35*	*1*

Client Sample ID: Trip Blank

Lab Sample ID: 460-101047-8
Matrix: Water
Date Collected: 09/10/15 19:40
Date Received: 09/11/15 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			09/22/15 14:44	1
Toluene	0.25	U	1.0	0.25	ug/L			09/22/15 14:44	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			09/22/15 14:44	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			09/22/15 14:44	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			09/22/15 14:44	1
Naphthalene	0.26	U	1.0	0.26	ug/L			09/22/15 14:44	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			09/22/15 14:44	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			09/22/15 14:44	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			09/22/15 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 137*		*09/22/15 14:44*	*1*
Toluene-d8 (Surr)	*99*		*74 - 120*		*09/22/15 14:44*	*1*

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Pike Newtown Square,PA

TestAmerica Job ID: 460-101047-1

Client Sample ID: Trip Blank
Date Collected: 09/10/15 19:40
Date Received: 09/11/15 16:45

Lab Sample ID: 460-101047-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Bromofluorobenzene	98		70 - 131		09/22/15 14:44	1
Dibromofluoromethane (Surr)	103		72 - 136		09/22/15 14:44	1

Surrogate Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Pike Newtown Square,PA

TestAmerica Job ID: 460-101047-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	12DCE (70-137)	TOL (74-120)	BFB (70-131)	DBFM (72-136)
460-101047-1	MW-1	97	98	101	104
460-101047-1 MS	MW-1	118	120	125	127
460-101047-1 MSD	MW-1	99	103	104	103
460-101047-2	MW-2	94	97	97	101
460-101047-3	MW-3	96	100	101	104
460-101047-4	MW-4	98	102	104	105
460-101047-8	Trip Blank	98	99	98	103
460-101169-C-1 MS	Matrix Spike	87	92	91	90
460-101169-C-1 MSD	Matrix Spike Duplicate	101	102	101	104
LCS 460-323976/4	Lab Control Sample	103	104	105	105
LCS 460-324131/3	Lab Control Sample	106	109	110	110
LCS 460-324221/3	Lab Control Sample	102	102	108	107
LCSD 460-324221/4	Lab Control Sample Dup	97	98	101	101
MB 460-323976/6	Method Blank	94	96	94	97
MB 460-324131/7	Method Blank	95	99	101	102
MB 460-324221/7	Method Blank	97	101	101	103

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = Bromofluorobenzene
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 460-323976/6
Matrix: Water
Analysis Batch: 323976

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			09/22/15 08:59	1
Toluene	0.25	U	1.0	0.25	ug/L			09/22/15 08:59	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			09/22/15 08:59	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			09/22/15 08:59	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			09/22/15 08:59	1
Naphthalene	0.26	U	1.0	0.26	ug/L			09/22/15 08:59	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			09/22/15 08:59	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			09/22/15 08:59	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			09/22/15 08:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 137*		*09/22/15 08:59*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*09/22/15 08:59*	*1*
Bromofluorobenzene	*94*		*70 - 131*		*09/22/15 08:59*	*1*
Dibromofluoromethane (Surr)	*97*		*72 - 136*		*09/22/15 08:59*	*1*

Lab Sample ID: LCS 460-323976/4
Matrix: Water
Analysis Batch: 323976

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	19.4		ug/L		97	76 - 125
Toluene	20.0	20.0		ug/L		100	80 - 120
Ethylbenzene	20.0	20.2		ug/L		101	80 - 120
Xylenes, Total	40.0	41.0		ug/L		102	80 - 120
Methyl tert-butyl ether	20.0	20.1		ug/L		100	78 - 129
Naphthalene	20.0	20.0		ug/L		100	66 - 133
1,2,4-Trimethylbenzene	20.0	20.0		ug/L		100	74 - 127
1,3,5-Trimethylbenzene	20.0	20.6		ug/L		103	68 - 130
Isopropylbenzene	20.0	21.0		ug/L		105	80 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 137*
Toluene-d8 (Surr)	*104*		*74 - 120*
Bromofluorobenzene	*105*		*70 - 131*
Dibromofluoromethane (Surr)	*105*		*72 - 136*

Lab Sample ID: 460-101169-C-1 MS
Matrix: Water
Analysis Batch: 323976

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.39	J	200	183		ug/L		91	76 - 125
Toluene	0.25	U	200	187		ug/L		94	80 - 120
Ethylbenzene	0.30	U	200	186		ug/L		93	80 - 120
Xylenes, Total	0.28	U	400	378		ug/L		94	80 - 120
Methyl tert-butyl ether	0.38	J	200	175		ug/L		88	78 - 129

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 460-101169-C-1 MS
Matrix: Water
Analysis Batch: 323976

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	0.26	U	200	171		ug/L		85	66 - 133
1,2,4-Trimethylbenzene	0.23	U	200	180		ug/L		90	74 - 127
1,3,5-Trimethylbenzene	0.25	U	200	190		ug/L		95	68 - 130
Isopropylbenzene	0.32	U	200	196		ug/L		98	80 - 127

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*70 - 137*
Toluene-d8 (Surr)	*92*		*74 - 120*
Bromofluorobenzene	*91*		*70 - 131*
Dibromofluoromethane (Surr)	*90*		*72 - 136*

Lab Sample ID: 460-101169-C-1 MSD
Matrix: Water
Analysis Batch: 323976

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.39	J	200	197		ug/L		98	76 - 125	7	30
Toluene	0.25	U	200	195		ug/L		97	80 - 120	4	30
Ethylbenzene	0.30	U	200	196		ug/L		98	80 - 120	5	30
Xylenes, Total	0.28	U	400	389		ug/L		97	80 - 120	3	30
Methyl tert-butyl ether	0.38	J	200	182		ug/L		91	78 - 129	4	30
Naphthalene	0.26	U	200	174		ug/L		87	66 - 133	2	30
1,2,4-Trimethylbenzene	0.23	U	200	190		ug/L		95	74 - 127	6	30
1,3,5-Trimethylbenzene	0.25	U	200	192		ug/L		96	68 - 130	1	30
Isopropylbenzene	0.32	U	200	200		ug/L		100	80 - 127	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 137*
Toluene-d8 (Surr)	*102*		*74 - 120*
Bromofluorobenzene	*101*		*70 - 131*
Dibromofluoromethane (Surr)	*104*		*72 - 136*

Lab Sample ID: MB 460-324131/7
Matrix: Water
Analysis Batch: 324131

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			09/22/15 22:49	1
Toluene	0.25	U	1.0	0.25	ug/L			09/22/15 22:49	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			09/22/15 22:49	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			09/22/15 22:49	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			09/22/15 22:49	1
Naphthalene	0.26	U	1.0	0.26	ug/L			09/22/15 22:49	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			09/22/15 22:49	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			09/22/15 22:49	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			09/22/15 22:49	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 460-324131/7
Matrix: Water
Analysis Batch: 324131

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		70 - 137		09/22/15 22:49	1
Toluene-d8 (Surr)	99		74 - 120		09/22/15 22:49	1
Bromofluorobenzene	101		70 - 131		09/22/15 22:49	1
Dibromofluoromethane (Surr)	102		72 - 136		09/22/15 22:49	1

Lab Sample ID: LCS 460-324131/3
Matrix: Water
Analysis Batch: 324131

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	21.7		ug/L		108	76 - 125
Toluene	20.0	22.2		ug/L		111	80 - 120
Ethylbenzene	20.0	22.7		ug/L		114	80 - 120
Xylenes, Total	40.0	45.6		ug/L		114	80 - 120
Methyl tert-butyl ether	20.0	20.1		ug/L		101	78 - 129
Naphthalene	20.0	20.1		ug/L		101	66 - 133
1,2,4-Trimethylbenzene	20.0	22.7		ug/L		113	74 - 127
1,3,5-Trimethylbenzene	20.0	22.9		ug/L		115	68 - 130
Isopropylbenzene	20.0	23.6		ug/L		118	80 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	106		70 - 137
Toluene-d8 (Surr)	109		74 - 120
Bromofluorobenzene	110		70 - 131
Dibromofluoromethane (Surr)	110		72 - 136

Lab Sample ID: 460-101047-1 MS
Matrix: Water
Analysis Batch: 324131

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	330		500	944		ug/L		123	76 - 125
Toluene	11	J	500	568		ug/L		112	80 - 120
Ethylbenzene	94		500	689		ug/L		119	80 - 120
Xylenes, Total	14	J	1000	1180		ug/L		116	80 - 120
Methyl tert-butyl ether	5100		500	6860	4	ug/L		358	78 - 129
Naphthalene	91		500	724		ug/L		126	66 - 133
1,2,4-Trimethylbenzene	9.0	J	500	577		ug/L		114	74 - 127
1,3,5-Trimethylbenzene	6.3	U	500	564		ug/L		113	68 - 130
Isopropylbenzene	17	J	500	600		ug/L		117	80 - 127

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	118		70 - 137
Toluene-d8 (Surr)	120		74 - 120
Bromofluorobenzene	125		70 - 131
Dibromofluoromethane (Surr)	127		72 - 136

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 460-324221/7
Matrix: Water
Analysis Batch: 324221

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			09/23/15 11:05	1
Toluene	0.25	U	1.0	0.25	ug/L			09/23/15 11:05	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			09/23/15 11:05	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			09/23/15 11:05	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			09/23/15 11:05	1
Naphthalene	0.26	U	1.0	0.26	ug/L			09/23/15 11:05	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			09/23/15 11:05	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			09/23/15 11:05	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			09/23/15 11:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 137*		*09/23/15 11:05*	*1*
Toluene-d8 (Surr)	*101*		*74 - 120*		*09/23/15 11:05*	*1*
Bromofluorobenzene	*101*		*70 - 131*		*09/23/15 11:05*	*1*
Dibromofluoromethane (Surr)	*103*		*72 - 136*		*09/23/15 11:05*	*1*

Lab Sample ID: LCS 460-324221/3
Matrix: Water
Analysis Batch: 324221

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	19.5		ug/L		97	76 - 125
Toluene	20.0	20.2		ug/L		101	80 - 120
Ethylbenzene	20.0	21.5		ug/L		107	80 - 120
Xylenes, Total	40.0	42.7		ug/L		107	80 - 120
Methyl tert-butyl ether	20.0	20.3		ug/L		101	78 - 129
Naphthalene	20.0	20.3		ug/L		102	66 - 133
1,2,4-Trimethylbenzene	20.0	20.6		ug/L		103	74 - 127
1,3,5-Trimethylbenzene	20.0	21.1		ug/L		106	68 - 130
Isopropylbenzene	20.0	22.4		ug/L		112	80 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 137*
Toluene-d8 (Surr)	*102*		*74 - 120*
Bromofluorobenzene	*108*		*70 - 131*
Dibromofluoromethane (Surr)	*107*		*72 - 136*

Lab Sample ID: LCSD 460-324221/4
Matrix: Water
Analysis Batch: 324221

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	18.6		ug/L		93	76 - 125	5	30
Toluene	20.0	19.0		ug/L		95	80 - 120	6	30
Ethylbenzene	20.0	19.4		ug/L		97	80 - 120	10	30
Xylenes, Total	40.0	39.4		ug/L		99	80 - 120	8	30
Methyl tert-butyl ether	20.0	19.7		ug/L		98	78 - 129	3	30

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 460-324221/4
Matrix: Water
Analysis Batch: 324221

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene			20.0	19.5		ug/L		98	66 - 133	4	30
1,2,4-Trimethylbenzene			20.0	19.2		ug/L		96	74 - 127	7	30
1,3,5-Trimethylbenzene			20.0	19.7		ug/L		98	68 - 130	7	30
Isopropylbenzene			20.0	20.3		ug/L		102	80 - 127	10	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 137*
Toluene-d8 (Surr)	*98*		*74 - 120*
Bromofluorobenzene	*101*		*70 - 131*
Dibromofluoromethane (Surr)	*101*		*72 - 136*

Lab Sample ID: 460-101047-1 MSD
Matrix: Water
Analysis Batch: 324221

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	330		500	784		ug/L		91	76 - 125	18	30
Toluene	11	J	500	451		ug/L		88	80 - 120	23	30
Ethylbenzene	94		500	508		ug/L		83	80 - 120	30	30
Xylenes, Total	14	J	1000	887		ug/L		87	80 - 120	28	30
Methyl tert-butyl ether	5100		500	5530	4	ug/L		92	78 - 129	21	30
Naphthalene	91		500	556		ug/L		93	66 - 133	26	30
1,2,4-Trimethylbenzene	9.0	J	500	442		ug/L		87	74 - 127	27	30
1,3,5-Trimethylbenzene	6.3	U	500	443		ug/L		89	68 - 130	24	30
Isopropylbenzene	17	J	500	457		ug/L		88	80 - 127	27	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 137*
Toluene-d8 (Surr)	*103*		*74 - 120*
Bromofluorobenzene	*104*		*70 - 131*
Dibromofluoromethane (Surr)	*103*		*72 - 136*

QC Association Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Pike Newtown Square,PA

TestAmerica Job ID: 460-101047-1

GC/MS VOA

Analysis Batch: 323976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-101047-2	MW-2	Total/NA	Water	8260B	
460-101047-3	MW-3	Total/NA	Water	8260B	
460-101047-4	MW-4	Total/NA	Water	8260B	
460-101047-8	Trip Blank	Total/NA	Water	8260B	
460-101169-C-1 MS	Matrix Spike	Total/NA	Water	8260B	
460-101169-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
LCS 460-323976/4	Lab Control Sample	Total/NA	Water	8260B	
MB 460-323976/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 324131

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-101047-1	MW-1	Total/NA	Water	8260B	
460-101047-1 MS	MW-1	Total/NA	Water	8260B	
LCS 460-324131/3	Lab Control Sample	Total/NA	Water	8260B	
MB 460-324131/7	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 324221

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-101047-1 MSD	MW-1	Total/NA	Water	8260B	
LCS 460-324221/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 460-324221/4	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 460-324221/7	Method Blank	Total/NA	Water	8260B	

Lab Chronicle

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Pike Newtown Square,PA

TestAmerica Job ID: 460-101047-1

Client Sample ID: MW-1

Date Collected: 09/10/15 19:00
Date Received: 09/11/15 16:45

Lab Sample ID: 460-101047-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		25	324131	09/23/15 07:17	KLB	TAL EDI

Client Sample ID: MW-2

Date Collected: 09/10/15 19:15
Date Received: 09/11/15 16:45

Lab Sample ID: 460-101047-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	323976	09/22/15 15:12	CJM	TAL EDI

Client Sample ID: MW-3

Date Collected: 09/10/15 19:25
Date Received: 09/11/15 16:45

Lab Sample ID: 460-101047-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	323976	09/22/15 15:40	CJM	TAL EDI

Client Sample ID: MW-4

Date Collected: 09/10/15 19:40
Date Received: 09/11/15 16:45

Lab Sample ID: 460-101047-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	323976	09/22/15 16:35	CJM	TAL EDI

Client Sample ID: Trip Blank

Date Collected: 09/10/15 19:40
Date Received: 09/11/15 16:45

Lab Sample ID: 460-101047-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	323976	09/22/15 14:44	CJM	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Certification Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Pike Newtown Square,PA

TestAmerica Job ID: 460-101047-1

Laboratory: TestAmerica Edison

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-16
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-15
New Jersey	NELAP	2	12028	06-30-15 *
New York	NELAP	2	11452	03-31-16
Pennsylvania	NELAP	3	68-00522	02-28-16
Rhode Island	State Program	1	LAO00132	12-30-15
USDA	Federal		NJCA-003-08	04-04-17

* Certification renewal pending - certification considered valid.

Method Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Pike Newtown Square,PA

TestAmerica Job ID: 460-101047-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL EDI

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Pike Newtown Square,PA

TestAmerica Job ID: 460-101047-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-101047-1	MW-1	Water	09/10/15 19:00	09/11/15 16:45
460-101047-2	MW-2	Water	09/10/15 19:15	09/11/15 16:45
460-101047-3	MW-3	Water	09/10/15 19:25	09/11/15 16:45
460-101047-4	MW-4	Water	09/10/15 19:40	09/11/15 16:45
460-101047-8	Trip Blank	Water	09/10/15 19:40	09/11/15 16:45

urham Road
w Jersey 08817
2) 549-3900 Fax: (732) 549-3679

460-101047 Chain of Custody

TestAmerica
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CHAIN OF CUSTODY / ANA

Page ___ of ___

Name (for report and invoice) IP Singh	Samplers Name (Printed) JOHN MAHRE	Site/Project Identification 3608 West Chester Pike Newtown Square, PA
Company MIG Consulting, LLC	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: PA
Address 707 Raritan Avenue	Analysis Turnaround Time: Standard ☑	Regulatory Program:
City Highland Park State NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone 732-543-1150 Fax 732-543-1148		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	PADEP Shortlist 8260B	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	Cumene	MTBE	Naphthalene	1,2,4 - TMB	1,3,5 - TMB		LAB USE ONLY Sample Numbers
MW-1	09/10/15	12:00	GW	3		✓	✓	✓	✓	✓	✓	✓	✓	✓		-1
MW-2	"	12:15	"	3		✓	✓	✓	✓	✓	✓	✓	✓	✓		-2
MW-3	"	12:25	"	3		✓	✓	✓	✓	✓	✓	✓	✓	✓		-3
MW-4	09/10/15	12:40	GW	2		✓	✓	✓	✓	✓	✓	✓	✓	✓		-4
																-5
																-6
																-7
																-8
Preservation Used: 1 = ICE, (2) = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH				Soil:	—											
6 = Other ____, 7 = Other ____				Water:	2											

Job No: 101047

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9/30/2015

Special Instructions Please analyze for PADEP shortlist 8260B/5035

Water Metals Filtered (Yes/No)? No

Relinquished by 1) Ravi Kumar	Company MIG	Date / Time 09/11/15 1315	Received by 1)	Company T.A.
Relinquished by 2)	Company T.A.	Date / Time 9/11/15 1645	Received by 2)	Company TA Edison
Relinquished by 3)	Company	Date / Time	Received by 3)	Company 9/11/15 1645
Relinquished by 4)	Company	Date / Time	Received by 4)	Company

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL - 0016 (0408)

Massachusetts (M-NJ312), North Carolina (No. 578)

2.6-4.6 IR#5 NW CS

TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 101047

Number of Coolers: 1 IR Gun # 5

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	2.6 °C	4.6 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: _____ Date: 9/11/15

Login Sample Receipt Checklist

Client: MIG Consulting LLC

Job Number: 460-101047-1

Login Number: 101047
List Number: 1
Creator: Rivera, Kenneth

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.6°C, IR #5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	See NCM
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-105303-1

Client Project/Site: 3608 West Chester Piki, Newtown Square

For:

MIG Consulting LLC
707 Raritan Ave
Suite 203
Highland Park, New Jersey 08904

Attn: Ravi Kolaventi

Authorized for release by:
12/8/2015 2:46:26 PM
Shalini Williams, Project Management Assistant II
shalini.williams@testamericainc.com

Designee for

Sapna Nayyar, Project Manager I
(732)549-3900
sapna.nayyar@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Detection Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Piki, Newtown Square

TestAmerica Job ID: 460-105303-1

Client Sample ID: MW-1 — Lab Sample ID: 460-105303-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	220		20	1.8	ug/L	20		8260B	Total/NA
Toluene	22		20	5.0	ug/L	20		8260B	Total/NA
Ethylbenzene	63		20	6.0	ug/L	20		8260B	Total/NA
Xylenes, Total	16	J	40	5.6	ug/L	20		8260B	Total/NA
Methyl tert-butyl ether	5400		20	2.6	ug/L	20		8260B	Total/NA
Naphthalene	59		20	5.2	ug/L	20		8260B	Total/NA
1,2,4-Trimethylbenzene	9.3	J	20	4.6	ug/L	20		8260B	Total/NA
1,3,5-Trimethylbenzene	5.8	J	20	5.0	ug/L	20		8260B	Total/NA
Isopropylbenzene	12	J	20	6.4	ug/L	20		8260B	Total/NA

Client Sample ID: MW-2 — Lab Sample ID: 460-105303-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	23		1.0	0.090	ug/L	1		8260B	Total/NA
Toluene	0.25	J	1.0	0.25	ug/L	1		8260B	Total/NA
Ethylbenzene	0.55	J	1.0	0.30	ug/L	1		8260B	Total/NA
Xylenes, Total	1.4	J	2.0	0.28	ug/L	1		8260B	Total/NA
Methyl tert-butyl ether	8.9		1.0	0.13	ug/L	1		8260B	Total/NA
Naphthalene	0.36	J	1.0	0.26	ug/L	1		8260B	Total/NA

Client Sample ID: MW-3 — Lab Sample ID: 460-105303-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.63	J	1.0	0.090	ug/L	1		8260B	Total/NA
Methyl tert-butyl ether	2.8		1.0	0.13	ug/L	1		8260B	Total/NA

Client Sample ID: MW-4 — Lab Sample ID: 460-105303-4

No Detections.

Client Sample ID: MW-5 — Lab Sample ID: 460-105303-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	22		1.0	0.090	ug/L	1		8260B	Total/NA
Toluene	0.89	J	1.0	0.25	ug/L	1		8260B	Total/NA
Xylenes, Total	2.2		2.0	0.28	ug/L	1		8260B	Total/NA
Methyl tert-butyl ether	18		1.0	0.13	ug/L	1		8260B	Total/NA

Client Sample ID: MW-6 — Lab Sample ID: 460-105303-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methyl tert-butyl ether	3.5		1.0	0.13	ug/L	1		8260B	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 460-105303-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methyl tert-butyl ether	47		1.0	0.13	ug/L	1		8260B	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 460-105303-8

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Piki, Newtown Square

TestAmerica Job ID: 460-105303-1

Client Sample ID: MW-8 (Continued) — Lab Sample ID: 460-105303-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methyl tert-butyl ether	430		1.0	0.13	ug/L	1		8260B	Total/NA

Client Sample ID: Field Blank — Lab Sample ID: 460-105303-9

No Detections.

Client Sample ID: Trip Blank — Lab Sample ID: 460-105303-10

No Detections.

Client Sample ID: MW-9 — Lab Sample ID: 460-105303-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.15	J	1.0	0.090	ug/L	1		8260B	Total/NA

Client Sample ID: MW-10 — Lab Sample ID: 460-105303-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methyl tert-butyl ether	50		1.0	0.13	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-1

Lab Sample ID: 460-105303-1
Matrix: Water
Date Collected: 11/22/15 20:45
Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	220		20	1.8	ug/L			12/03/15 01:00	20
Toluene	22		20	5.0	ug/L			12/03/15 01:00	20
Ethylbenzene	63		20	6.0	ug/L			12/03/15 01:00	20
Xylenes, Total	16	J	40	5.6	ug/L			12/03/15 01:00	20
Methyl tert-butyl ether	5400		20	2.6	ug/L			12/03/15 01:00	20
Naphthalene	59		20	5.2	ug/L			12/03/15 01:00	20
1,2,4-Trimethylbenzene	9.3	J	20	4.6	ug/L			12/03/15 01:00	20
1,3,5-Trimethylbenzene	5.8	J	20	5.0	ug/L			12/03/15 01:00	20
Isopropylbenzene	12	J	20	6.4	ug/L			12/03/15 01:00	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 137*		*12/03/15 01:00*	*20*
Toluene-d8 (Surr)	*95*		*74 - 120*		*12/03/15 01:00*	*20*
Bromofluorobenzene	*102*		*70 - 131*		*12/03/15 01:00*	*20*
Dibromofluoromethane (Surr)	*100*		*72 - 136*		*12/03/15 01:00*	*20*

Client Sample ID: MW-2

Lab Sample ID: 460-105303-2
Matrix: Water
Date Collected: 11/22/15 21:10
Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	23		1.0	0.090	ug/L			12/02/15 22:17	1
Toluene	0.25	J	1.0	0.25	ug/L			12/02/15 22:17	1
Ethylbenzene	0.55	J	1.0	0.30	ug/L			12/02/15 22:17	1
Xylenes, Total	1.4	J	2.0	0.28	ug/L			12/02/15 22:17	1
Methyl tert-butyl ether	8.9		1.0	0.13	ug/L			12/02/15 22:17	1
Naphthalene	0.36	J	1.0	0.26	ug/L			12/02/15 22:17	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 22:17	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 22:17	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 137*		*12/02/15 22:17*	*1*
Toluene-d8 (Surr)	*112*		*74 - 120*		*12/02/15 22:17*	*1*
Bromofluorobenzene	*120*		*70 - 131*		*12/02/15 22:17*	*1*
Dibromofluoromethane (Surr)	*115*		*72 - 136*		*12/02/15 22:17*	*1*

Client Sample ID: MW-3

Lab Sample ID: 460-105303-3
Matrix: Water
Date Collected: 11/22/15 21:40
Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.63	J	1.0	0.090	ug/L			12/02/15 21:50	1
Toluene	0.25	U	1.0	0.25	ug/L			12/02/15 21:50	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 21:50	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			12/02/15 21:50	1
Methyl tert-butyl ether	2.8		1.0	0.13	ug/L			12/02/15 21:50	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 21:50	1

Client Sample ID: MW-3

Lab Sample ID: 460-105303-3

Date Collected: 11/22/15 21:40

Matrix: Water

Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 21:50	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 21:50	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 21:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 137*		*12/02/15 21:50*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*12/02/15 21:50*	*1*
Bromofluorobenzene	*104*		*70 - 131*		*12/02/15 21:50*	*1*
Dibromofluoromethane (Surr)	*101*		*72 - 136*		*12/02/15 21:50*	*1*

Client Sample ID: MW-4

Lab Sample ID: 460-105303-4

Date Collected: 11/22/15 22:20

Matrix: Water

Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			12/02/15 21:23	1
Toluene	0.25	U	1.0	0.25	ug/L			12/02/15 21:23	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 21:23	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			12/02/15 21:23	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			12/02/15 21:23	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 21:23	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 21:23	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 21:23	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 21:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 137*		*12/02/15 21:23*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*12/02/15 21:23*	*1*
Bromofluorobenzene	*101*		*70 - 131*		*12/02/15 21:23*	*1*
Dibromofluoromethane (Surr)	*101*		*72 - 136*		*12/02/15 21:23*	*1*

Client Sample ID: MW-5

Lab Sample ID: 460-105303-5

Date Collected: 11/22/15 20:30

Matrix: Water

Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**22**		1.0	0.090	ug/L			12/02/15 17:30	1
Toluene	**0.89**	**J**	1.0	0.25	ug/L			12/02/15 17:30	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 17:30	1
Xylenes, Total	**2.2**		2.0	0.28	ug/L			12/02/15 17:30	1
Methyl tert-butyl ether	**18**		1.0	0.13	ug/L			12/02/15 17:30	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 17:30	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 17:30	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 17:30	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 137*		*12/02/15 17:30*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*12/02/15 17:30*	*1*

Client Sample ID: MW-5

Date Collected: 11/22/15 20:30
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Bromofluorobenzene	*102*		*70 - 131*		*12/02/15 17:30*	*1*
Dibromofluoromethane (Surr)	*98*		*72 - 136*		*12/02/15 17:30*	*1*

Client Sample ID: MW-6

Date Collected: 11/22/15 19:50
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			12/02/15 16:10	1
Toluene	0.25	U	1.0	0.25	ug/L			12/02/15 16:10	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 16:10	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			12/02/15 16:10	1
Methyl tert-butyl ether	**3.5**		1.0	0.13	ug/L			12/02/15 16:10	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 16:10	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 16:10	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 16:10	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 16:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 137*		*12/02/15 16:10*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*12/02/15 16:10*	*1*
Bromofluorobenzene	*99*		*70 - 131*		*12/02/15 16:10*	*1*
Dibromofluoromethane (Surr)	*99*		*72 - 136*		*12/02/15 16:10*	*1*

Client Sample ID: MW-7

Date Collected: 11/22/15 19:00
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-7
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			12/02/15 16:37	1
Toluene	0.25	U	1.0	0.25	ug/L			12/02/15 16:37	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 16:37	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			12/02/15 16:37	1
Methyl tert-butyl ether	**47**		1.0	0.13	ug/L			12/02/15 16:37	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 16:37	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 16:37	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 16:37	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 16:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 137*		*12/02/15 16:37*	*1*
Toluene-d8 (Surr)	*110*		*74 - 120*		*12/02/15 16:37*	*1*
Bromofluorobenzene	*113*		*70 - 131*		*12/02/15 16:37*	*1*
Dibromofluoromethane (Surr)	*115*		*72 - 136*		*12/02/15 16:37*	*1*

Client Sample ID: MW-8

Lab Sample ID: 460-105303-8
Matrix: Water
Date Collected: 11/22/15 19:20
Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			12/02/15 17:04	1
Toluene	0.25	U	1.0	0.25	ug/L			12/02/15 17:04	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 17:04	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			12/02/15 17:04	1
Methyl tert-butyl ether	430		1.0	0.13	ug/L			12/02/15 17:04	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 17:04	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 17:04	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 17:04	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 137*		*12/02/15 17:04*	*1*
Toluene-d8 (Surr)	*102*		*74 - 120*		*12/02/15 17:04*	*1*
Bromofluorobenzene	*109*		*70 - 131*		*12/02/15 17:04*	*1*
Dibromofluoromethane (Surr)	*107*		*72 - 136*		*12/02/15 17:04*	*1*

Client Sample ID: Field Blank

Lab Sample ID: 460-105303-9
Matrix: Water
Date Collected: 11/21/15 22:40
Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			12/02/15 13:29	1
Toluene	0.25	U	1.0	0.25	ug/L			12/02/15 13:29	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 13:29	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			12/02/15 13:29	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			12/02/15 13:29	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 13:29	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 13:29	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 13:29	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 13:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 137*		*12/02/15 13:29*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*12/02/15 13:29*	*1*
Bromofluorobenzene	*100*		*70 - 131*		*12/02/15 13:29*	*1*
Dibromofluoromethane (Surr)	*100*		*72 - 136*		*12/02/15 13:29*	*1*

Client Sample ID: Trip Blank

Lab Sample ID: 460-105303-10
Matrix: Water
Date Collected: 11/22/15 22:20
Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			12/02/15 13:55	1
Toluene	0.25	U	1.0	0.25	ug/L			12/02/15 13:55	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 13:55	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			12/02/15 13:55	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			12/02/15 13:55	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 13:55	1

Client Sample ID: Trip Blank

Lab Sample ID: 460-105303-10
Matrix: Water
Date Collected: 11/22/15 22:20
Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 13:55	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 13:55	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 13:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 137*		*12/02/15 13:55*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*12/02/15 13:55*	*1*
Bromofluorobenzene	*101*		*70 - 131*		*12/02/15 13:55*	*1*
Dibromofluoromethane (Surr)	*100*		*72 - 136*		*12/02/15 13:55*	*1*

Client Sample ID: MW-9

Lab Sample ID: 460-105303-11
Matrix: Water
Date Collected: 11/18/15 16:25
Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.15**	**J**	1.0	0.090	ug/L			12/02/15 10:46	1
Toluene	0.25	U	1.0	0.25	ug/L			12/02/15 10:46	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 10:46	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			12/02/15 10:46	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			12/02/15 10:46	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 10:46	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 10:46	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 10:46	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 10:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 137*		*12/02/15 10:46*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*12/02/15 10:46*	*1*
Bromofluorobenzene	*98*		*70 - 131*		*12/02/15 10:46*	*1*
Dibromofluoromethane (Surr)	*100*		*72 - 136*		*12/02/15 10:46*	*1*

Client Sample ID: MW-10

Lab Sample ID: 460-105303-12
Matrix: Water
Date Collected: 11/18/15 15:55
Date Received: 11/25/15 13:03

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			12/02/15 11:14	1
Toluene	0.25	U	1.0	0.25	ug/L			12/02/15 11:14	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 11:14	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			12/02/15 11:14	1
Methyl tert-butyl ether	**50**		1.0	0.13	ug/L			12/02/15 11:14	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 11:14	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 11:14	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 11:14	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 11:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 137*		*12/02/15 11:14*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*12/02/15 11:14*	*1*

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Piki, Newtown Square

TestAmerica Job ID: 460-105303-1

Client Sample ID: MW-10
Date Collected: 11/18/15 15:55
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-12
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Bromofluorobenzene	101		70 - 131		12/02/15 11:14	1
Dibromofluoromethane (Surr)	99		72 - 136		12/02/15 11:14	1

Surrogate Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Piki, Newtown Square

TestAmerica Job ID: 460-105303-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	12DCE (70-137)	TOL (74-120)	BFB (70-131)	DBFM (72-136)
460-105303-1	MW-1	98	95	102	100
460-105303-2	MW-2	111	112	120	115
460-105303-3	MW-3	98	95	104	101
460-105303-4	MW-4	95	96	101	101
460-105303-4 MS	MW-4	98	95	106	102
460-105303-4 MSD	MW-4	94	95	99	99
460-105303-5	MW-5	95	93	102	98
460-105303-6	MW-6	94	93	99	99
460-105303-7	MW-7	110	110	113	115
460-105303-8	MW-8	100	102	109	107
460-105303-9	Field Blank	96	94	100	100
460-105303-10	Trip Blank	96	96	101	100
460-105303-11	MW-9	97	93	98	100
460-105303-12	MW-10	96	95	101	99
LCS 460-338308/4	Lab Control Sample	94	95	104	101
LCS 460-338438/3	Lab Control Sample	91	93	103	99
LCSD 460-338308/5	Lab Control Sample Dup	94	95	104	101
MB 460-338308/8	Method Blank	95	95	101	99
MB 460-338438/7	Method Blank	95	94	100	101

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = Bromofluorobenzene
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 460-338308/8
Matrix: Water
Analysis Batch: 338308

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			12/02/15 09:25	1
Toluene	0.25	U	1.0	0.25	ug/L			12/02/15 09:25	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 09:25	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			12/02/15 09:25	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			12/02/15 09:25	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 09:25	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 09:25	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 09:25	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 09:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 137*		*12/02/15 09:25*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*12/02/15 09:25*	*1*
Bromofluorobenzene	*101*		*70 - 131*		*12/02/15 09:25*	*1*
Dibromofluoromethane (Surr)	*99*		*72 - 136*		*12/02/15 09:25*	*1*

Lab Sample ID: LCS 460-338308/4
Matrix: Water
Analysis Batch: 338308

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	19.0		ug/L		95	76 - 125
Toluene	20.0	19.3		ug/L		96	80 - 120
Ethylbenzene	20.0	19.3		ug/L		96	80 - 120
Xylenes, Total	40.0	38.4		ug/L		96	80 - 120
Methyl tert-butyl ether	20.0	19.7		ug/L		99	78 - 129
Naphthalene	20.0	19.2		ug/L		96	66 - 133
1,2,4-Trimethylbenzene	20.0	19.1		ug/L		95	74 - 127
1,3,5-Trimethylbenzene	20.0	18.8		ug/L		94	68 - 130
Isopropylbenzene	20.0	20.3		ug/L		102	80 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 137*
Toluene-d8 (Surr)	*95*		*74 - 120*
Bromofluorobenzene	*104*		*70 - 131*
Dibromofluoromethane (Surr)	*101*		*72 - 136*

Lab Sample ID: LCSD 460-338308/5
Matrix: Water
Analysis Batch: 338308

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	19.1		ug/L		96	76 - 125	1	30
Toluene	20.0	19.4		ug/L		97	80 - 120	1	30
Ethylbenzene	20.0	19.4		ug/L		97	80 - 120	0	30
Xylenes, Total	40.0	38.7		ug/L		97	80 - 120	1	30
Methyl tert-butyl ether	20.0	19.9		ug/L		99	78 - 129	1	30

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 460-338308/5
Matrix: Water
Analysis Batch: 338308

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene			20.0	20.3		ug/L		101	66 - 133	6	30
1,2,4-Trimethylbenzene			20.0	19.2		ug/L		96	74 - 127	1	30
1,3,5-Trimethylbenzene			20.0	19.2		ug/L		96	68 - 130	2	30
Isopropylbenzene			20.0	20.4		ug/L		102	80 - 127	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 137*
Toluene-d8 (Surr)	*95*		*74 - 120*
Bromofluorobenzene	*104*		*70 - 131*
Dibromofluoromethane (Surr)	*101*		*72 - 136*

Lab Sample ID: MB 460-338438/7
Matrix: Water
Analysis Batch: 338438

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			12/02/15 20:56	1
Toluene	0.25	U	1.0	0.25	ug/L			12/02/15 20:56	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			12/02/15 20:56	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			12/02/15 20:56	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			12/02/15 20:56	1
Naphthalene	0.26	U	1.0	0.26	ug/L			12/02/15 20:56	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			12/02/15 20:56	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			12/02/15 20:56	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			12/02/15 20:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 137*		*12/02/15 20:56*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*12/02/15 20:56*	*1*
Bromofluorobenzene	*100*		*70 - 131*		*12/02/15 20:56*	*1*
Dibromofluoromethane (Surr)	*101*		*72 - 136*		*12/02/15 20:56*	*1*

Lab Sample ID: LCS 460-338438/3
Matrix: Water
Analysis Batch: 338438

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene			20.0	19.2		ug/L		96	76 - 125
Toluene			20.0	19.1		ug/L		95	80 - 120
Ethylbenzene			20.0	19.3		ug/L		97	80 - 120
Xylenes, Total			40.0	38.8		ug/L		97	80 - 120
Methyl tert-butyl ether			20.0	18.4		ug/L		92	78 - 129
Naphthalene			20.0	17.8		ug/L		89	66 - 133
1,2,4-Trimethylbenzene			20.0	19.3		ug/L		96	74 - 127
1,3,5-Trimethylbenzene			20.0	19.1		ug/L		96	68 - 130
Isopropylbenzene			20.0	20.1		ug/L		101	80 - 127

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 460-338438/3
Matrix: Water
Analysis Batch: 338438

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		70 - 137
Toluene-d8 (Surr)	93		74 - 120
Bromofluorobenzene	103		70 - 131
Dibromofluoromethane (Surr)	99		72 - 136

Lab Sample ID: 460-105303-4 MS
Matrix: Water
Analysis Batch: 338438

Client Sample ID: MW-4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.090	U	200	186		ug/L		93	76 - 125
Toluene	0.25	U	200	188		ug/L		94	80 - 120
Ethylbenzene	0.30	U	200	194		ug/L		97	80 - 120
Xylenes, Total	0.28	U	400	375		ug/L		94	80 - 120
Methyl tert-butyl ether	0.13	U	200	205		ug/L		103	78 - 129
Naphthalene	0.26	U	200	189		ug/L		95	66 - 133
1,2,4-Trimethylbenzene	0.23	U	200	191		ug/L		96	74 - 127
1,3,5-Trimethylbenzene	0.25	U	200	190		ug/L		95	68 - 130
Isopropylbenzene	0.32	U	200	197		ug/L		98	80 - 127

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		70 - 137
Toluene-d8 (Surr)	95		74 - 120
Bromofluorobenzene	106		70 - 131
Dibromofluoromethane (Surr)	102		72 - 136

Lab Sample ID: 460-105303-4 MSD
Matrix: Water
Analysis Batch: 338438

Client Sample ID: MW-4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.090	U	200	188		ug/L		94	76 - 125	1	30
Toluene	0.25	U	200	189		ug/L		95	80 - 120	1	30
Ethylbenzene	0.30	U	200	195		ug/L		97	80 - 120	0	30
Xylenes, Total	0.28	U	400	377		ug/L		94	80 - 120	1	30
Methyl tert-butyl ether	0.13	U	200	202		ug/L		101	78 - 129	1	30
Naphthalene	0.26	U	200	198		ug/L		99	66 - 133	5	30
1,2,4-Trimethylbenzene	0.23	U	200	193		ug/L		96	74 - 127	1	30
1,3,5-Trimethylbenzene	0.25	U	200	191		ug/L		96	68 - 130	1	30
Isopropylbenzene	0.32	U	200	187		ug/L		94	80 - 127	5	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		70 - 137
Toluene-d8 (Surr)	95		74 - 120
Bromofluorobenzene	99		70 - 131
Dibromofluoromethane (Surr)	99		72 - 136

QC Association Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Piki, Newtown Square

TestAmerica Job ID: 460-105303-1

GC/MS VOA

Analysis Batch: 338308

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-105303-5	MW-5	Total/NA	Water	8260B	
460-105303-6	MW-6	Total/NA	Water	8260B	
460-105303-7	MW-7	Total/NA	Water	8260B	
460-105303-8	MW-8	Total/NA	Water	8260B	
460-105303-9	Field Blank	Total/NA	Water	8260B	
460-105303-10	Trip Blank	Total/NA	Water	8260B	
460-105303-11	MW-9	Total/NA	Water	8260B	
460-105303-12	MW-10	Total/NA	Water	8260B	
LCS 460-338308/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 460-338308/5	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 460-338308/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 338438

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-105303-1	MW-1	Total/NA	Water	8260B	
460-105303-2	MW-2	Total/NA	Water	8260B	
460-105303-3	MW-3	Total/NA	Water	8260B	
460-105303-4	MW-4	Total/NA	Water	8260B	
460-105303-4 MS	MW-4	Total/NA	Water	8260B	
460-105303-4 MSD	MW-4	Total/NA	Water	8260B	
LCS 460-338438/3	Lab Control Sample	Total/NA	Water	8260B	
MB 460-338438/7	Method Blank	Total/NA	Water	8260B	

Lab Chronicle

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Piki, Newtown Square

TestAmerica Job ID: 460-105303-1

Client Sample ID: MW-1
Date Collected: 11/22/15 20:45
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		20	338438	12/03/15 01:00	AAT	TAL EDI

Client Sample ID: MW-2
Date Collected: 11/22/15 21:10
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	338438	12/02/15 22:17	AAT	TAL EDI

Client Sample ID: MW-3
Date Collected: 11/22/15 21:40
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	338438	12/02/15 21:50	AAT	TAL EDI

Client Sample ID: MW-4
Date Collected: 11/22/15 22:20
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	338438	12/02/15 21:23	AAT	TAL EDI

Client Sample ID: MW-5
Date Collected: 11/22/15 20:30
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	338308	12/02/15 17:30	CJM	TAL EDI

Client Sample ID: MW-6
Date Collected: 11/22/15 19:50
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	338308	12/02/15 16:10	CJM	TAL EDI

Lab Chronicle

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Piki, Newtown Square

TestAmerica Job ID: 460-105303-1

Client Sample ID: MW-7
Date Collected: 11/22/15 19:00
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	338308	12/02/15 16:37	CJM	TAL EDI

Client Sample ID: MW-8
Date Collected: 11/22/15 19:20
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	338308	12/02/15 17:04	CJM	TAL EDI

Client Sample ID: Field Blank
Date Collected: 11/21/15 22:40
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	338308	12/02/15 13:29	CJM	TAL EDI

Client Sample ID: Trip Blank
Date Collected: 11/22/15 22:20
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	338308	12/02/15 13:55	CJM	TAL EDI

Client Sample ID: MW-9
Date Collected: 11/18/15 16:25
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	338308	12/02/15 10:46	CJM	TAL EDI

Client Sample ID: MW-10
Date Collected: 11/18/15 15:55
Date Received: 11/25/15 13:03

Lab Sample ID: 460-105303-12
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	338308	12/02/15 11:14	CJM	TAL EDI

Laboratory References:
TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Certification Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Piki, Newtown Square

TestAmerica Job ID: 460-105303-1

Laboratory: TestAmerica Edison

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-16
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-15
New Jersey	NELAP	2	12028	06-30-16
New York	NELAP	2	11452	03-31-16
Pennsylvania	NELAP	3	68-00522	02-28-16
Rhode Island	State Program	1	LAO00132	12-30-15
USDA	Federal		NJCA-003-08	04-04-17

Method Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Piki, Newtown Square

TestAmerica Job ID: 460-105303-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL EDI

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: MIG Consulting LLC
Project/Site: 3608 West Chester Piki, Newtown Square

TestAmerica Job ID: 460-105303-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-105303-1	MW-1	Water	11/22/15 20:45	11/25/15 13:03
460-105303-2	MW-2	Water	11/22/15 21:10	11/25/15 13:03
460-105303-3	MW-3	Water	11/22/15 21:40	11/25/15 13:03
460-105303-4	MW-4	Water	11/22/15 22:20	11/25/15 13:03
460-105303-5	MW-5	Water	11/22/15 20:30	11/25/15 13:03
460-105303-6	MW-6	Water	11/22/15 19:50	11/25/15 13:03
460-105303-7	MW-7	Water	11/22/15 19:00	11/25/15 13:03
460-105303-8	MW-8	Water	11/22/15 19:20	11/25/15 13:03
460-105303-9	Field Blank	Water	11/21/15 22:40	11/25/15 13:03
460-105303-10	Trip Blank	Water	11/22/15 22:20	11/25/15 13:03
460-105303-11	MW-9	Water	11/18/15 16:25	11/25/15 13:03
460-105303-12	MW-10	Water	11/18/15 15:55	11/25/15 13:03

ANALYZE FOR 8260B

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS

460-105303 Chain of Custody

d
3817
) Fax: (732) 549-3679

12/8/2015

age 1 of 2

Name (for report and invoice) EP Singh	Samplers Name (Printed) JOHN MAHR	Site/Project Identification 360E, West Chester Pike Newtown Square, PA
Company MLG Consulting LLC	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: PA
Address 707 Raritan Ave	Analysis Turnaround Time: Standard ☑	Regulatory Program: DKQP: ☐
City Highland Park State NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone 732-543-1150 Fax 732-543-1148		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	PA DEP Method 8260B Shortlist	Benzene	Toluene	Ethylbenzene	Total Xylenes	Cumene	MTBE	Naphthalene	1,2,4-TMB	1,3,5-TMB		LAB USE ONLY Project No: Job No: 105303 Sample Numbers
MW-1	11/22/15	2045	GW	3		✓	✓	✓	✓	✓	✓	✓	✓	✓		-1
MW-2	"	2110	"	"		✓	✓	✓	✓	✓	✓	✓	✓	✓		-2
MW-3	"	2140	"	"		✓	✓	✓	✓	✓	✓	✓	✓	✓		-3
MW-4	"	2220	"	"		✓	✓	✓	✓	✓	✓	✓	✓	✓		-4
MW-5	"	2030	"	"		✓	✓	✓	✓	✓	✓	✓	✓	✓		-5
MW-6	"	1950	"	"		✓	✓	✓	✓	✓	✓	✓	✓	✓		-6
MW-7	"	1900	"	"		✓	✓	✓	✓	✓	✓	✓	✓	✓		-7
MW-8	11/22/15	1920	GW	3		✓	✓	✓	✓	✓	✓	✓	✓	✓		-8
Field Blank	11/21/15	2240	W	2		✓	✓	✓	✓	✓	✓	✓	✓	✓		-9
Temp Blank	—	—	—	2		✓	✓	✓	✓	✓	✓	✓	✓	✓		-10

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other _____, 7 = Other _____ Soil: Water: 2, 1

Special Instructions: Please analyze for EPA Method 5035/8260B. PA-Shortlist Water Metals Filtered (Yes/No)? —

Relinquished by	Company	Date / Time	Received by	Company
1) RAVI	MLG Consulting LLC	11/25/15 12:25 PM	1) K CHALOVA	TA
2) K CHALOVA	TA	11/25/15 1:03 PM	2)	TA
3)			3)	
4)			4)	

H5
2.3°C
4.3°C

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL - 0016 (0715)

Massachusetts (M-NJ312), North Carolina (No. 578)

NO CS

ANALYZE FOR 8260B

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

12/8/2015

Name (for report and invoice): IP SINGH	Samplers Name (Printed): JOHN MAIKE	Site/Project Identification: NEWTOWN SQUARE
Company: MIG CONSULTING	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: PA
		Regulatory Program: DKQP: ☐
Address: 707 RARITAN AVE	Analysis Turnaround Time: Standard ☑	
City: HIGHLAND PARK State: NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone: 732-543-1150 Fax: 732-543-1148		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	PA DEP METHOD 8260B	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES (TOTAL)	CUMENE	MTBE	NAPHTHALENE	1,2,4 TMB	1,3,5 TMB		LAB USE ONLY Sample Numbers
MW-9	11/18/15	1625	GW	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		-11
MW-10	11/19/15	1555	GW	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		-12

LAB USE ONLY Project No: Job No: 105303

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other _____, 7 = Other _____ Soil: Water: 2;1

* NOTE: SAMPLE DATE IS 11/16/15

Special Instructions: Please analyze for EPA method 5035/8260B. PA shortlist

Water Metals Filtered (Yes/No)? —

Relinquished by	Company	Date / Time	Received by	Company
1) JOHN MAIKE	MIG CONSULTING	11/25/15 [illegible]	1) K CHALOUGA	TA
2) K CHALOUGA	TA	11/25/15 1603	2)	
3)			3)	
4)			4)	

2-3°C
4.3°C

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132), Massachusetts (M-NJ312), North Carolina (No. 578)

TAL - 0016 (0715)

NO CS

Job Number: 105303

TestAmerica Edison
Receipt Temperature and pH Log

Number of Coolers: 1 IR Gun # 5

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	2.3 °C	4.3 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: LCC Date: 11/25/15

Login Sample Receipt Checklist

Client: MIG Consulting LLC

Job Number: 460-105303-1

Login Number: 105303
List Number: 1
Creator: Rivera, Kenneth

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.3°C, IR #5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	See NCM
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

PHOENIX
Environmental Laboratories, Inc.

Thursday, March 03, 2016

Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Project ID: NEWTOWN SQUARE
Sample ID#s: BK70909 - BK70918

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 03, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		02/28/16	20:40
Location Code:	MIGCONSULT	Received by:	SW	02/29/16	16:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK70909
Phoenix ID: BK70909

Project ID: NEWTOWN SQUARE
Client ID: MW-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	20	ug/L	20	03/01/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	20	ug/L	20	03/01/16	MH	SW8260C
Benzene	550	20	ug/L	20	03/01/16	MH	SW8260C
Ethylbenzene	87	20	ug/L	20	03/01/16	MH	SW8260C
Isopropylbenzene	30	20	ug/L	20	03/01/16	MH	SW8260C
m&p-Xylene	22	20	ug/L	20	03/01/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	9400	500	ug/L	500	03/01/16	MH	SW8260C
Naphthalene	110	20	ug/L	20	03/01/16	MH	SW8260C
o-Xylene	ND	20	ug/L	20	03/01/16	MH	SW8260C
Toluene	23	20	ug/L	20	03/01/16	MH	SW8260C
Xylenes (Total)	22	20	ug/L	20	03/01/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	20	03/01/16	MH	70 - 130 %
% Bromofluorobenzene	97		%	20	03/01/16	MH	70 - 130 %
% Dibromofluoromethane	99		%	20	03/01/16	MH	70 - 130 %
% Toluene-d8	99		%	20	03/01/16	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Volatile Comment:
Elevated reporting limits for volatiles due to the presence of target and/or non-target compounds.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
March 03, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
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Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 03, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		02/28/16	22:10
Location Code:	MIGCONSULT	Received by:	SW	02/29/16	16:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK70909
Phoenix ID: BK70910

Project ID: NEWTOWN SQUARE
Client ID: MW-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Benzene	9.5	1.0	ug/L	1	02/29/16	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	8.9	1.0	ug/L	1	02/29/16	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Toluene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Xylenes (Total)	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	101		%	1	02/29/16	MH	70 - 130 %
% Bromofluorobenzene	99		%	1	02/29/16	MH	70 - 130 %
% Dibromofluoromethane	104		%	1	02/29/16	MH	70 - 130 %
% Toluene-d8	100		%	1	02/29/16	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
March 03, 2016
Reviewed and Released by: Ethan Lee, Project Manager

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Environmental Laboratories, Inc.
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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 03, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		02/28/16	21:35
Location Code:	MIGCONSULT	Received by:	SW	02/29/16	16:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK70909
Phoenix ID: BK70911

Project ID: NEWTOWN SQUARE
Client ID: MW-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Benzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	2.3	1.0	ug/L	1	02/29/16	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Toluene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Xylenes (Total)	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	101		%	1	02/29/16	MH	70 - 130 %
% Bromofluorobenzene	98		%	1	02/29/16	MH	70 - 130 %
% Dibromofluoromethane	99		%	1	02/29/16	MH	70 - 130 %
% Toluene-d8	101		%	1	02/29/16	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
March 03, 2016
Reviewed and Released by: Ethan Lee, Project Manager

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 03, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		02/28/16	22:40
Location Code:	MIGCONSULT	Received by:	SW	02/29/16	16:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK70909
Phoenix ID: BK70912

Project ID: NEWTOWN SQUARE
Client ID: MW-5

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Benzene	27	1.0	ug/L	1	02/29/16	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	20	1.0	ug/L	1	02/29/16	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Toluene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Xylenes (Total)	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	1	02/29/16	MH	70 - 130 %
% Bromofluorobenzene	102		%	1	02/29/16	MH	70 - 130 %
% Dibromofluoromethane	100		%	1	02/29/16	MH	70 - 130 %
% Toluene-d8	99		%	1	02/29/16	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
March 03, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 03, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		02/28/16	22:15
Location Code:	MIGCONSULT	Received by:	SW	02/29/16	16:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK70909
Phoenix ID: BK70913

Project ID: NEWTOWN SQUARE
Client ID: MW-6

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Benzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	200	20	ug/L	20	03/01/16	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Toluene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Xylenes (Total)	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	103		%	1	02/29/16	MH	70 - 130 %
% Bromofluorobenzene	100		%	1	02/29/16	MH	70 - 130 %
% Dibromofluoromethane	103		%	1	02/29/16	MH	70 - 130 %
% Toluene-d8	100		%	1	02/29/16	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
March 03, 2016
Reviewed and Released by: Ethan Lee, Project Manager

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 03, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		02/28/16	21:45
Location Code:	MIGCONSULT	Received by:	SW	02/29/16	16:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK70909
Phoenix ID: BK70914

Project ID: NEWTOWN SQUARE
Client ID: MW-7

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Benzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	2.4	1.0	ug/L	1	03/01/16	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Xylenes (Total)	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	99		%	1	03/01/16	MH	70 - 130 %
% Bromofluorobenzene	98		%	1	03/01/16	MH	70 - 130 %
% Dibromofluoromethane	97		%	1	03/01/16	MH	70 - 130 %
% Toluene-d8	100		%	1	03/01/16	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
March 03, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 03, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		02/28/16	21:10
Location Code:	MIGCONSULT	Received by:	SW	02/29/16	16:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK70909
Phoenix ID: BK70915

Project ID: NEWTOWN SQUARE
Client ID: MW-8

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Benzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	650	50	ug/L	50	03/01/16	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Xylenes (Total)	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	102		%	1	03/01/16	MH	70 - 130 %
% Bromofluorobenzene	100		%	1	03/01/16	MH	70 - 130 %
% Dibromofluoromethane	99		%	1	03/01/16	MH	70 - 130 %
% Toluene-d8	100		%	1	03/01/16	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
March 03, 2016
Reviewed and Released by: Ethan Lee, Project Manager

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587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 03, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		02/28/16	21:35
Location Code:	MIGCONSULT	Received by:	SW	02/29/16	16:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK70909
Phoenix ID: BK70916

Project ID: NEWTOWN SQUARE
Client ID: MW-9

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Benzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Xylenes (Total)	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	1	03/01/16	MH	70 - 130 %
% Bromofluorobenzene	98		%	1	03/01/16	MH	70 - 130 %
% Dibromofluoromethane	97		%	1	03/01/16	MH	70 - 130 %
% Toluene-d8	99		%	1	03/01/16	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
March 03, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 03, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		02/28/16	21:40
Location Code:	MIGCONSULT	Received by:	SW	02/29/16	16:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK70909
Phoenix ID: BK70917

Project ID: NEWTOWN SQUARE
Client ID: FIELD BLANK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Benzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
Xylenes (Total)	ND	1.0	ug/L	1	03/01/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	1	03/01/16	MH	70 - 130 %
% Bromofluorobenzene	98		%	1	03/01/16	MH	70 - 130 %
% Dibromofluoromethane	97		%	1	03/01/16	MH	70 - 130 %
% Toluene-d8	100		%	1	03/01/16	MH	70 - 130 %

Project ID: NEWTOWN SQUARE
Client ID: FIELD BLANK

Phoenix I.D.: BK70917

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
March 03, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 03, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		02/28/16	
Location Code:	MIGCONSULT	Received by:	SW	02/29/16	16:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK70909
Phoenix ID: BK70918

Project ID: NEWTOWN SQUARE
Client ID: TRIP BLANK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Benzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Toluene	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
Xylenes (Total)	ND	1.0	ug/L	1	02/29/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	1	02/29/16	MH	70 - 130 %
% Bromofluorobenzene	98		%	1	02/29/16	MH	70 - 130 %
% Dibromofluoromethane	101		%	1	02/29/16	MH	70 - 130 %
% Toluene-d8	101		%	1	02/29/16	MH	70 - 130 %

Project ID: NEWTOWN SQUARE
Client ID: TRIP BLANK

Phoenix I.D.: BK70918

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

TRIP BLANK INCLUDED.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
March 03, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

March 03, 2016

QA/QC Data

SDG I.D.: GBK70909

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 336557 (ug/L), QC Sample No: BK70681 (BK70910, BK70911, BK70912, BK70913, BK70918)										
Volatiles - Ground Water										
1,2,4-Trimethylbenzene	ND	1.0	101	101	0.0	92	89	3.3	70 - 130	30
1,3,5-Trimethylbenzene	ND	1.0	103	103	0.0	94	91	3.2	70 - 130	30
Benzene	ND	0.70	102	102	0.0	100	98	2.0	70 - 130	30
Ethylbenzene	ND	1.0	103	104	1.0	97	95	2.1	70 - 130	30
Isopropylbenzene	ND	1.0	103	102	1.0	97	94	3.1	70 - 130	30
m&p-Xylene	ND	1.0	103	103	0.0	94	92	2.2	70 - 130	30
Methyl t-butyl ether (MTBE)	ND	1.0	107	108	0.9	99	105	5.9	70 - 130	30
Naphthalene	ND	1.0	109	113	3.6	82	96	15.7	70 - 130	30
o-Xylene	ND	1.0	100	102	2.0	94	93	1.1	70 - 130	30
Toluene	ND	1.0	100	101	1.0	97	94	3.1	70 - 130	30
% 1,2-dichlorobenzene-d4	102	%	101	101	0.0	100	101	1.0	70 - 130	30
% Bromofluorobenzene	96	%	100	100	0.0	101	101	0.0	70 - 130	30
% Dibromofluoromethane	101	%	99	101	2.0	99	101	2.0	70 - 130	30
% Toluene-d8	99	%	101	100	1.0	101	99	2.0	70 - 130	30

Comment:

Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

QA/QC Batch 336688 (ug/L), QC Sample No: BK71458 (BK70909 (20X, 500X) , BK70913 (20X) , BK70914, BK70915 (1X, 50X) , BK70916, BK70917)

Volatiles - Ground Water

1,2,4-Trimethylbenzene	ND	1.0	102	103	1.0				70 - 130	30
1,3,5-Trimethylbenzene	ND	1.0	103	105	1.9				70 - 130	30
Benzene	ND	0.70	102	103	1.0				70 - 130	30
Ethylbenzene	ND	1.0	102	107	4.8				70 - 130	30
Isopropylbenzene	ND	1.0	101	103	2.0				70 - 130	30
m&p-Xylene	ND	1.0	102	107	4.8				70 - 130	30
Methyl t-butyl ether (MTBE)	ND	1.0	98	103	5.0				70 - 130	30
Naphthalene	ND	1.0	98	105	6.9				70 - 130	30
o-Xylene	ND	1.0	100	103	3.0				70 - 130	30
Toluene	ND	1.0	100	103	3.0				70 - 130	30
% 1,2-dichlorobenzene-d4	100	%	101	100	1.0				70 - 130	30
% Bromofluorobenzene	96	%	101	103	2.0				70 - 130	30
% Dibromofluoromethane	96	%	99	98	1.0				70 - 130	30
% Toluene-d8	99	%	100	99	1.0				70 - 130	30

Comment:

A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

QA/QC Data

SDG I.D.: GBK70909

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
March 03, 2016

Sample Criteria Exceedences Report

GBK70909 - MIGCONSULT

Criteria: PA: GW

State: PA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BK70909	$8260PAUNLW	Naphthalene	PA / GW MSC / Organics Non-Res.	110	20	100	100	ug/L
BK70909	$8260PAUNLW	Benzene	PA / GW MSC / Organics Non-Res.	550	20	5	5	ug/L
BK70909	$8260PAUNLW	Methyl t-Butyl Ether (MTBE)	PA / GW MSC / Organics Non-Res.	9400	500	20	20	ug/L
BK70909	$8260PAUNLW	1,3,5-Trimethylbenzene	PA / GW MSC / Organics Res.	ND	20	13	13	ug/L
BK70909	$8260PAUNLW	Benzene	PA / GW MSC / Organics Res.	550	20	5	5	ug/L
BK70909	$8260PAUNLW	Methyl t-Butyl Ether (MTBE)	PA / GW MSC / Organics Res.	9400	500	20	20	ug/L
BK70909	$8260PAUNLW	1,2,4-Trimethylbenzene	PA / GW MSC / Organics Res.	ND	20	15	15	ug/L
BK70909	$8260PAUNLW	Naphthalene	PA / GW MSC / Organics Res.	110	20	100	100	ug/L
BK70910	$8260PAUNLW	Benzene	PA / GW MSC / Organics Non-Res.	9.5	1.0	5	5	ug/L
BK70910	$8260PAUNLW	Benzene	PA / GW MSC / Organics Res.	9.5	1.0	5	5	ug/L
BK70912	$8260PAUNLW	Benzene	PA / GW MSC / Organics Non-Res.	27	1.0	5	5	ug/L
BK70912	$8260PAUNLW	Benzene	PA / GW MSC / Organics Res.	27	1.0	5	5	ug/L
BK70913	$8260PAUNLW	Methyl t-Butyl Ether (MTBE)	PA / GW MSC / Organics Non-Res.	200	20	20	20	ug/L
BK70913	$8260PAUNLW	Methyl t-Butyl Ether (MTBE)	PA / GW MSC / Organics Res.	200	20	20	20	ug/L
BK70915	$8260PAUNLW	Methyl t-Butyl Ether (MTBE)	PA / GW MSC / Organics Non-Res.	650	50	20	20	ug/L
BK70915	$8260PAUNLW	Methyl t-Butyl Ether (MTBE)	PA / GW MSC / Organics Res.	650	50	20	20	ug/L

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Cooler: Yes ☑ No ☐
Coolant: IPK ☐ ICE ☑ No ☐
Temp 5 °C Pg of

PHOENIX
Environmental Laboratories, Inc.

NY/NJ CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Contact Options:
Fax: 732-543-1148
Phone: 732-543-1150
Email:

Customer: MIG CONSULTING
Address: 707 RARITAN AVENUE
HIGHLAND PARK, NJ 08904

Project: NEWTOWN SQUARE
Report to: IP SINGH
Invoice to: IP SINGH

Project P.O:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: 02/28/16

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
OIL=Oil B=Bulk L=Liquid

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	PA DEP Method 8260 Shortlist	Benzene	Toluene	Ethylbenzene	Total Xylenes	Cumene	MTBE	Naphthalene	1,2,4-TMB	1,3,5-TMB	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container [ ] methanol [ ] H2O	GL Soil container [ ] oz	40 ml VOA Vial [ ] oz	GL Amber 1000ml [ ] As is [ ] HCl	PL As is [ ] 250ml [ ] As is [ ] H2SO4	PL H2SO4 [ ] 250ml [ ] 500ml [ ] 1000ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle
70909	MW-1	GW	2/28/16	2040	✓	✓	✓	✓	✓	✓	✓	✓	✓					3						
70910	MW-2	GW	2/28/16	2210	✓	✓	✓	✓	✓	✓	✓	✓	✓					3						
70911	MW-3	GW	2/28/16	2135	✓	✓	✓	✓	✓	✓	✓	✓	✓					3						
70912	MW-5	GW	2/27/16	2240	✓	✓	✓	✓	✓	✓	✓	✓	✓					3						
70913	MW-6	GW	2/27/16	2215	✓	✓	✓	✓	✓	✓	✓	✓	✓					3						
70914	MW-7	GW	2/27/16	2145	✓	✓	✓	✓	✓	✓	✓	✓	✓					3						
70915	MW-8	GW	2/27/16	2110	✓	✓	✓	✓	✓	✓	✓	✓	✓					3						
70916	MW-9	GW	2/26/16	2135	✓	✓	✓	✓	✓	✓	✓	✓	✓					3						
70917	FIELD BLANK	W	2/26/16	2140	✓	✓	✓	✓	✓	✓	✓	✓	✓					2						
70918	TRIP BLANK	W	—	—	✓	✓	✓	✓	✓	✓	✓	✓	✓					2						

Relinquished by:	Accepted by:	Date:	Time:
[signature] 2/29/16 cc 3D	[signature] 02/29/16	02/29/16	0945
[signature] 02/29/16	[signature]	2-29-16	15:30
[signature]	TF Cann	2/29/1610	1630

Comments, Special Requirements or Regulations:

Turnaround:
- ☐ 1 Day*
- ☐ 2 Days*
- ☐ 3 Days*
- ☑ 5 Days
- ☑ 10 Days
- ☐ Other

* SURCHARGE APPLIES

NJ
- ☐ Res. Criteria
- ☐ Non-Res. Criteria
- ☐ Impact to GW Soil Cleanup Criteria
- ☑ GW Criteria

NY
- ☐ TAGM 4046 GW
- ☐ TAGM 4046 SOIL
- ☐ NY375 Unrestricted Use Soil
- ☐ NY375 Residential Soil
- ☐ Restricted/Residential
- ☐ Commercial
- ☐ Industrial

Data Format
- ☑ Phoenix Std Report
- ☑ Excel
- ☑ PDF
- ☐ GIS/Key
- ☐ EQuIS
- ☐ NJ Hazsite EDD
- ☐ NY EZ EDD (ASP)
- ☐ Other

Data Package
- ☐ NJ Reduced Deliv. *
- ☐ NY Enhanced (ASP B) *
- ☐ Other

State where samples were collected: PA

PHOENIX
Environmental Laboratories, Inc.

Wednesday, March 16, 2016

Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Project ID: NEWTOWN SQUARE
Sample ID#s: BK77806 - BK77807

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 16, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:	JM	03/09/16	22:05
Location Code:	MIGCONSULT	Received by:	SW	03/11/16	18:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK77806
Phoenix ID: BK77806

Project ID: NEWTOWN SQUARE
Client ID: MW-4

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Benzene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Xylenes (Total)	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	101		%	1	03/12/16	MH	70 - 130 %
% Bromofluorobenzene	98		%	1	03/12/16	MH	70 - 130 %
% Dibromofluoromethane	100		%	1	03/12/16	MH	70 - 130 %
% Toluene-d8	101		%	1	03/12/16	MH	70 - 130 %

Project ID: NEWTOWN SQUARE
Client ID: MW-4

Phoenix I.D.: BK77806

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
March 16, 2016
Reviewed and Released by: Bobbi Aloisa, Vice President

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 16, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:	JM	03/09/16	21:30
Location Code:	MIGCONSULT	Received by:	SW	03/11/16	18:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK77806
Phoenix ID: BK77807

Project ID: NEWTOWN SQUARE
Client ID: MW-10

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles (Unleaded Gasoline)							
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Benzene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Methyl t-Butyl Ether (MTBE)	27	1.0	ug/L	1	03/12/16	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
Xylenes (Total)	ND	1.0	ug/L	1	03/12/16	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	102		%	1	03/12/16	MH	70 - 130 %
% Bromofluorobenzene	99		%	1	03/12/16	MH	70 - 130 %
% Dibromofluoromethane	101		%	1	03/12/16	MH	70 - 130 %
% Toluene-d8	100		%	1	03/12/16	MH	70 - 130 %

Project ID: NEWTOWN SQUARE
Client ID: MW-10

Phoenix I.D.: BK77807

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
March 16, 2016
Reviewed and Released by: Bobbi Aloisa, Vice President

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

March 16, 2016

QA/QC Data

SDG I.D.: GBK77806

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 337971 (ug/L), QC Sample No: BK76889 (BK77806, BK77807)										
Volatiles - Ground Water										
1,2,4-Trimethylbenzene	ND	1.0	91	86	5.6	85	101	17.2	70 - 130	30
1,3,5-Trimethylbenzene	ND	1.0	92	88	4.4	90	104	14.4	70 - 130	30
Benzene	ND	0.70	91	87	4.5	97	108	10.7	70 - 130	30
Ethylbenzene	ND	1.0	92	86	6.7	77	102	27.9	70 - 130	30
Isopropylbenzene	ND	1.0	91	84	8.0	93	103	10.2	70 - 130	30
m&p-Xylene	ND	1.0	92	86	6.7	98	108	9.7	70 - 130	30
Methyl t-butyl ether (MTBE)	ND	1.0	97	98	1.0	100	107	6.8	70 - 130	30
Naphthalene	ND	1.0	101	92	9.3	97	112	14.4	70 - 130	30
o-Xylene	ND	1.0	91	89	2.2	NC	NC	NC	70 - 130	30
Toluene	ND	1.0	91	88	3.4	95	102	7.1	70 - 130	30
% 1,2-dichlorobenzene-d4	102	%	101	100	1.0	101	100	1.0	70 - 130	30
% Bromofluorobenzene	99	%	102	99	3.0	104	104	0.0	70 - 130	30
% Dibromofluoromethane	105	%	102	103	1.0	77	76	1.3	70 - 130	30
% Toluene-d8	100	%	100	100	0.0	101	102	1.0	70 - 130	30

Comment:

Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
March 16, 2016

Sample Criteria Exceedences Report

GBK77806 - MIGCONSULT

Criteria: PA: GW

State: PA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BK77807	$8260PAUNLW	Methyl t-Butyl Ether (MTBE)	PA / GW MSC / Organics Non-Res.	27	1.0	20	20	ug/L
BK77807	$8260PAUNLW	Methyl t-Butyl Ether (MTBE)	PA / GW MSC / Organics Res.	27	1.0	20	20	ug/L

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Cooler: Yes ☑ No ☐
Coolant: IPK ☐ ICE ☑ No ☐

PHOENIX
Environmental Laboratories, Inc.

NY/NJ CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Temp 4 °C Pg of

Contact Options:
☑ Fax: 732-543-1148
☑ Phone: 732-543-1150
☑ Email: migconsultingllc@gmail.com

Customer: MIG CONSULTING, LLC
Address: 707 RARITAN AVENUE
HIGHLAND PARK, NJ 08904

Project: NEWTOWN SQUARE
Report to: Sam Habib
Invoice to: Accounts Payable/MIG Consulting LLC

Project P.O:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature: JOHN MAIRE Date: 3/9/16

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
OIL=Oil B=Bulk L=Liquid

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	PADEP METHOD 8260B	SHORTLIST	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES	CUMENE	MTBE	NAPHTHALENE	1,2,4-TMB	1,3,5-TMB	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container ( ) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [✓] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml [ ] 500ml [ ] 1000ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle
77806	MW-4	GW	3/9/16	2205			✓	✓	✓	✓	✓	✓	✓	✓	✓				3						
77807	MW-10	GW	3/9/16	2130			✓	✓	✓	✓	✓	✓	✓	✓	✓				3						

Relinquished by:	Accepted by:	Date:	Time:
		3-10-16	1251
		3-11-16	8:45

Comments, Special Requirements or Regulations:

→ PLEASE COMPARE TO PENNSYLVANIA GROUND WATER STDS
PA-GWNR and PAGWR

Turnaround:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☑ 5 Days
☐ 10 Days
☐ Other
* SURCHARGE APPLIES

NJ ☑
PA
☐ Res. Criteria
☐ Non-Res. Criteria
☐ Impact to GW Soil Cleanup Criteria
☐ GW Criteria
☑ PAGWNR
☑ PA GWR

NY
☐ NY 375 GWP
☐ NY375 Unrestricted Use Soil
☐ NY375 Residential Soil
☐ Restricted/Residential
☐ Commercial
☐ Industrial

Data Format
☑ Phoenix Std Report
☑ Excel
☑ PDF
☐ GIS/Key
☐ EQuIS
☐ NJ Hazsite EDD
☐ NY EZ EDD (ASP)
☐ Other _____

Data Package
☐ NJ Reduced Deliv. *
☐ NY Enhanced (ASP B) *
☐ Other

State where samples were collected: PA

APPENDIX E

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-97906-2
Client Project/Site: NEWTOWN SQUARE, INC

For:
MIG Consulting LLC
707 Raritan Ave
Suite 203
Highland Park, New Jersey 08904

Attn: Ravi Kolaventi

Authorized for release by:
9/15/2015 2:59:32 AM
Jannel Franklin, Project Manager I
(732)593-2551
jannel.franklin@testamericainc.com

Designee for

Sapna Nayyar, Project Manager I
(732)549-3900
sapna.nayyar@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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Definitions/Glossary

Client: MIG Consulting LLC
Project/Site: NEWTOWN SQUARE, INC

TestAmerica Job ID: 460-97906-2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 460-97906-2

Laboratory: TestAmerica Edison

Narrative

CASE NARRATIVE - REVISION 1

Client: MIG Consulting LLC

Project: NEWTOWN SQUARE, INC

Report Number: 460-97906-2

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISION 1
The following report(s) required a revision: 460-97906-1. Details are as follows: Per client request, revised to lower method from 8260C to 8260B as orginially requested on Chain of Custody.

RECEIPT
The samples were received on 7/14/2015 2:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

Receipt Exceptions

Encore for sample #1 received past holding time.

Received no moisture containers with Encores.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples SB-9 (7.5-8 ft) (460-97906-1), SB-10 (9.5-10 ft) (460-97906-2) and SB-10 (24.5-25 ft) (460-97906-3) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were prepared on 07/14/2015 and analyzed on 07/19/2015.

No difficulties were encountered during the volatiles analysis.

All quality control parameters were within the acceptance limits.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Sample TWP-1 (@ SB-10) (460-97906-4) was analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 07/22/2015.

Job ID: 460-97906-2 (Continued)

Laboratory: TestAmerica Edison (Continued)

No difficulties were encountered during the volatiles analysis.

All quality control parameters were within the acceptance limits.

Detection Summary

Client: MIG Consulting LLC
Project/Site: NEWTOWN SQUARE, INC

TestAmerica Job ID: 460-97906-2

Client Sample ID: SB-9 (7.5-8 ft) — Lab Sample ID: 460-97906-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Naphthalene	0.16	J H	1.2	0.15	ug/Kg	1		8260B	Total/NA

Client Sample ID: SB-10 (9.5-10 ft) — Lab Sample ID: 460-97906-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.40	J	1.1	0.20	ug/Kg	1		8260B	Total/NA
Naphthalene	0.14	J	1.1	0.13	ug/Kg	1		8260B	Total/NA

Client Sample ID: SB-10 (24.5-25 ft) — Lab Sample ID: 460-97906-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.24	J	1.1	0.21	ug/Kg	1		8260B	Total/NA
Methyl tert-butyl ether	0.62	J	1.1	0.19	ug/Kg	1		8260B	Total/NA

Client Sample ID: TWP-1 (@ SB-10) — Lab Sample ID: 460-97906-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.21	J	1.0	0.090	ug/L	1		8260B	Total/NA
Toluene	2.4		1.0	0.25	ug/L	1		8260B	Total/NA
Ethylbenzene	2.9		1.0	0.30	ug/L	1		8260B	Total/NA
Xylenes, Total	8.7		2.0	0.28	ug/L	1		8260B	Total/NA
Methyl tert-butyl ether	70		1.0	0.13	ug/L	1		8260B	Total/NA
Naphthalene	0.59	J	1.0	0.26	ug/L	1		8260B	Total/NA
1,2,4-Trimethylbenzene	1.0		1.0	0.23	ug/L	1		8260B	Total/NA
1,3,5-Trimethylbenzene	0.34	J	1.0	0.25	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB-9 (7.5-8 ft)

Lab Sample ID: 460-97906-1
Matrix: Solid
Date Collected: 07/12/15 13:55
Date Received: 07/14/15 14:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.25	U H	1.2	0.25	ug/Kg		07/14/15 14:30	07/19/15 07:01	1
Toluene	0.24	U H	1.2	0.24	ug/Kg		07/14/15 14:30	07/19/15 07:01	1
Ethylbenzene	0.22	U H	1.2	0.22	ug/Kg		07/14/15 14:30	07/19/15 07:01	1
Xylenes, Total	0.14	U H	2.5	0.14	ug/Kg		07/14/15 14:30	07/19/15 07:01	1
Methyl tert-butyl ether	0.21	U H	1.2	0.21	ug/Kg		07/14/15 14:30	07/19/15 07:01	1
Naphthalene	**0.16**	**J H**	1.2	0.15	ug/Kg		07/14/15 14:30	07/19/15 07:01	1
1,2,4-Trimethylbenzene	0.42	U H	1.2	0.42	ug/Kg		07/14/15 14:30	07/19/15 07:01	1
1,3,5-Trimethylbenzene	0.16	U H	1.2	0.16	ug/Kg		07/14/15 14:30	07/19/15 07:01	1
Isopropylbenzene	0.21	U H	1.2	0.21	ug/Kg		07/14/15 14:30	07/19/15 07:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 130*	*07/14/15 14:30*	*07/19/15 07:01*	*1*
Toluene-d8 (Surr)	*96*		*70 - 130*	*07/14/15 14:30*	*07/19/15 07:01*	*1*
Bromofluorobenzene	*90*		*70 - 130*	*07/14/15 14:30*	*07/19/15 07:01*	*1*
Dibromofluoromethane (Surr)	*84*		*70 - 130*	*07/14/15 14:30*	*07/19/15 07:01*	*1*

Client Sample ID: SB-10 (9.5-10 ft)

Lab Sample ID: 460-97906-2
Matrix: Solid
Date Collected: 07/12/15 15:23
Date Received: 07/14/15 14:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.21	U	1.1	0.21	ug/Kg		07/14/15 14:34	07/19/15 07:26	1
Toluene	**0.40**	**J**	1.1	0.20	ug/Kg		07/14/15 14:34	07/19/15 07:26	1
Ethylbenzene	0.19	U	1.1	0.19	ug/Kg		07/14/15 14:34	07/19/15 07:26	1
Xylenes, Total	0.12	U	2.1	0.12	ug/Kg		07/14/15 14:34	07/19/15 07:26	1
Methyl tert-butyl ether	0.18	U	1.1	0.18	ug/Kg		07/14/15 14:34	07/19/15 07:26	1
Naphthalene	**0.14**	**J**	1.1	0.13	ug/Kg		07/14/15 14:34	07/19/15 07:26	1
1,2,4-Trimethylbenzene	0.36	U	1.1	0.36	ug/Kg		07/14/15 14:34	07/19/15 07:26	1
1,3,5-Trimethylbenzene	0.14	U	1.1	0.14	ug/Kg		07/14/15 14:34	07/19/15 07:26	1
Isopropylbenzene	0.18	U	1.1	0.18	ug/Kg		07/14/15 14:34	07/19/15 07:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*	*07/14/15 14:34*	*07/19/15 07:26*	*1*
Toluene-d8 (Surr)	*105*		*70 - 130*	*07/14/15 14:34*	*07/19/15 07:26*	*1*
Bromofluorobenzene	*98*		*70 - 130*	*07/14/15 14:34*	*07/19/15 07:26*	*1*
Dibromofluoromethane (Surr)	*97*		*70 - 130*	*07/14/15 14:34*	*07/19/15 07:26*	*1*

Client Sample ID: SB-10 (24.5-25 ft)

Lab Sample ID: 460-97906-3
Matrix: Solid
Date Collected: 07/12/15 16:30
Date Received: 07/14/15 14:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.22	U	1.1	0.22	ug/Kg		07/14/15 14:39	07/19/15 07:51	1
Toluene	**0.24**	**J**	1.1	0.21	ug/Kg		07/14/15 14:39	07/19/15 07:51	1
Ethylbenzene	0.20	U	1.1	0.20	ug/Kg		07/14/15 14:39	07/19/15 07:51	1
Xylenes, Total	0.12	U	2.2	0.12	ug/Kg		07/14/15 14:39	07/19/15 07:51	1
Methyl tert-butyl ether	**0.62**	**J**	1.1	0.19	ug/Kg		07/14/15 14:39	07/19/15 07:51	1
Naphthalene	0.13	U	1.1	0.13	ug/Kg		07/14/15 14:39	07/19/15 07:51	1

Client Sample ID: SB-10 (24.5-25 ft)
Date Collected: 07/12/15 16:30
Date Received: 07/14/15 14:00

Lab Sample ID: 460-97906-3
Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	0.37	U	1.1	0.37	ug/Kg		07/14/15 14:39	07/19/15 07:51	1
1,3,5-Trimethylbenzene	0.14	U	1.1	0.14	ug/Kg		07/14/15 14:39	07/19/15 07:51	1
Isopropylbenzene	0.19	U	1.1	0.19	ug/Kg		07/14/15 14:39	07/19/15 07:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*70 - 130*	*07/14/15 14:39*	*07/19/15 07:51*	*1*
Toluene-d8 (Surr)	*93*		*70 - 130*	*07/14/15 14:39*	*07/19/15 07:51*	*1*
Bromofluorobenzene	*88*		*70 - 130*	*07/14/15 14:39*	*07/19/15 07:51*	*1*
Dibromofluoromethane (Surr)	*87*		*70 - 130*	*07/14/15 14:39*	*07/19/15 07:51*	*1*

Client Sample ID: TWP-1 (@ SB-10)
Date Collected: 07/12/15 16:45
Date Received: 07/14/15 14:00

Lab Sample ID: 460-97906-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.21**	**J**	1.0	0.090	ug/L			07/22/15 06:01	1
Toluene	**2.4**		1.0	0.25	ug/L			07/22/15 06:01	1
Ethylbenzene	**2.9**		1.0	0.30	ug/L			07/22/15 06:01	1
Xylenes, Total	**8.7**		2.0	0.28	ug/L			07/22/15 06:01	1
Methyl tert-butyl ether	**70**		1.0	0.13	ug/L			07/22/15 06:01	1
Naphthalene	**0.59**	**J**	1.0	0.26	ug/L			07/22/15 06:01	1
1,2,4-Trimethylbenzene	**1.0**		1.0	0.23	ug/L			07/22/15 06:01	1
1,3,5-Trimethylbenzene	**0.34**	**J**	1.0	0.25	ug/L			07/22/15 06:01	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			07/22/15 06:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 130*		*07/22/15 06:01*	*1*
Toluene-d8 (Surr)	*82*		*70 - 130*		*07/22/15 06:01*	*1*
Bromofluorobenzene	*90*		*64 - 135*		*07/22/15 06:01*	*1*
Dibromofluoromethane (Surr)	*101*		*72 - 137*		*07/22/15 06:01*	*1*

Surrogate Summary

Client: MIG Consulting LLC
Project/Site: NEWTOWN SQUARE, INC

TestAmerica Job ID: 460-97906-2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	12DCE (70-130)	TOL (70-130)	BFB (70-130)	DBFM (70-130)
460-97906-1	SB-9 (7.5-8 ft)	90	96	90	84
460-97906-2	SB-10 (9.5-10 ft)	104	105	98	97
460-97906-3	SB-10 (24.5-25 ft)	89	93	88	87
LCS 460-311363/4	Lab Control Sample	87	99	94	85
LCSD 460-311363/5	Lab Control Sample Dup	90	103	98	91
MB 460-311363/7	Method Blank	87	98	90	85

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = Bromofluorobenzene
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	12DCE (70-130)	TOL (70-130)	BFB (64-135)	DBFM (72-137)
460-97906-4	TWP-1 (@ SB-10)	96	82	90	101
LCS 460-322352/3	Lab Control Sample	109	97	107	117
LCSD 460-322352/4	Lab Control Sample Dup	105	95	105	112
MB 460-322352/6	Method Blank	119	106	114	124

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = Bromofluorobenzene
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 460-311363/7
Matrix: Solid
Analysis Batch: 311363

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.20	U	1.0	0.20	ug/Kg			07/19/15 05:48	1
Toluene	0.19	U	1.0	0.19	ug/Kg			07/19/15 05:48	1
Ethylbenzene	0.18	U	1.0	0.18	ug/Kg			07/19/15 05:48	1
Xylenes, Total	0.11	U	2.0	0.11	ug/Kg			07/19/15 05:48	1
Methyl tert-butyl ether	0.17	U	1.0	0.17	ug/Kg			07/19/15 05:48	1
Naphthalene	0.12	U	1.0	0.12	ug/Kg			07/19/15 05:48	1
1,2,4-Trimethylbenzene	0.34	U	1.0	0.34	ug/Kg			07/19/15 05:48	1
1,3,5-Trimethylbenzene	0.13	U	1.0	0.13	ug/Kg			07/19/15 05:48	1
Isopropylbenzene	0.17	U	1.0	0.17	ug/Kg			07/19/15 05:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*70 - 130*		*07/19/15 05:48*	*1*
Toluene-d8 (Surr)	*98*		*70 - 130*		*07/19/15 05:48*	*1*
Bromofluorobenzene	*90*		*70 - 130*		*07/19/15 05:48*	*1*
Dibromofluoromethane (Surr)	*85*		*70 - 130*		*07/19/15 05:48*	*1*

Lab Sample ID: LCS 460-311363/4
Matrix: Solid
Analysis Batch: 311363

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	19.6		ug/Kg		98	75 - 123
Toluene	20.0	19.4		ug/Kg		97	82 - 117
Ethylbenzene	20.0	19.9		ug/Kg		99	80 - 120
Xylenes, Total	40.0	39.7		ug/Kg		99	78 - 120
Methyl tert-butyl ether	20.0	18.4		ug/Kg		92	75 - 124
Naphthalene	20.0	18.0		ug/Kg		90	73 - 121
1,2,4-Trimethylbenzene	20.0	19.5		ug/Kg		98	80 - 122
1,3,5-Trimethylbenzene	20.0	19.7		ug/Kg		99	79 - 122
Isopropylbenzene	20.0	20.7		ug/Kg		104	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*70 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*
Bromofluorobenzene	*94*		*70 - 130*
Dibromofluoromethane (Surr)	*85*		*70 - 130*

Lab Sample ID: LCSD 460-311363/5
Matrix: Solid
Analysis Batch: 311363

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	19.8		ug/Kg		99	75 - 123	1	30
Toluene	20.0	19.1		ug/Kg		96	82 - 117	2	30
Ethylbenzene	20.0	19.5		ug/Kg		98	80 - 120	2	30
Xylenes, Total	40.0	38.7		ug/Kg		97	78 - 120	3	30
Methyl tert-butyl ether	20.0	19.1		ug/Kg		96	75 - 124	4	30

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 460-311363/5
Matrix: Solid
Analysis Batch: 311363

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	20.0	18.6		ug/Kg		93	73 - 121	3	30
1,2,4-Trimethylbenzene	20.0	18.9		ug/Kg		95	80 - 122	3	30
1,3,5-Trimethylbenzene	20.0	19.2		ug/Kg		96	79 - 122	3	30
Isopropylbenzene	20.0	20.3		ug/Kg		102	80 - 120	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 130*
Toluene-d8 (Surr)	*103*		*70 - 130*
Bromofluorobenzene	*98*		*70 - 130*
Dibromofluoromethane (Surr)	*91*		*70 - 130*

Lab Sample ID: MB 460-322352/6
Matrix: Water
Analysis Batch: 322352

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			07/21/15 21:12	1
Toluene	0.25	U	1.0	0.25	ug/L			07/21/15 21:12	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			07/21/15 21:12	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			07/21/15 21:12	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			07/21/15 21:12	1
Naphthalene	0.26	U	1.0	0.26	ug/L			07/21/15 21:12	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			07/21/15 21:12	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			07/21/15 21:12	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			07/21/15 21:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*70 - 130*		*07/21/15 21:12*	*1*
Toluene-d8 (Surr)	*106*		*70 - 130*		*07/21/15 21:12*	*1*
Bromofluorobenzene	*114*		*64 - 135*		*07/21/15 21:12*	*1*
Dibromofluoromethane (Surr)	*124*		*72 - 137*		*07/21/15 21:12*	*1*

Lab Sample ID: LCS 460-322352/3
Matrix: Water
Analysis Batch: 322352

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	21.6		ug/L		108	69 - 125
Toluene	20.0	18.7		ug/L		94	78 - 120
Ethylbenzene	20.0	18.9		ug/L		95	74 - 120
Xylenes, Total	40.0	37.4		ug/L		94	73 - 122
Methyl tert-butyl ether	20.0	23.4		ug/L		117	73 - 125
Naphthalene	20.0	20.2		ug/L		101	54 - 148
1,2,4-Trimethylbenzene	20.0	18.7		ug/L		94	68 - 127
1,3,5-Trimethylbenzene	20.0	18.3		ug/L		92	67 - 129
Isopropylbenzene	20.0	18.8		ug/L		94	74 - 127

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 460-322352/3
Matrix: Water
Analysis Batch: 322352

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	109		70 - 130
Toluene-d8 (Surr)	97		70 - 130
Bromofluorobenzene	107		64 - 135
Dibromofluoromethane (Surr)	117		72 - 137

Lab Sample ID: LCSD 460-322352/4
Matrix: Water
Analysis Batch: 322352

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			20.0	21.4		ug/L		107	69 - 125	1	30
Toluene			20.0	18.6		ug/L		93	78 - 120	1	30
Ethylbenzene			20.0	19.3		ug/L		97	74 - 120	2	30
Xylenes, Total			40.0	37.7		ug/L		94	73 - 122	1	30
Methyl tert-butyl ether			20.0	23.1		ug/L		115	73 - 125	2	30
Naphthalene			20.0	20.1		ug/L		101	54 - 148	0	30
1,2,4-Trimethylbenzene			20.0	18.6		ug/L		93	68 - 127	1	30
1,3,5-Trimethylbenzene			20.0	18.3		ug/L		92	67 - 129	0	30
Isopropylbenzene			20.0	19.2		ug/L		96	74 - 127	2	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		70 - 130
Toluene-d8 (Surr)	95		70 - 130
Bromofluorobenzene	105		64 - 135
Dibromofluoromethane (Surr)	112		72 - 137

QC Association Summary

Client: MIG Consulting LLC
Project/Site: NEWTOWN SQUARE, INC

TestAmerica Job ID: 460-97906-2

GC/MS VOA

Prep Batch: 310356

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-97906-1	SB-9 (7.5-8 ft)	Total/NA	Solid	5035	
460-97906-2	SB-10 (9.5-10 ft)	Total/NA	Solid	5035	
460-97906-3	SB-10 (24.5-25 ft)	Total/NA	Solid	5035	

Analysis Batch: 311363

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-97906-1	SB-9 (7.5-8 ft)	Total/NA	Solid	8260B	310356
460-97906-2	SB-10 (9.5-10 ft)	Total/NA	Solid	8260B	310356
460-97906-3	SB-10 (24.5-25 ft)	Total/NA	Solid	8260B	310356
LCS 460-311363/4	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 460-311363/5	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 460-311363/7	Method Blank	Total/NA	Solid	8260B	

Analysis Batch: 322352

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-97906-4	TWP-1 (@ SB-10)	Total/NA	Water	8260B	
LCS 460-322352/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 460-322352/4	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 460-322352/6	Method Blank	Total/NA	Water	8260B	

Lab Chronicle

Client: MIG Consulting LLC
Project/Site: NEWTOWN SQUARE, INC

TestAmerica Job ID: 460-97906-2

Client Sample ID: SB-9 (7.5-8 ft)

Lab Sample ID: 460-97906-1
Matrix: Solid
Date Collected: 07/12/15 13:55
Date Received: 07/14/15 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			310356	07/14/15 14:30	DBM	TAL EDI
Total/NA	Analysis	8260B		1	311363	07/19/15 07:01	AAT	TAL EDI

Client Sample ID: SB-10 (9.5-10 ft)

Lab Sample ID: 460-97906-2
Matrix: Solid
Date Collected: 07/12/15 15:23
Date Received: 07/14/15 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			310356	07/14/15 14:34	DBM	TAL EDI
Total/NA	Analysis	8260B		1	311363	07/19/15 07:26	AAT	TAL EDI

Client Sample ID: SB-10 (24.5-25 ft)

Lab Sample ID: 460-97906-3
Matrix: Solid
Date Collected: 07/12/15 16:30
Date Received: 07/14/15 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			310356	07/14/15 14:39	DBM	TAL EDI
Total/NA	Analysis	8260B		1	311363	07/19/15 07:51	AAT	TAL EDI

Client Sample ID: TWP-1 (@ SB-10)

Lab Sample ID: 460-97906-4
Matrix: Water
Date Collected: 07/12/15 16:45
Date Received: 07/14/15 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	322352	07/22/15 06:01	MZS	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Certification Summary

Client: MIG Consulting LLC
Project/Site: NEWTOWN SQUARE, INC

TestAmerica Job ID: 460-97906-2

Laboratory: TestAmerica Edison

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-16
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-15
New Jersey	NELAP	2	12028	06-30-15 *
New York	NELAP	2	11452	03-31-16
Pennsylvania	NELAP	3	68-00522	02-28-16
Rhode Island	State Program	1	LAO00132	12-30-15
USDA	Federal		NJCA-003-08	04-04-17

* Certification renewal pending - certification considered valid.

Method Summary

Client: MIG Consulting LLC
Project/Site: NEWTOWN SQUARE, INC

TestAmerica Job ID: 460-97906-2

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL EDI

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: MIG Consulting LLC
Project/Site: NEWTOWN SQUARE, INC

TestAmerica Job ID: 460-97906-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-97906-1	SB-9 (7.5-8 ft)	Solid	07/12/15 13:55	07/14/15 14:00
460-97906-2	SB-10 (9.5-10 ft)	Solid	07/12/15 15:23	07/14/15 14:00
460-97906-3	SB-10 (24.5-25 ft)	Solid	07/12/15 16:30	07/14/15 14:00
460-97906-4	TWP-1 (@ SB-10)	Water	07/12/15 16:45	07/14/15 14:00

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

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THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

Page ___ of ___

Name (for report and invoice) T P SINGH	Samplers Name (Printed) JOHN MAIRE	Site/Project Identification NEWTOWN SQUARE, INC
Company HLG CONSULTING, LLC	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: PA
Address 707 RARITAN AVE	Analysis Turnaround Time: Standard ☑	Regulatory Program:
City HIGHLAND PARK State NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	LAB USE ONLY Project No:
Phone 732-543-1150 Fax 732-543-1148		Job No: 97906

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	PaDEP SHORTLIST 8260 B	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	Cumene	MTBE	Naphthalene	1,2,4 - TMB	1,3,5 - TMB	Sample Numbers
SB-9 (7.5-8 ft)	07/12/15	13:55	Soil	3		✓	✓	✓	✓	✓	✓	✓	✓	✓	-1
SB-10 (9.5-10 ft)	07/12/15	15:23	Soil	3		✓	✓	✓	✓	✓	✓	✓	✓	✓	-2
SB-10 (24.5-25 ft)	07/12/15	16:30	Soil	3		✓	✓	✓	✓	✓	✓	✓	✓	✓	-3
TWP-1 (@ SB-10)	07/12/15	16:45	GW	3		✓	✓	✓	✓	✓	✓	✓	✓	✓	-4

TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 97906

Number of Coolers: 1 IR Gun #: 5

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	2.0 °C	4.6 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: NA

Preservative Name/Conc.: NA Volume of Preservative used (ml): NA

Lot # of Preservative(s): NA Expiration Date: NA

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: JT Date: 7-14-15

Login Sample Receipt Checklist

Client: MIG Consulting LLC

Job Number: 460-97906-2

Login Number: 97906
List Number: 1
Creator: Lysy, Susan

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.6°C IR#5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	False	See NCM
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	False	See NCM
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-98505-2
Client Project/Site: Newton Square, 3608 Westchester Pike, PA
Revision: 1

For:
MIG Consulting LLC
707 Raritan Ave
Suite 203
Highland Park, New Jersey 08904

Attn: Ravi Kolaventi

Authorized for release by:
11/5/2015 4:08:03 PM
Shalini Williams, Project Management Assistant II
shalini.williams@testamericainc.com

Designee for

Sapna Nayyar, Project Manager I
(732)549-3900
sapna.nayyar@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

LINKS

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Visit us at: www.testamericainc.com

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 460-98505-2

Laboratory: TestAmerica Edison

Narrative

CASE NARRATIVE- REVISION 1

Client: MIG Consulting LLC

Project: Newton Square, 3608 Westchester Pike, PA

Report Number: 460-98505-2

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISION 1
The following report(s) required a revision: 460-98505-1. Details are as follows: Per client request, revised to lower method from 8260C to 8260B as orginially requested on Chain of Custody.

Revision 2

COC was checked for PA site but was logged under NJ.Revising report 11/4/2015

RECEIPT
The samples were received on 7/24/2015 3:35 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.3° C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples SB-1 (7.5-8') (460-98505-1), SB-1 (17.5-18') (460-98505-2), SB-7 (7.5-8') (460-98505-3), SB-7 (11.5-12') (460-98505-4), SB-6 (7.5-8') (460-98505-5) and SB-6 (27.5-28') (460-98505-6) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were prepared on 07/24/2015 and analyzed on 07/28/2015.

No difficulties were encountered during the volatiles analysis.

All quality control parameters were within the acceptance limits.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Sample TWP-2@SB-6 (460-98505-7) was analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 07/30/2015.

Internal standard (ISTD) response for TBA-d9 for the following method blank and samples was outside acceptance criteria: TWP-2@SB-6

Job ID: 460-98505-2 (Continued)

Laboratory: TestAmerica Edison (Continued)

(460-98505-7) and (MB 460-313609/8). This ISTD does not correspond to any of the requested target compounds; therefore, the data have been reported.

Internal standard (ISTD) response for TBA-d9 for the following continuing calibration verification (CCV) was outside acceptance criteria: (CCVIS 460-313609/3). This ISTD does not correspond to any of the requested target compounds; therefore, the data have been reported.

No other difficulties were encountered during the volatiles analysis.

All other quality control parameters were within the acceptance limits.

Detection Summary

Client: MIG Consulting LLC
Project/Site: Newton Square, 3608 Westchester Pike, PA

TestAmerica Job ID: 460-98505-2

Client Sample ID: SB-1 (7.5-8') — Lab Sample ID: 460-98505-1

No Detections.

Client Sample ID: SB-1 (17.5-18') — Lab Sample ID: 460-98505-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.36	J	1.3	0.25	ug/Kg	1	☼	8260B	Total/NA
Methyl tert-butyl ether	0.33	J	1.3	0.23	ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: SB-7 (7.5-8') — Lab Sample ID: 460-98505-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Xylenes, Total	1.1	J	4.5	0.25	ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: SB-7 (11.5-12') — Lab Sample ID: 460-98505-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.39	J	1.8	0.35	ug/Kg	1	☼	8260B	Total/NA
Toluene	1.1	J	1.8	0.33	ug/Kg	1	☼	8260B	Total/NA
Xylenes, Total	0.49	J	3.5	0.19	ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: SB-6 (7.5-8') — Lab Sample ID: 460-98505-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.47	J	1.7	0.32	ug/Kg	1	☼	8260B	Total/NA
Xylenes, Total	0.29	J	3.4	0.19	ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: SB-6 (27.5-28') — Lab Sample ID: 460-98505-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.39	J	1.4	0.27	ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: TWP-2@SB-6 — Lab Sample ID: 460-98505-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.26	J	1.0	0.25	ug/L	1		8260B	Total/NA
Methyl tert-butyl ether	0.14	J	1.0	0.13	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB-1 (7.5-8')

Date Collected: 07/23/15 14:10
Date Received: 07/24/15 15:35

Lab Sample ID: 460-98505-1
Matrix: Solid
Percent Solids: 89.7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.38	U	1.9	0.38	ug/Kg	☼	07/24/15 22:06	07/28/15 03:06	1
Toluene	0.36	U	1.9	0.36	ug/Kg	☼	07/24/15 22:06	07/28/15 03:06	1
Ethylbenzene	0.34	U	1.9	0.34	ug/Kg	☼	07/24/15 22:06	07/28/15 03:06	1
Xylenes, Total	0.21	U	3.8	0.21	ug/Kg	☼	07/24/15 22:06	07/28/15 03:06	1
Methyl tert-butyl ether	0.32	U	1.9	0.32	ug/Kg	☼	07/24/15 22:06	07/28/15 03:06	1
Naphthalene	0.23	U	1.9	0.23	ug/Kg	☼	07/24/15 22:06	07/28/15 03:06	1
1,2,4-Trimethylbenzene	0.65	U	1.9	0.65	ug/Kg	☼	07/24/15 22:06	07/28/15 03:06	1
1,3,5-Trimethylbenzene	0.25	U	1.9	0.25	ug/Kg	☼	07/24/15 22:06	07/28/15 03:06	1
Isopropylbenzene	0.32	U	1.9	0.32	ug/Kg	☼	07/24/15 22:06	07/28/15 03:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*70 - 130*	*07/24/15 22:06*	*07/28/15 03:06*	*1*
Toluene-d8 (Surr)	*91*		*70 - 130*	*07/24/15 22:06*	*07/28/15 03:06*	*1*
Bromofluorobenzene	*113*		*70 - 130*	*07/24/15 22:06*	*07/28/15 03:06*	*1*
Dibromofluoromethane (Surr)	*109*		*70 - 130*	*07/24/15 22:06*	*07/28/15 03:06*	*1*

Client Sample ID: SB-1 (17.5-18')

Date Collected: 07/23/15 14:30
Date Received: 07/24/15 15:35

Lab Sample ID: 460-98505-2
Matrix: Solid
Percent Solids: 84.4

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.27	U	1.3	0.27	ug/Kg	☼	07/24/15 22:07	07/28/15 03:30	1
Toluene	**0.36**	**J**	1.3	0.25	ug/Kg	☼	07/24/15 22:07	07/28/15 03:30	1
Ethylbenzene	0.24	U	1.3	0.24	ug/Kg	☼	07/24/15 22:07	07/28/15 03:30	1
Xylenes, Total	0.15	U	2.7	0.15	ug/Kg	☼	07/24/15 22:07	07/28/15 03:30	1
Methyl tert-butyl ether	**0.33**	**J**	1.3	0.23	ug/Kg	☼	07/24/15 22:07	07/28/15 03:30	1
Naphthalene	0.16	U	1.3	0.16	ug/Kg	☼	07/24/15 22:07	07/28/15 03:30	1
1,2,4-Trimethylbenzene	0.45	U	1.3	0.45	ug/Kg	☼	07/24/15 22:07	07/28/15 03:30	1
1,3,5-Trimethylbenzene	0.17	U	1.3	0.17	ug/Kg	☼	07/24/15 22:07	07/28/15 03:30	1
Isopropylbenzene	0.23	U	1.3	0.23	ug/Kg	☼	07/24/15 22:07	07/28/15 03:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*70 - 130*	*07/24/15 22:07*	*07/28/15 03:30*	*1*
Toluene-d8 (Surr)	*89*		*70 - 130*	*07/24/15 22:07*	*07/28/15 03:30*	*1*
Bromofluorobenzene	*113*		*70 - 130*	*07/24/15 22:07*	*07/28/15 03:30*	*1*
Dibromofluoromethane (Surr)	*108*		*70 - 130*	*07/24/15 22:07*	*07/28/15 03:30*	*1*

Client Sample ID: SB-7 (7.5-8')

Date Collected: 07/23/15 15:10
Date Received: 07/24/15 15:35

Lab Sample ID: 460-98505-3
Matrix: Solid
Percent Solids: 80.9

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.45	U	2.2	0.45	ug/Kg	☼	07/24/15 22:08	07/28/15 16:43	1
Toluene	0.43	U	2.2	0.43	ug/Kg	☼	07/24/15 22:08	07/28/15 16:43	1
Ethylbenzene	0.40	U	2.2	0.40	ug/Kg	☼	07/24/15 22:08	07/28/15 16:43	1
Xylenes, Total	**1.1**	**J**	4.5	0.25	ug/Kg	☼	07/24/15 22:08	07/28/15 16:43	1
Methyl tert-butyl ether	0.38	U	2.2	0.38	ug/Kg	☼	07/24/15 22:08	07/28/15 16:43	1
Naphthalene	0.27	U	2.2	0.27	ug/Kg	☼	07/24/15 22:08	07/28/15 16:43	1

Client Sample ID: SB-7 (7.5-8')

Lab Sample ID: 460-98505-3
Date Collected: 07/23/15 15:10
Matrix: Solid
Date Received: 07/24/15 15:35
Percent Solids: 80.9

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	0.76	U	2.2	0.76	ug/Kg	☼	07/24/15 22:08	07/28/15 16:43	1
1,3,5-Trimethylbenzene	0.29	U	2.2	0.29	ug/Kg	☼	07/24/15 22:08	07/28/15 16:43	1
Isopropylbenzene	0.38	U	2.2	0.38	ug/Kg	☼	07/24/15 22:08	07/28/15 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*70 - 130*	*07/24/15 22:08*	*07/28/15 16:43*	*1*
Toluene-d8 (Surr)	*90*		*70 - 130*	*07/24/15 22:08*	*07/28/15 16:43*	*1*
Bromofluorobenzene	*116*		*70 - 130*	*07/24/15 22:08*	*07/28/15 16:43*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*	*07/24/15 22:08*	*07/28/15 16:43*	*1*

Client Sample ID: SB-7 (11.5-12')

Lab Sample ID: 460-98505-4
Date Collected: 07/23/15 15:30
Matrix: Solid
Date Received: 07/24/15 15:35
Percent Solids: 92.2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.39**	**J**	1.8	0.35	ug/Kg	☼	07/24/15 22:09	07/28/15 17:07	1
Toluene	**1.1**	**J**	1.8	0.33	ug/Kg	☼	07/24/15 22:09	07/28/15 17:07	1
Ethylbenzene	0.32	U	1.8	0.32	ug/Kg	☼	07/24/15 22:09	07/28/15 17:07	1
Xylenes, Total	**0.49**	**J**	3.5	0.19	ug/Kg	☼	07/24/15 22:09	07/28/15 17:07	1
Methyl tert-butyl ether	0.30	U	1.8	0.30	ug/Kg	☼	07/24/15 22:09	07/28/15 17:07	1
Naphthalene	0.21	U	1.8	0.21	ug/Kg	☼	07/24/15 22:09	07/28/15 17:07	1
1,2,4-Trimethylbenzene	0.60	U	1.8	0.60	ug/Kg	☼	07/24/15 22:09	07/28/15 17:07	1
1,3,5-Trimethylbenzene	0.23	U	1.8	0.23	ug/Kg	☼	07/24/15 22:09	07/28/15 17:07	1
Isopropylbenzene	0.30	U	1.8	0.30	ug/Kg	☼	07/24/15 22:09	07/28/15 17:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*70 - 130*	*07/24/15 22:09*	*07/28/15 17:07*	*1*
Toluene-d8 (Surr)	*93*		*70 - 130*	*07/24/15 22:09*	*07/28/15 17:07*	*1*
Bromofluorobenzene	*117*		*70 - 130*	*07/24/15 22:09*	*07/28/15 17:07*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 130*	*07/24/15 22:09*	*07/28/15 17:07*	*1*

Client Sample ID: SB-6 (7.5-8')

Lab Sample ID: 460-98505-5
Date Collected: 07/23/15 16:25
Matrix: Solid
Date Received: 07/24/15 15:35
Percent Solids: 85.4

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.34	U	1.7	0.34	ug/Kg	☼	07/24/15 22:11	07/28/15 17:31	1
Toluene	**0.47**	**J**	1.7	0.32	ug/Kg	☼	07/24/15 22:11	07/28/15 17:31	1
Ethylbenzene	0.31	U	1.7	0.31	ug/Kg	☼	07/24/15 22:11	07/28/15 17:31	1
Xylenes, Total	**0.29**	**J**	3.4	0.19	ug/Kg	☼	07/24/15 22:11	07/28/15 17:31	1
Methyl tert-butyl ether	0.29	U	1.7	0.29	ug/Kg	☼	07/24/15 22:11	07/28/15 17:31	1
Naphthalene	0.20	U	1.7	0.20	ug/Kg	☼	07/24/15 22:11	07/28/15 17:31	1
1,2,4-Trimethylbenzene	0.58	U	1.7	0.58	ug/Kg	☼	07/24/15 22:11	07/28/15 17:31	1
1,3,5-Trimethylbenzene	0.22	U	1.7	0.22	ug/Kg	☼	07/24/15 22:11	07/28/15 17:31	1
Isopropylbenzene	0.29	U	1.7	0.29	ug/Kg	☼	07/24/15 22:11	07/28/15 17:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*70 - 130*	*07/24/15 22:11*	*07/28/15 17:31*	*1*
Toluene-d8 (Surr)	*90*		*70 - 130*	*07/24/15 22:11*	*07/28/15 17:31*	*1*

Client Sample ID: SB-6 (7.5-8')

Date Collected: 07/23/15 16:25
Date Received: 07/24/15 15:35

Lab Sample ID: 460-98505-5
Matrix: Solid
Percent Solids: 85.4

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Bromofluorobenzene	*117*		*70 - 130*	*07/24/15 22:11*	*07/28/15 17:31*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*	*07/24/15 22:11*	*07/28/15 17:31*	*1*

Client Sample ID: SB-6 (27.5-28')

Date Collected: 07/23/15 17:50
Date Received: 07/24/15 15:35

Lab Sample ID: 460-98505-6
Matrix: Solid
Percent Solids: 81.3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.29	U	1.4	0.29	ug/Kg	☼	07/24/15 22:12	07/28/15 17:55	1
Toluene	**0.39**	**J**	1.4	0.27	ug/Kg	☼	07/24/15 22:12	07/28/15 17:55	1
Ethylbenzene	0.26	U	1.4	0.26	ug/Kg	☼	07/24/15 22:12	07/28/15 17:55	1
Xylenes, Total	0.16	U	2.9	0.16	ug/Kg	☼	07/24/15 22:12	07/28/15 17:55	1
Methyl tert-butyl ether	0.24	U	1.4	0.24	ug/Kg	☼	07/24/15 22:12	07/28/15 17:55	1
Naphthalene	0.17	U	1.4	0.17	ug/Kg	☼	07/24/15 22:12	07/28/15 17:55	1
1,2,4-Trimethylbenzene	0.49	U	1.4	0.49	ug/Kg	☼	07/24/15 22:12	07/28/15 17:55	1
1,3,5-Trimethylbenzene	0.19	U	1.4	0.19	ug/Kg	☼	07/24/15 22:12	07/28/15 17:55	1
Isopropylbenzene	0.24	U	1.4	0.24	ug/Kg	☼	07/24/15 22:12	07/28/15 17:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*80*		*70 - 130*	*07/24/15 22:12*	*07/28/15 17:55*	*1*
Toluene-d8 (Surr)	*89*		*70 - 130*	*07/24/15 22:12*	*07/28/15 17:55*	*1*
Bromofluorobenzene	*117*		*70 - 130*	*07/24/15 22:12*	*07/28/15 17:55*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*	*07/24/15 22:12*	*07/28/15 17:55*	*1*

Client Sample ID: TWP-2@SB-6

Date Collected: 07/23/15 18:15
Date Received: 07/24/15 15:35

Lab Sample ID: 460-98505-7
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			07/30/15 11:42	1
Toluene	**0.26**	**J**	1.0	0.25	ug/L			07/30/15 11:42	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			07/30/15 11:42	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			07/30/15 11:42	1
Methyl tert-butyl ether	**0.14**	**J**	1.0	0.13	ug/L			07/30/15 11:42	1
Naphthalene	0.26	U	1.0	0.26	ug/L			07/30/15 11:42	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			07/30/15 11:42	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			07/30/15 11:42	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			07/30/15 11:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*		*07/30/15 11:42*	*1*
Toluene-d8 (Surr)	*100*		*70 - 130*		*07/30/15 11:42*	*1*
Bromofluorobenzene	*97*		*64 - 135*		*07/30/15 11:42*	*1*
Dibromofluoromethane (Surr)	*106*		*72 - 137*		*07/30/15 11:42*	*1*

Surrogate Summary

Client: MIG Consulting LLC
Project/Site: Newton Square, 3608 Westchester Pike, PA

TestAmerica Job ID: 460-98505-2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	12DCE (70-130)	TOL (70-130)	BFB (70-130)	DBFM (70-130)
460-98505-1	SB-1 (7.5-8')	88	91	113	109
460-98505-2	SB-1 (17.5-18')	89	89	113	108
460-98505-3	SB-7 (7.5-8')	79	90	116	103
460-98505-4	SB-7 (11.5-12')	81	93	117	106
460-98505-5	SB-6 (7.5-8')	80	90	117	103
460-98505-6	SB-6 (27.5-28')	80	89	117	103
LB3 460-312644/1-A	Method Blank	102	94	87	97
LCS 460-312753/3	Lab Control Sample	97	95	88	94
LCS 460-313003/3	Lab Control Sample	95	95	101	104
LCS 460-313141/3	Lab Control Sample	85	92	113	104
LCSD 460-312753/4	Lab Control Sample Dup	95	97	90	97
LCSD 460-313003/4	Lab Control Sample Dup	91	92	97	100
LCSD 460-313141/4	Lab Control Sample Dup	84	91	111	102
MB 460-312753/6	Method Blank	98	94	85	95
MB 460-313003/6	Method Blank	92	87	93	106
MB 460-313141/6	Method Blank	85	91	114	105

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = Bromofluorobenzene
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	12DCE (70-130)	TOL (70-130)	BFB (64-135)	DBFM (72-137)
460-98505-7	TWP-2@SB-6	104	100	97	106
LCS 460-313609/4	Lab Control Sample	104	100	101	104
LCSD 460-313609/5	Lab Control Sample Dup	104	101	101	104
MB 460-313609/8	Method Blank	101	100	99	107

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = Bromofluorobenzene
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: LB3 460-312644/1-A
Matrix: Solid
Analysis Batch: 312753

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 312644

Analyte	LB3 Result	LB3 Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.20	U	1.0	0.20	ug/Kg		07/24/15 22:05	07/26/15 08:47	1
Toluene	0.19	U	1.0	0.19	ug/Kg		07/24/15 22:05	07/26/15 08:47	1
Ethylbenzene	0.18	U	1.0	0.18	ug/Kg		07/24/15 22:05	07/26/15 08:47	1
Xylenes, Total	0.11	U	2.0	0.11	ug/Kg		07/24/15 22:05	07/26/15 08:47	1
Methyl tert-butyl ether	0.17	U	1.0	0.17	ug/Kg		07/24/15 22:05	07/26/15 08:47	1
Naphthalene	0.12	U	1.0	0.12	ug/Kg		07/24/15 22:05	07/26/15 08:47	1
1,2,4-Trimethylbenzene	0.34	U	1.0	0.34	ug/Kg		07/24/15 22:05	07/26/15 08:47	1
1,3,5-Trimethylbenzene	0.13	U	1.0	0.13	ug/Kg		07/24/15 22:05	07/26/15 08:47	1
Isopropylbenzene	0.17	U	1.0	0.17	ug/Kg		07/24/15 22:05	07/26/15 08:47	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 130*	*07/24/15 22:05*	*07/26/15 08:47*	*1*
Toluene-d8 (Surr)	*94*		*70 - 130*	*07/24/15 22:05*	*07/26/15 08:47*	*1*
Bromofluorobenzene	*87*		*70 - 130*	*07/24/15 22:05*	*07/26/15 08:47*	*1*
Dibromofluoromethane (Surr)	*97*		*70 - 130*	*07/24/15 22:05*	*07/26/15 08:47*	*1*

Lab Sample ID: MB 460-312753/6
Matrix: Solid
Analysis Batch: 312753

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.20	U	1.0	0.20	ug/Kg			07/26/15 04:44	1
Toluene	0.19	U	1.0	0.19	ug/Kg			07/26/15 04:44	1
Ethylbenzene	0.18	U	1.0	0.18	ug/Kg			07/26/15 04:44	1
Xylenes, Total	0.11	U	2.0	0.11	ug/Kg			07/26/15 04:44	1
Methyl tert-butyl ether	0.17	U	1.0	0.17	ug/Kg			07/26/15 04:44	1
Naphthalene	0.12	U	1.0	0.12	ug/Kg			07/26/15 04:44	1
1,2,4-Trimethylbenzene	0.34	U	1.0	0.34	ug/Kg			07/26/15 04:44	1
1,3,5-Trimethylbenzene	0.13	U	1.0	0.13	ug/Kg			07/26/15 04:44	1
Isopropylbenzene	0.17	U	1.0	0.17	ug/Kg			07/26/15 04:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 130*		*07/26/15 04:44*	*1*
Toluene-d8 (Surr)	*94*		*70 - 130*		*07/26/15 04:44*	*1*
Bromofluorobenzene	*85*		*70 - 130*		*07/26/15 04:44*	*1*
Dibromofluoromethane (Surr)	*95*		*70 - 130*		*07/26/15 04:44*	*1*

Lab Sample ID: LCS 460-312753/3
Matrix: Solid
Analysis Batch: 312753

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	18.9		ug/Kg		95	75 - 123
Toluene	20.0	18.7		ug/Kg		93	82 - 117
Ethylbenzene	20.0	19.5		ug/Kg		97	80 - 120
Xylenes, Total	40.0	38.9		ug/Kg		97	78 - 120
Methyl tert-butyl ether	20.0	20.4		ug/Kg		102	75 - 124

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 460-312753/3
Matrix: Solid
Analysis Batch: 312753

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	20.0	16.6		ug/Kg		83	73 - 121
1,2,4-Trimethylbenzene	20.0	18.0		ug/Kg		90	80 - 122
1,3,5-Trimethylbenzene	20.0	18.0		ug/Kg		90	79 - 122
Isopropylbenzene	20.0	19.9		ug/Kg		100	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 130*
Toluene-d8 (Surr)	*95*		*70 - 130*
Bromofluorobenzene	*88*		*70 - 130*
Dibromofluoromethane (Surr)	*94*		*70 - 130*

Lab Sample ID: LCSD 460-312753/4
Matrix: Solid
Analysis Batch: 312753

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	18.9		ug/Kg		94	75 - 123	0	30
Toluene	20.0	18.7		ug/Kg		94	82 - 117	0	30
Ethylbenzene	20.0	18.9		ug/Kg		95	80 - 120	3	30
Xylenes, Total	40.0	39.0		ug/Kg		98	78 - 120	0	30
Methyl tert-butyl ether	20.0	20.5		ug/Kg		103	75 - 124	1	30
Naphthalene	20.0	17.3		ug/Kg		86	73 - 121	4	30
1,2,4-Trimethylbenzene	20.0	18.2		ug/Kg		91	80 - 122	1	30
1,3,5-Trimethylbenzene	20.0	18.4		ug/Kg		92	79 - 122	2	30
Isopropylbenzene	20.0	20.3		ug/Kg		102	80 - 120	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 130*
Toluene-d8 (Surr)	*97*		*70 - 130*
Bromofluorobenzene	*90*		*70 - 130*
Dibromofluoromethane (Surr)	*97*		*70 - 130*

Lab Sample ID: MB 460-313003/6
Matrix: Solid
Analysis Batch: 313003

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.20	U	1.0	0.20	ug/Kg			07/27/15 19:28	1
Toluene	0.19	U	1.0	0.19	ug/Kg			07/27/15 19:28	1
Ethylbenzene	0.18	U	1.0	0.18	ug/Kg			07/27/15 19:28	1
Xylenes, Total	0.11	U	2.0	0.11	ug/Kg			07/27/15 19:28	1
Methyl tert-butyl ether	0.17	U	1.0	0.17	ug/Kg			07/27/15 19:28	1
Naphthalene	0.12	U	1.0	0.12	ug/Kg			07/27/15 19:28	1
1,2,4-Trimethylbenzene	0.34	U	1.0	0.34	ug/Kg			07/27/15 19:28	1
1,3,5-Trimethylbenzene	0.13	U	1.0	0.13	ug/Kg			07/27/15 19:28	1
Isopropylbenzene	0.17	U	1.0	0.17	ug/Kg			07/27/15 19:28	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 460-313003/6
Matrix: Solid
Analysis Batch: 313003

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		70 - 130		07/27/15 19:28	1
Toluene-d8 (Surr)	87		70 - 130		07/27/15 19:28	1
Bromofluorobenzene	93		70 - 130		07/27/15 19:28	1
Dibromofluoromethane (Surr)	106		70 - 130		07/27/15 19:28	1

Lab Sample ID: LCS 460-313003/3
Matrix: Solid
Analysis Batch: 313003

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	17.8		ug/Kg		89	75 - 123
Toluene	20.0	18.0		ug/Kg		90	82 - 117
Ethylbenzene	20.0	18.5		ug/Kg		92	80 - 120
Xylenes, Total	40.0	38.1		ug/Kg		95	78 - 120
Methyl tert-butyl ether	20.0	18.3		ug/Kg		91	75 - 124
Naphthalene	20.0	18.1		ug/Kg		90	73 - 121
1,2,4-Trimethylbenzene	20.0	17.9		ug/Kg		90	80 - 122
1,3,5-Trimethylbenzene	20.0	18.0		ug/Kg		90	79 - 122
Isopropylbenzene	20.0	19.1		ug/Kg		95	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		70 - 130
Toluene-d8 (Surr)	95		70 - 130
Bromofluorobenzene	101		70 - 130
Dibromofluoromethane (Surr)	104		70 - 130

Lab Sample ID: LCSD 460-313003/4
Matrix: Solid
Analysis Batch: 313003

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	18.8		ug/Kg		94	75 - 123	5	30
Toluene	20.0	18.6		ug/Kg		93	82 - 117	4	30
Ethylbenzene	20.0	18.8		ug/Kg		94	80 - 120	2	30
Xylenes, Total	40.0	38.9		ug/Kg		97	78 - 120	2	30
Methyl tert-butyl ether	20.0	18.0		ug/Kg		90	75 - 124	2	30
Naphthalene	20.0	18.8		ug/Kg		94	73 - 121	4	30
1,2,4-Trimethylbenzene	20.0	18.8		ug/Kg		94	80 - 122	5	30
1,3,5-Trimethylbenzene	20.0	18.6		ug/Kg		93	79 - 122	3	30
Isopropylbenzene	20.0	19.2		ug/Kg		96	80 - 120	1	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		70 - 130
Toluene-d8 (Surr)	92		70 - 130
Bromofluorobenzene	97		70 - 130
Dibromofluoromethane (Surr)	100		70 - 130

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 460-313141/6
Matrix: Solid
Analysis Batch: 313141

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.20	U	1.0	0.20	ug/Kg			07/28/15 13:51	1
Toluene	0.19	U	1.0	0.19	ug/Kg			07/28/15 13:51	1
Ethylbenzene	0.18	U	1.0	0.18	ug/Kg			07/28/15 13:51	1
Xylenes, Total	0.11	U	2.0	0.11	ug/Kg			07/28/15 13:51	1
Methyl tert-butyl ether	0.17	U	1.0	0.17	ug/Kg			07/28/15 13:51	1
Naphthalene	0.12	U	1.0	0.12	ug/Kg			07/28/15 13:51	1
1,2,4-Trimethylbenzene	0.34	U	1.0	0.34	ug/Kg			07/28/15 13:51	1
1,3,5-Trimethylbenzene	0.13	U	1.0	0.13	ug/Kg			07/28/15 13:51	1
Isopropylbenzene	0.17	U	1.0	0.17	ug/Kg			07/28/15 13:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*70 - 130*		*07/28/15 13:51*	*1*
Toluene-d8 (Surr)	*91*		*70 - 130*		*07/28/15 13:51*	*1*
Bromofluorobenzene	*114*		*70 - 130*		*07/28/15 13:51*	*1*
Dibromofluoromethane (Surr)	*105*		*70 - 130*		*07/28/15 13:51*	*1*

Lab Sample ID: LCS 460-313141/3
Matrix: Solid
Analysis Batch: 313141

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	17.9		ug/Kg		89	75 - 123
Toluene	20.0	18.5		ug/Kg		92	82 - 117
Ethylbenzene	20.0	19.6		ug/Kg		98	80 - 120
Xylenes, Total	40.0	41.9		ug/Kg		105	78 - 120
Methyl tert-butyl ether	20.0	20.6		ug/Kg		103	75 - 124
Naphthalene	20.0	21.3		ug/Kg		106	73 - 121
1,2,4-Trimethylbenzene	20.0	18.6		ug/Kg		93	80 - 122
1,3,5-Trimethylbenzene	20.0	18.6		ug/Kg		93	79 - 122
Isopropylbenzene	20.0	20.7		ug/Kg		103	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*70 - 130*
Toluene-d8 (Surr)	*92*		*70 - 130*
Bromofluorobenzene	*113*		*70 - 130*
Dibromofluoromethane (Surr)	*104*		*70 - 130*

Lab Sample ID: LCSD 460-313141/4
Matrix: Solid
Analysis Batch: 313141

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	16.7		ug/Kg		84	75 - 123	7	30
Toluene	20.0	17.6		ug/Kg		88	82 - 117	5	30
Ethylbenzene	20.0	18.4		ug/Kg		92	80 - 120	6	30
Xylenes, Total	40.0	39.5		ug/Kg		99	78 - 120	6	30
Methyl tert-butyl ether	20.0	19.6		ug/Kg		98	75 - 124	5	30

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 460-313141/4
Matrix: Solid
Analysis Batch: 313141

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	20.0	19.9		ug/Kg		99	73 - 121	7	30
1,2,4-Trimethylbenzene	20.0	17.7		ug/Kg		88	80 - 122	5	30
1,3,5-Trimethylbenzene	20.0	17.6		ug/Kg		88	79 - 122	5	30
Isopropylbenzene	20.0	19.3		ug/Kg		97	80 - 120	7	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*70 - 130*
Toluene-d8 (Surr)	*91*		*70 - 130*
Bromofluorobenzene	*111*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*

Lab Sample ID: MB 460-313609/8
Matrix: Water
Analysis Batch: 313609

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			07/30/15 10:32	1
Toluene	0.25	U	1.0	0.25	ug/L			07/30/15 10:32	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			07/30/15 10:32	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			07/30/15 10:32	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			07/30/15 10:32	1
Naphthalene	0.26	U	1.0	0.26	ug/L			07/30/15 10:32	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			07/30/15 10:32	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			07/30/15 10:32	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			07/30/15 10:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*		*07/30/15 10:32*	*1*
Toluene-d8 (Surr)	*100*		*70 - 130*		*07/30/15 10:32*	*1*
Bromofluorobenzene	*99*		*64 - 135*		*07/30/15 10:32*	*1*
Dibromofluoromethane (Surr)	*107*		*72 - 137*		*07/30/15 10:32*	*1*

Lab Sample ID: LCS 460-313609/4
Matrix: Water
Analysis Batch: 313609

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	21.0		ug/L		105	69 - 125
Toluene	20.0	22.0		ug/L		110	78 - 120
Ethylbenzene	20.0	22.8		ug/L		114	74 - 120
Xylenes, Total	40.0	45.3		ug/L		113	73 - 122
Methyl tert-butyl ether	20.0	20.7		ug/L		103	73 - 125
Naphthalene	20.0	21.1		ug/L		105	54 - 148
1,2,4-Trimethylbenzene	20.0	22.4		ug/L		112	68 - 127
1,3,5-Trimethylbenzene	20.0	22.3		ug/L		112	67 - 129
Isopropylbenzene	20.0	23.1		ug/L		116	74 - 127

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 460-313609/4
Matrix: Water
Analysis Batch: 313609

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		70 - 130
Toluene-d8 (Surr)	100		70 - 130
Bromofluorobenzene	101		64 - 135
Dibromofluoromethane (Surr)	104		72 - 137

Lab Sample ID: LCSD 460-313609/5
Matrix: Water
Analysis Batch: 313609

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			20.0	18.2		ug/L		91	69 - 125	14	30
Toluene			20.0	18.9		ug/L		94	78 - 120	15	30
Ethylbenzene			20.0	19.4		ug/L		97	74 - 120	16	30
Xylenes, Total			40.0	39.2		ug/L		98	73 - 122	14	30
Methyl tert-butyl ether			20.0	18.8		ug/L		94	73 - 125	9	30
Naphthalene			20.0	19.4		ug/L		97	54 - 148	8	30
1,2,4-Trimethylbenzene			20.0	19.8		ug/L		99	68 - 127	12	30
1,3,5-Trimethylbenzene			20.0	19.4		ug/L		97	67 - 129	14	30
Isopropylbenzene			20.0	19.8		ug/L		99	74 - 127	15	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		70 - 130
Toluene-d8 (Surr)	101		70 - 130
Bromofluorobenzene	101		64 - 135
Dibromofluoromethane (Surr)	104		72 - 137

GC/MS VOA

Prep Batch: 312644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-98505-1	SB-1 (7.5-8')	Total/NA	Solid	5035	
460-98505-2	SB-1 (17.5-18')	Total/NA	Solid	5035	
460-98505-3	SB-7 (7.5-8')	Total/NA	Solid	5035	
460-98505-4	SB-7 (11.5-12')	Total/NA	Solid	5035	
460-98505-5	SB-6 (7.5-8')	Total/NA	Solid	5035	
460-98505-6	SB-6 (27.5-28')	Total/NA	Solid	5035	
LB3 460-312644/1-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 312753

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB3 460-312644/1-A	Method Blank	Total/NA	Solid	8260B	312644
LCS 460-312753/3	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 460-312753/4	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 460-312753/6	Method Blank	Total/NA	Solid	8260B	

Analysis Batch: 313003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-98505-1	SB-1 (7.5-8')	Total/NA	Solid	8260B	312644
460-98505-2	SB-1 (17.5-18')	Total/NA	Solid	8260B	312644
LCS 460-313003/3	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 460-313003/4	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 460-313003/6	Method Blank	Total/NA	Solid	8260B	

Analysis Batch: 313141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-98505-3	SB-7 (7.5-8')	Total/NA	Solid	8260B	312644
460-98505-4	SB-7 (11.5-12')	Total/NA	Solid	8260B	312644
460-98505-5	SB-6 (7.5-8')	Total/NA	Solid	8260B	312644
460-98505-6	SB-6 (27.5-28')	Total/NA	Solid	8260B	312644
LCS 460-313141/3	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 460-313141/4	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 460-313141/6	Method Blank	Total/NA	Solid	8260B	

Analysis Batch: 313609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-98505-7	TWP-2@SB-6	Total/NA	Water	8260B	
LCS 460-313609/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 460-313609/5	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 460-313609/8	Method Blank	Total/NA	Water	8260B	

Lab Chronicle

Client: MIG Consulting LLC
Project/Site: Newton Square, 3608 Westchester Pike, PA

TestAmerica Job ID: 460-98505-2

Client Sample ID: SB-1 (7.5-8')

Lab Sample ID: 460-98505-1
Date Collected: 07/23/15 14:10
Matrix: Solid
Date Received: 07/24/15 15:35
Percent Solids: 89.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312644	07/24/15 22:06	AVM	TAL EDI
Total/NA	Analysis	8260B		1	313003	07/28/15 03:06	MZS	TAL EDI

Client Sample ID: SB-1 (17.5-18')

Lab Sample ID: 460-98505-2
Date Collected: 07/23/15 14:30
Matrix: Solid
Date Received: 07/24/15 15:35
Percent Solids: 84.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312644	07/24/15 22:07	AVM	TAL EDI
Total/NA	Analysis	8260B		1	313003	07/28/15 03:30	MZS	TAL EDI

Client Sample ID: SB-7 (7.5-8')

Lab Sample ID: 460-98505-3
Date Collected: 07/23/15 15:10
Matrix: Solid
Date Received: 07/24/15 15:35
Percent Solids: 80.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312644	07/24/15 22:08	AVM	TAL EDI
Total/NA	Analysis	8260B		1	313141	07/28/15 16:43	EMM	TAL EDI

Client Sample ID: SB-7 (11.5-12')

Lab Sample ID: 460-98505-4
Date Collected: 07/23/15 15:30
Matrix: Solid
Date Received: 07/24/15 15:35
Percent Solids: 92.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312644	07/24/15 22:09	AVM	TAL EDI
Total/NA	Analysis	8260B		1	313141	07/28/15 17:07	EMM	TAL EDI

Client Sample ID: SB-6 (7.5-8')

Lab Sample ID: 460-98505-5
Date Collected: 07/23/15 16:25
Matrix: Solid
Date Received: 07/24/15 15:35
Percent Solids: 85.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312644	07/24/15 22:11	AVM	TAL EDI
Total/NA	Analysis	8260B		1	313141	07/28/15 17:31	EMM	TAL EDI

Client Sample ID: SB-6 (27.5-28')

Lab Sample ID: 460-98505-6
Date Collected: 07/23/15 17:50
Matrix: Solid
Date Received: 07/24/15 15:35
Percent Solids: 81.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312644	07/24/15 22:12	AVM	TAL EDI
Total/NA	Analysis	8260B		1	313141	07/28/15 17:55	EMM	TAL EDI

Lab Chronicle

Client: MIG Consulting LLC
Project/Site: Newton Square, 3608 Westchester Pike, PA

TestAmerica Job ID: 460-98505-2

Client Sample ID: TWP-2@SB-6
Date Collected: 07/23/15 18:15
Date Received: 07/24/15 15:35

Lab Sample ID: 460-98505-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	313609	07/30/15 11:42	SZD	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Certification Summary

Client: MIG Consulting LLC
Project/Site: Newton Square, 3608 Westchester Pike, PA

TestAmerica Job ID: 460-98505-2

Laboratory: TestAmerica Edison

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-16
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-15
New Jersey	NELAP	2	12028	06-30-15 *
New York	NELAP	2	11452	03-31-16
Pennsylvania	NELAP	3	68-00522	02-28-16
Rhode Island	State Program	1	LAO00132	12-30-15
USDA	Federal		NJCA-003-08	04-04-17

* Certification renewal pending - certification considered valid.

Method Summary

Client: MIG Consulting LLC
Project/Site: Newton Square, 3608 Westchester Pike, PA

TestAmerica Job ID: 460-98505-2

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL EDI

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: MIG Consulting LLC
Project/Site: Newton Square, 3608 Westchester Pike, PA

TestAmerica Job ID: 460-98505-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-98505-1	SB-1 (7.5-8')	Solid	07/23/15 14:10	07/24/15 15:35
460-98505-2	SB-1 (17.5-18')	Solid	07/23/15 14:30	07/24/15 15:35
460-98505-3	SB-7 (7.5-8')	Solid	07/23/15 15:10	07/24/15 15:35
460-98505-4	SB-7 (11.5-12')	Solid	07/23/15 15:30	07/24/15 15:35
460-98505-5	SB-6 (7.5-8')	Solid	07/23/15 16:25	07/24/15 15:35
460-98505-6	SB-6 (27.5-28')	Solid	07/23/15 17:50	07/24/15 15:35
460-98505-7	TWP-2@SB-6	Water	07/23/15 18:15	07/24/15 15:35

' New Durham Road
son, New Jersey 08817
ne: (732) 549-3900 Fax: (732) 549-3679

460-98505 Chain of Custody

11/5/2015

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY /

Page ___ of ___

Name (for report and invoice) I. P. Singh	Samplers Name (Printed) Rajit & Kolaventi	Site/Project Identification 3608 Westchester Pike Newtown Square, PA 19703
Company MLG Consulting, LLC	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: (PA)
Address 707 Raritan Avenue	Analysis Turnaround Time: Standard ☑	Regulatory Program:
City Highland Park State NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	LAB USE ONLY Project No:
Phone 732-543-1150 Fax 732-543-1148		Job No: 98505

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	Cumene	MTBE	Naphthalene	1,2,4 - TMB	1,3,5 - TMB			Sample Numbers
SB-1 (7.5-8')	07/23/15	14:10	S	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			1
SB-1 (17.5-18')	"	14:30	S	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			2
SB-7 (7.5-8')	"	15:10	S	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			3
SB-7 (11.5-12')	"	15:30	S	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			4
SB-6 (7.5-8')	"	16:25	S	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			5
SB-6 (27.5-28')	"	17:50	S	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			6
TWP-2 @ SB-6	07/23/15	18:15	GW	3	✓	✓	✓	✓	✓	✓	✓	✓	✓			7

SHORT HOLD

vation Used: 1 = ICE, (2) = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH — Soil: 7

6 = Other _____ (7) = Other As Is — Water: 2 (Soil) (GW 8260B)

Special Instructions Analyze for PaDEP short list 8260B 5035 PA Method Water Metals Filtered (Yes/No)? NO

Relinquished by	Company	Date / Time	Received by	Company
1) Rajit	MLG Consulting LLC	7/24/15 2045	1) K CHALOKA	TA
2) K CHALOKA	TA	7/24/15 1335 PM	2) C	TA
3)			3)	
4)			4)	

#5
2.3°C
4.3°C

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL - 0016 (0814)

Massachusetts (M-NJ312), North Carolina (No. 578)

NO CS

TestAmerica Edison
Receipt Temperature and pH Log

Page ____ of ____

Job Number: 9855

Number of Coolers: 1 IR Gun # 5

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	2.3 °C	4.3 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: KC Date: 7/24/15

Login Sample Receipt Checklist

Client: MIG Consulting LLC

Job Number: 460-98505-2

Login Number: 98505
List Number: 1
Creator: Hall, Alonzo

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.3° C IR#5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-98551-2
Client Project/Site: Newtown Square, 3608 West Chester Pike
Revision: 1

For:
MIG Consulting LLC
707 Raritan Ave
Suite 203
Highland Park, New Jersey 08904

Attn: Ravi Kolaventi

Authorized for release by:
11/5/2015 4:17:47 PM
Shalini Williams, Project Management Assistant II
shalini.williams@testamericainc.com

Designee for

Sapna Nayyar, Project Manager I
(732)549-3900
sapna.nayyar@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: MIG Consulting LLC
Project/Site: Newtown Square, 3608 West Chester Pike

TestAmerica Job ID: 460-98551-2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 460-98551-2

Laboratory: TestAmerica Edison

Narrative

CASE NARRATIVE - REVISION 1

Client: MIG Consulting LLC

Project: Newtown Square, 3608 West Chester Pike

Report Number: 460-98551-2

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISION 1
The following report(s) required a revision: 460-98551-1. Details are as follows: Per client request, revised to lower method from 8260C to 8260B as orginially requested on Chain of Custody.

Revision 2

COC was checked for PA site but was logged under NJ.Revising report 11/4/2015

RECEIPT
The samples were received on 7/25/2015 11:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 28.5° C.

Receipt Exceptions

The following sample(s) was received outside of holding time: Sample date 7/23/2015 @ 18:45 received at lab on 7/25/2015 @ 11:00.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples SB-12 (7.5-8') (460-98551-1), SB-11 (7.5-8') (460-98551-2), SB-12 (23.5-24') (460-98551-3), SB-2 (7.5-8') (460-98551-4), SB-2 (23.5-24') (460-98551-5), SB-4 (7.5-8') (460-98551-6), SB-4 (15.5-16') (460-98551-7), SB-3 (7.5-8') (460-98551-8), SB-3 (23.5-24') (460-98551-9), SB-5 (7.5-8') (460-98551-10), SB-5 (14.5-5') (460-98551-11), SB-13 (7.5-8') (460-98551-12) and SB-13 (15.5-16') (460-98551-13) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were prepared on 07/25/2015 and analyzed on 07/31/2015 and 08/04/2015.

Toluene was detected in method blank LB3 460-312746/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Job ID: 460-98551-2 (Continued)

Laboratory: TestAmerica Edison (Continued)

No other difficulties were encountered during the volatiles analysis.

All other quality control parameters were within the acceptance limits.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Sample FB (460-98551-14) was analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 07/31/2015.

No difficulties were encountered during the volatiles analysis.

All quality control parameters were within the acceptance limits.

Detection Summary

Client: MIG Consulting LLC
Project/Site: Newtown Square, 3608 West Chester Pike

TestAmerica Job ID: 460-98551-2

Client Sample ID: SB-12 (7.5-8') — Lab Sample ID: 460-98551-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.42	J B	1.9	0.36	ug/Kg	1	☼	8260B	Total/NA
Xylenes, Total	0.21	J	3.8	0.21	ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: SB-11 (7.5-8') — Lab Sample ID: 460-98551-2

No Detections.

Client Sample ID: SB-12 (23.5-24') — Lab Sample ID: 460-98551-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.49	J B	1.3	0.25	ug/Kg	1	☼	8260B	Total/NA
Naphthalene	0.40	J	1.3	0.16	ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: SB-2 (7.5-8') — Lab Sample ID: 460-98551-4

No Detections.

Client Sample ID: SB-2 (23.5-24') — Lab Sample ID: 460-98551-5

No Detections.

Client Sample ID: SB-4 (7.5-8') — Lab Sample ID: 460-98551-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.45	J B	2.2	0.41	ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: SB-4 (15.5-16') — Lab Sample ID: 460-98551-7

No Detections.

Client Sample ID: SB-3 (7.5-8') — Lab Sample ID: 460-98551-8

No Detections.

Client Sample ID: SB-3 (23.5-24') — Lab Sample ID: 460-98551-9

No Detections.

Client Sample ID: SB-5 (7.5-8') — Lab Sample ID: 460-98551-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,3,5-Trimethylbenzene	0.41	J	1.5	0.20	ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: SB-5 (14.5-5') — Lab Sample ID: 460-98551-11

No Detections.

Client Sample ID: SB-13 (7.5-8') — Lab Sample ID: 460-98551-12

No Detections.

Client Sample ID: SB-13 (15.5-16') — Lab Sample ID: 460-98551-13

This Detection Summary does not include radiochemical test results.

TestAmerica Edison

Client Sample ID: SB-13 (15.5-16') (Continued)

Lab Sample ID: 460-98551-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methyl tert-butyl ether	0.25	J	1.2	0.20	ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: FB

Lab Sample ID: 460-98551-14

No Detections.

Client Sample ID: SB-12 (7.5-8')

Lab Sample ID: 460-98551-1
Date Collected: 07/24/15 12:15
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 76.3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.38	U	1.9	0.38	ug/Kg	☼	07/25/15 20:34	07/31/15 10:24	1
Toluene	**0.42**	**J B**	1.9	0.36	ug/Kg	☼	07/25/15 20:34	07/31/15 10:24	1
Ethylbenzene	0.34	U	1.9	0.34	ug/Kg	☼	07/25/15 20:34	07/31/15 10:24	1
Xylenes, Total	**0.21**	**J**	3.8	0.21	ug/Kg	☼	07/25/15 20:34	07/31/15 10:24	1
Methyl tert-butyl ether	0.32	U	1.9	0.32	ug/Kg	☼	07/25/15 20:34	07/31/15 10:24	1
Naphthalene	0.23	U	1.9	0.23	ug/Kg	☼	07/25/15 20:34	07/31/15 10:24	1
1,2,4-Trimethylbenzene	0.64	U	1.9	0.64	ug/Kg	☼	07/25/15 20:34	07/31/15 10:24	1
1,3,5-Trimethylbenzene	0.24	U	1.9	0.24	ug/Kg	☼	07/25/15 20:34	07/31/15 10:24	1
Isopropylbenzene	0.32	U	1.9	0.32	ug/Kg	☼	07/25/15 20:34	07/31/15 10:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*70 - 130*	*07/25/15 20:34*	*07/31/15 10:24*	*1*
Toluene-d8 (Surr)	*91*		*70 - 130*	*07/25/15 20:34*	*07/31/15 10:24*	*1*
Bromofluorobenzene	*83*		*70 - 130*	*07/25/15 20:34*	*07/31/15 10:24*	*1*
Dibromofluoromethane (Surr)	*80*		*70 - 130*	*07/25/15 20:34*	*07/31/15 10:24*	*1*

Client Sample ID: SB-11 (7.5-8')

Lab Sample ID: 460-98551-2
Date Collected: 07/23/15 18:45
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 83.5

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.51	U	2.6	0.51	ug/Kg	☼	07/25/15 17:50	08/04/15 14:31	1
Toluene	0.49	U	2.6	0.49	ug/Kg	☼	07/25/15 17:50	08/04/15 14:31	1
Ethylbenzene	0.46	U	2.6	0.46	ug/Kg	☼	07/25/15 17:50	08/04/15 14:31	1
Xylenes, Total	0.28	U	5.1	0.28	ug/Kg	☼	07/25/15 17:50	08/04/15 14:31	1
Methyl tert-butyl ether	0.44	U	2.6	0.44	ug/Kg	☼	07/25/15 17:50	08/04/15 14:31	1
Naphthalene	0.31	U	2.6	0.31	ug/Kg	☼	07/25/15 17:50	08/04/15 14:31	1
1,2,4-Trimethylbenzene	0.87	U	2.6	0.87	ug/Kg	☼	07/25/15 17:50	08/04/15 14:31	1
1,3,5-Trimethylbenzene	0.33	U	2.6	0.33	ug/Kg	☼	07/25/15 17:50	08/04/15 14:31	1
Isopropylbenzene	0.44	U	2.6	0.44	ug/Kg	☼	07/25/15 17:50	08/04/15 14:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*	*07/25/15 17:50*	*08/04/15 14:31*	*1*
Toluene-d8 (Surr)	*106*		*70 - 130*	*07/25/15 17:50*	*08/04/15 14:31*	*1*
Bromofluorobenzene	*97*		*70 - 130*	*07/25/15 17:50*	*08/04/15 14:31*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 130*	*07/25/15 17:50*	*08/04/15 14:31*	*1*

Client Sample ID: SB-12 (23.5-24')

Lab Sample ID: 460-98551-3
Date Collected: 07/24/15 12:55
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 77.2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.26	U	1.3	0.26	ug/Kg	☼	07/25/15 20:36	07/31/15 10:48	1
Toluene	**0.49**	**J B**	1.3	0.25	ug/Kg	☼	07/25/15 20:36	07/31/15 10:48	1
Ethylbenzene	0.24	U	1.3	0.24	ug/Kg	☼	07/25/15 20:36	07/31/15 10:48	1
Xylenes, Total	0.15	U	2.6	0.15	ug/Kg	☼	07/25/15 20:36	07/31/15 10:48	1
Methyl tert-butyl ether	0.23	U	1.3	0.23	ug/Kg	☼	07/25/15 20:36	07/31/15 10:48	1
Naphthalene	**0.40**	**J**	1.3	0.16	ug/Kg	☼	07/25/15 20:36	07/31/15 10:48	1

Client Sample ID: SB-12 (23.5-24') — **Lab Sample ID: 460-98551-3**
Date Collected: 07/24/15 12:55 — **Matrix: Solid**
Date Received: 07/25/15 11:00 — **Percent Solids: 77.2**

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	0.45	U	1.3	0.45	ug/Kg	☼	07/25/15 20:36	07/31/15 10:48	1
1,3,5-Trimethylbenzene	0.17	U	1.3	0.17	ug/Kg	☼	07/25/15 20:36	07/31/15 10:48	1
Isopropylbenzene	0.23	U	1.3	0.23	ug/Kg	☼	07/25/15 20:36	07/31/15 10:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*70 - 130*	*07/25/15 20:36*	*07/31/15 10:48*	*1*
Toluene-d8 (Surr)	*92*		*70 - 130*	*07/25/15 20:36*	*07/31/15 10:48*	*1*
Bromofluorobenzene	*85*		*70 - 130*	*07/25/15 20:36*	*07/31/15 10:48*	*1*
Dibromofluoromethane (Surr)	*82*		*70 - 130*	*07/25/15 20:36*	*07/31/15 10:48*	*1*

Client Sample ID: SB-2 (7.5-8') — **Lab Sample ID: 460-98551-4**
Date Collected: 07/24/15 13:20 — **Matrix: Solid**
Date Received: 07/25/15 11:00 — **Percent Solids: 80.9**

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.32	U	1.6	0.32	ug/Kg	☼	07/25/15 20:37	07/31/15 11:12	1
Toluene	0.31	U	1.6	0.31	ug/Kg	☼	07/25/15 20:37	07/31/15 11:12	1
Ethylbenzene	0.29	U	1.6	0.29	ug/Kg	☼	07/25/15 20:37	07/31/15 11:12	1
Xylenes, Total	0.18	U	3.2	0.18	ug/Kg	☼	07/25/15 20:37	07/31/15 11:12	1
Methyl tert-butyl ether	0.27	U	1.6	0.27	ug/Kg	☼	07/25/15 20:37	07/31/15 11:12	1
Naphthalene	0.19	U	1.6	0.19	ug/Kg	☼	07/25/15 20:37	07/31/15 11:12	1
1,2,4-Trimethylbenzene	0.55	U	1.6	0.55	ug/Kg	☼	07/25/15 20:37	07/31/15 11:12	1
1,3,5-Trimethylbenzene	0.21	U	1.6	0.21	ug/Kg	☼	07/25/15 20:37	07/31/15 11:12	1
Isopropylbenzene	0.27	U	1.6	0.27	ug/Kg	☼	07/25/15 20:37	07/31/15 11:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*70 - 130*	*07/25/15 20:37*	*07/31/15 11:12*	*1*
Toluene-d8 (Surr)	*91*		*70 - 130*	*07/25/15 20:37*	*07/31/15 11:12*	*1*
Bromofluorobenzene	*85*		*70 - 130*	*07/25/15 20:37*	*07/31/15 11:12*	*1*
Dibromofluoromethane (Surr)	*81*		*70 - 130*	*07/25/15 20:37*	*07/31/15 11:12*	*1*

Client Sample ID: SB-2 (23.5-24') — **Lab Sample ID: 460-98551-5**
Date Collected: 07/24/15 13:45 — **Matrix: Solid**
Date Received: 07/25/15 11:00 — **Percent Solids: 70.5**

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.34	U	1.7	0.34	ug/Kg	☼	07/25/15 20:39	07/31/15 11:36	1
Toluene	0.33	U	1.7	0.33	ug/Kg	☼	07/25/15 20:39	07/31/15 11:36	1
Ethylbenzene	0.31	U	1.7	0.31	ug/Kg	☼	07/25/15 20:39	07/31/15 11:36	1
Xylenes, Total	0.19	U	3.4	0.19	ug/Kg	☼	07/25/15 20:39	07/31/15 11:36	1
Methyl tert-butyl ether	0.29	U	1.7	0.29	ug/Kg	☼	07/25/15 20:39	07/31/15 11:36	1
Naphthalene	0.21	U	1.7	0.21	ug/Kg	☼	07/25/15 20:39	07/31/15 11:36	1
1,2,4-Trimethylbenzene	0.58	U	1.7	0.58	ug/Kg	☼	07/25/15 20:39	07/31/15 11:36	1
1,3,5-Trimethylbenzene	0.22	U	1.7	0.22	ug/Kg	☼	07/25/15 20:39	07/31/15 11:36	1
Isopropylbenzene	0.29	U	1.7	0.29	ug/Kg	☼	07/25/15 20:39	07/31/15 11:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*70 - 130*	*07/25/15 20:39*	*07/31/15 11:36*	*1*
Toluene-d8 (Surr)	*91*		*70 - 130*	*07/25/15 20:39*	*07/31/15 11:36*	*1*

Client Sample ID: SB-2 (23.5-24')

Lab Sample ID: 460-98551-5
Date Collected: 07/24/15 13:45
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 70.5

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Bromofluorobenzene	*81*		*70 - 130*	*07/25/15 20:39*	*07/31/15 11:36*	*1*
Dibromofluoromethane (Surr)	*80*		*70 - 130*	*07/25/15 20:39*	*07/31/15 11:36*	*1*

Client Sample ID: SB-4 (7.5-8')

Lab Sample ID: 460-98551-6
Date Collected: 07/24/15 14:15
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 82.9

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.43	U	2.2	0.43	ug/Kg	☼	07/25/15 20:40	07/31/15 12:00	1
Toluene	**0.45**	**J B**	2.2	0.41	ug/Kg	☼	07/25/15 20:40	07/31/15 12:00	1
Ethylbenzene	0.39	U	2.2	0.39	ug/Kg	☼	07/25/15 20:40	07/31/15 12:00	1
Xylenes, Total	0.24	U	4.3	0.24	ug/Kg	☼	07/25/15 20:40	07/31/15 12:00	1
Methyl tert-butyl ether	0.37	U	2.2	0.37	ug/Kg	☼	07/25/15 20:40	07/31/15 12:00	1
Naphthalene	0.26	U	2.2	0.26	ug/Kg	☼	07/25/15 20:40	07/31/15 12:00	1
1,2,4-Trimethylbenzene	0.73	U	2.2	0.73	ug/Kg	☼	07/25/15 20:40	07/31/15 12:00	1
1,3,5-Trimethylbenzene	0.28	U	2.2	0.28	ug/Kg	☼	07/25/15 20:40	07/31/15 12:00	1
Isopropylbenzene	0.37	U	2.2	0.37	ug/Kg	☼	07/25/15 20:40	07/31/15 12:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 130*	*07/25/15 20:40*	*07/31/15 12:00*	*1*
Toluene-d8 (Surr)	*103*		*70 - 130*	*07/25/15 20:40*	*07/31/15 12:00*	*1*
Bromofluorobenzene	*95*		*70 - 130*	*07/25/15 20:40*	*07/31/15 12:00*	*1*
Dibromofluoromethane (Surr)	*90*		*70 - 130*	*07/25/15 20:40*	*07/31/15 12:00*	*1*

Client Sample ID: SB-4 (15.5-16')

Lab Sample ID: 460-98551-7
Date Collected: 07/24/15 15:00
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 79.7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.26	U	1.3	0.26	ug/Kg	☼	07/25/15 20:42	07/31/15 12:24	1
Toluene	0.24	U	1.3	0.24	ug/Kg	☼	07/25/15 20:42	07/31/15 12:24	1
Ethylbenzene	0.23	U	1.3	0.23	ug/Kg	☼	07/25/15 20:42	07/31/15 12:24	1
Xylenes, Total	0.14	U	2.6	0.14	ug/Kg	☼	07/25/15 20:42	07/31/15 12:24	1
Methyl tert-butyl ether	0.22	U	1.3	0.22	ug/Kg	☼	07/25/15 20:42	07/31/15 12:24	1
Naphthalene	0.15	U	1.3	0.15	ug/Kg	☼	07/25/15 20:42	07/31/15 12:24	1
1,2,4-Trimethylbenzene	0.44	U	1.3	0.44	ug/Kg	☼	07/25/15 20:42	07/31/15 12:24	1
1,3,5-Trimethylbenzene	0.17	U	1.3	0.17	ug/Kg	☼	07/25/15 20:42	07/31/15 12:24	1
Isopropylbenzene	0.22	U	1.3	0.22	ug/Kg	☼	07/25/15 20:42	07/31/15 12:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*70 - 130*	*07/25/15 20:42*	*07/31/15 12:24*	*1*
Toluene-d8 (Surr)	*93*		*70 - 130*	*07/25/15 20:42*	*07/31/15 12:24*	*1*
Bromofluorobenzene	*84*		*70 - 130*	*07/25/15 20:42*	*07/31/15 12:24*	*1*
Dibromofluoromethane (Surr)	*81*		*70 - 130*	*07/25/15 20:42*	*07/31/15 12:24*	*1*

Client Sample ID: SB-3 (7.5-8')

Lab Sample ID: 460-98551-8
Date Collected: 07/24/15 15:50
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 85.3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.48	U	2.4	0.48	ug/Kg	☼	07/25/15 20:43	07/31/15 12:48	1
Toluene	0.46	U	2.4	0.46	ug/Kg	☼	07/25/15 20:43	07/31/15 12:48	1
Ethylbenzene	0.44	U	2.4	0.44	ug/Kg	☼	07/25/15 20:43	07/31/15 12:48	1
Xylenes, Total	0.27	U	4.8	0.27	ug/Kg	☼	07/25/15 20:43	07/31/15 12:48	1
Methyl tert-butyl ether	0.41	U	2.4	0.41	ug/Kg	☼	07/25/15 20:43	07/31/15 12:48	1
Naphthalene	0.29	U	2.4	0.29	ug/Kg	☼	07/25/15 20:43	07/31/15 12:48	1
1,2,4-Trimethylbenzene	0.82	U	2.4	0.82	ug/Kg	☼	07/25/15 20:43	07/31/15 12:48	1
1,3,5-Trimethylbenzene	0.31	U	2.4	0.31	ug/Kg	☼	07/25/15 20:43	07/31/15 12:48	1
Isopropylbenzene	0.41	U	2.4	0.41	ug/Kg	☼	07/25/15 20:43	07/31/15 12:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*70 - 130*	*07/25/15 20:43*	*07/31/15 12:48*	*1*
Toluene-d8 (Surr)	*90*		*70 - 130*	*07/25/15 20:43*	*07/31/15 12:48*	*1*
Bromofluorobenzene	*85*		*70 - 130*	*07/25/15 20:43*	*07/31/15 12:48*	*1*
Dibromofluoromethane (Surr)	*80*		*70 - 130*	*07/25/15 20:43*	*07/31/15 12:48*	*1*

Client Sample ID: SB-3 (23.5-24')

Lab Sample ID: 460-98551-9
Date Collected: 07/24/15 16:20
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 80.5

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.25	U	1.2	0.25	ug/Kg	☼	07/25/15 20:45	07/31/15 17:54	1
Toluene	0.23	U	1.2	0.23	ug/Kg	☼	07/25/15 20:45	07/31/15 17:54	1
Ethylbenzene	0.22	U	1.2	0.22	ug/Kg	☼	07/25/15 20:45	07/31/15 17:54	1
Xylenes, Total	0.14	U	2.5	0.14	ug/Kg	☼	07/25/15 20:45	07/31/15 17:54	1
Methyl tert-butyl ether	0.21	U	1.2	0.21	ug/Kg	☼	07/25/15 20:45	07/31/15 17:54	1
Naphthalene	0.15	U	1.2	0.15	ug/Kg	☼	07/25/15 20:45	07/31/15 17:54	1
1,2,4-Trimethylbenzene	0.42	U	1.2	0.42	ug/Kg	☼	07/25/15 20:45	07/31/15 17:54	1
1,3,5-Trimethylbenzene	0.16	U	1.2	0.16	ug/Kg	☼	07/25/15 20:45	07/31/15 17:54	1
Isopropylbenzene	0.21	U	1.2	0.21	ug/Kg	☼	07/25/15 20:45	07/31/15 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*70 - 130*	*07/25/15 20:45*	*07/31/15 17:54*	*1*
Toluene-d8 (Surr)	*97*		*70 - 130*	*07/25/15 20:45*	*07/31/15 17:54*	*1*
Bromofluorobenzene	*88*		*70 - 130*	*07/25/15 20:45*	*07/31/15 17:54*	*1*
Dibromofluoromethane (Surr)	*85*		*70 - 130*	*07/25/15 20:45*	*07/31/15 17:54*	*1*

Client Sample ID: SB-5 (7.5-8')

Lab Sample ID: 460-98551-10
Date Collected: 07/24/15 16:55
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 75.1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.30	U	1.5	0.30	ug/Kg	☼	07/25/15 20:46	07/31/15 18:18	1
Toluene	0.29	U	1.5	0.29	ug/Kg	☼	07/25/15 20:46	07/31/15 18:18	1
Ethylbenzene	0.27	U	1.5	0.27	ug/Kg	☼	07/25/15 20:46	07/31/15 18:18	1
Xylenes, Total	0.17	U	3.0	0.17	ug/Kg	☼	07/25/15 20:46	07/31/15 18:18	1
Methyl tert-butyl ether	0.26	U	1.5	0.26	ug/Kg	☼	07/25/15 20:46	07/31/15 18:18	1
Naphthalene	0.18	U	1.5	0.18	ug/Kg	☼	07/25/15 20:46	07/31/15 18:18	1

Client Sample ID: SB-5 (7.5-8')

Lab Sample ID: 460-98551-10
Date Collected: 07/24/15 16:55
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 75.1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	0.52	U	1.5	0.52	ug/Kg	☼	07/25/15 20:46	07/31/15 18:18	1
1,3,5-Trimethylbenzene	0.41	J	1.5	0.20	ug/Kg	☼	07/25/15 20:46	07/31/15 18:18	1
Isopropylbenzene	0.26	U	1.5	0.26	ug/Kg	☼	07/25/15 20:46	07/31/15 18:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*70 - 130*	*07/25/15 20:46*	*07/31/15 18:18*	*1*
Toluene-d8 (Surr)	*91*		*70 - 130*	*07/25/15 20:46*	*07/31/15 18:18*	*1*
Bromofluorobenzene	*81*		*70 - 130*	*07/25/15 20:46*	*07/31/15 18:18*	*1*
Dibromofluoromethane (Surr)	*80*		*70 - 130*	*07/25/15 20:46*	*07/31/15 18:18*	*1*

Client Sample ID: SB-5 (14.5-5')

Lab Sample ID: 460-98551-11
Date Collected: 07/24/15 17:20
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 78.2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.32	U	1.6	0.32	ug/Kg	☼	07/25/15 20:48	07/31/15 18:42	1
Toluene	0.30	U	1.6	0.30	ug/Kg	☼	07/25/15 20:48	07/31/15 18:42	1
Ethylbenzene	0.29	U	1.6	0.29	ug/Kg	☼	07/25/15 20:48	07/31/15 18:42	1
Xylenes, Total	0.17	U	3.2	0.17	ug/Kg	☼	07/25/15 20:48	07/31/15 18:42	1
Methyl tert-butyl ether	0.27	U	1.6	0.27	ug/Kg	☼	07/25/15 20:48	07/31/15 18:42	1
Naphthalene	0.19	U	1.6	0.19	ug/Kg	☼	07/25/15 20:48	07/31/15 18:42	1
1,2,4-Trimethylbenzene	0.54	U	1.6	0.54	ug/Kg	☼	07/25/15 20:48	07/31/15 18:42	1
1,3,5-Trimethylbenzene	0.21	U	1.6	0.21	ug/Kg	☼	07/25/15 20:48	07/31/15 18:42	1
Isopropylbenzene	0.27	U	1.6	0.27	ug/Kg	☼	07/25/15 20:48	07/31/15 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 130*	*07/25/15 20:48*	*07/31/15 18:42*	*1*
Toluene-d8 (Surr)	*106*		*70 - 130*	*07/25/15 20:48*	*07/31/15 18:42*	*1*
Bromofluorobenzene	*98*		*70 - 130*	*07/25/15 20:48*	*07/31/15 18:42*	*1*
Dibromofluoromethane (Surr)	*94*		*70 - 130*	*07/25/15 20:48*	*07/31/15 18:42*	*1*

Client Sample ID: SB-13 (7.5-8')

Lab Sample ID: 460-98551-12
Date Collected: 07/24/15 17:40
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 72.4

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.33	U	1.7	0.33	ug/Kg	☼	07/25/15 20:49	07/31/15 19:07	1
Toluene	0.32	U	1.7	0.32	ug/Kg	☼	07/25/15 20:49	07/31/15 19:07	1
Ethylbenzene	0.30	U	1.7	0.30	ug/Kg	☼	07/25/15 20:49	07/31/15 19:07	1
Xylenes, Total	0.18	U	3.3	0.18	ug/Kg	☼	07/25/15 20:49	07/31/15 19:07	1
Methyl tert-butyl ether	0.28	U	1.7	0.28	ug/Kg	☼	07/25/15 20:49	07/31/15 19:07	1
Naphthalene	0.20	U	1.7	0.20	ug/Kg	☼	07/25/15 20:49	07/31/15 19:07	1
1,2,4-Trimethylbenzene	0.57	U	1.7	0.57	ug/Kg	☼	07/25/15 20:49	07/31/15 19:07	1
1,3,5-Trimethylbenzene	0.22	U	1.7	0.22	ug/Kg	☼	07/25/15 20:49	07/31/15 19:07	1
Isopropylbenzene	0.28	U	1.7	0.28	ug/Kg	☼	07/25/15 20:49	07/31/15 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*70 - 130*	*07/25/15 20:49*	*07/31/15 19:07*	*1*
Toluene-d8 (Surr)	*92*		*70 - 130*	*07/25/15 20:49*	*07/31/15 19:07*	*1*

Client: MIG Consulting LLC
Project/Site: Newtown Square, 3608 West Chester Pike

TestAmerica Job ID: 460-98551-2

Client Sample ID: SB-13 (7.5-8')

Lab Sample ID: 460-98551-12
Date Collected: 07/24/15 17:40
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 72.4

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Bromofluorobenzene	*83*		*70 - 130*	*07/25/15 20:49*	*07/31/15 19:07*	*1*
Dibromofluoromethane (Surr)	*81*		*70 - 130*	*07/25/15 20:49*	*07/31/15 19:07*	*1*

Client Sample ID: SB-13 (15.5-16')

Lab Sample ID: 460-98551-13
Date Collected: 07/24/15 18:00
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 81.9

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.23	U	1.2	0.23	ug/Kg	☼	07/25/15 20:51	07/31/15 19:31	1
Toluene	0.22	U	1.2	0.22	ug/Kg	☼	07/25/15 20:51	07/31/15 19:31	1
Ethylbenzene	0.21	U	1.2	0.21	ug/Kg	☼	07/25/15 20:51	07/31/15 19:31	1
Xylenes, Total	0.13	U	2.3	0.13	ug/Kg	☼	07/25/15 20:51	07/31/15 19:31	1
Methyl tert-butyl ether	**0.25**	**J**	1.2	0.20	ug/Kg	☼	07/25/15 20:51	07/31/15 19:31	1
Naphthalene	0.14	U	1.2	0.14	ug/Kg	☼	07/25/15 20:51	07/31/15 19:31	1
1,2,4-Trimethylbenzene	0.39	U	1.2	0.39	ug/Kg	☼	07/25/15 20:51	07/31/15 19:31	1
1,3,5-Trimethylbenzene	0.15	U	1.2	0.15	ug/Kg	☼	07/25/15 20:51	07/31/15 19:31	1
Isopropylbenzene	0.20	U	1.2	0.20	ug/Kg	☼	07/25/15 20:51	07/31/15 19:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*86*		*70 - 130*	*07/25/15 20:51*	*07/31/15 19:31*	*1*
Toluene-d8 (Surr)	*90*		*70 - 130*	*07/25/15 20:51*	*07/31/15 19:31*	*1*
Bromofluorobenzene	*81*		*70 - 130*	*07/25/15 20:51*	*07/31/15 19:31*	*1*
Dibromofluoromethane (Surr)	*81*		*70 - 130*	*07/25/15 20:51*	*07/31/15 19:31*	*1*

Client Sample ID: FB

Lab Sample ID: 460-98551-14
Date Collected: 07/24/15 17:40
Matrix: Water
Date Received: 07/25/15 11:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			07/31/15 03:30	1
Toluene	0.25	U	1.0	0.25	ug/L			07/31/15 03:30	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			07/31/15 03:30	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			07/31/15 03:30	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			07/31/15 03:30	1
Naphthalene	0.26	U	1.0	0.26	ug/L			07/31/15 03:30	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			07/31/15 03:30	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			07/31/15 03:30	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			07/31/15 03:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 130*		*07/31/15 03:30*	*1*
Toluene-d8 (Surr)	*101*		*70 - 130*		*07/31/15 03:30*	*1*
Bromofluorobenzene	*98*		*64 - 135*		*07/31/15 03:30*	*1*
Dibromofluoromethane (Surr)	*109*		*72 - 137*		*07/31/15 03:30*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	12DCE (70-130)	TOL (70-130)	BFB (70-130)	DBFM (70-130)
460-98551-1	SB-12 (7.5-8')	83	91	83	80
460-98551-2	SB-11 (7.5-8')	99	106	97	106
460-98551-3	SB-12 (23.5-24')	86	92	85	82
460-98551-4	SB-2 (7.5-8')	84	91	85	81
460-98551-5	SB-2 (23.5-24')	84	91	81	80
460-98551-6	SB-4 (7.5-8')	96	103	95	90
460-98551-7	SB-4 (15.5-16')	83	93	84	81
460-98551-8	SB-3 (7.5-8')	83	90	85	80
460-98551-9	SB-3 (23.5-24')	89	97	88	85
460-98551-10	SB-5 (7.5-8')	83	91	81	80
460-98551-11	SB-5 (14.5-5')	97	106	98	94
460-98551-12	SB-13 (7.5-8')	85	92	83	81
460-98551-13	SB-13 (15.5-16')	86	90	81	81
LB3 460-312739/1-A	Method Blank	84	99	102	101
LB3 460-312746/1-A	Method Blank	86	94	88	81
LCS 460-312857/3	Lab Control Sample	78	90	95	94
LCS 460-313915/3	Lab Control Sample	83	96	88	81
LCS 460-313988/3	Lab Control Sample	82	96	86	81
LCS 460-314501/3	Lab Control Sample	95	105	95	99
LCSD 460-312857/4	Lab Control Sample Dup	85	96	100	100
LCSD 460-313915/4	Lab Control Sample Dup	88	105	96	87
LCSD 460-313988/4	Lab Control Sample Dup	90	109	98	90
LCSD 460-314501/4	Lab Control Sample Dup	97	108	98	102
MB 460-312857/7	Method Blank	82	91	98	98
MB 460-313915/6	Method Blank	91	103	95	90
MB 460-313988/6	Method Blank	90	106	96	89
MB 460-314501/7	Method Blank	98	101	97	102

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = Bromofluorobenzene
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	12DCE (70-130)	TOL (70-130)	BFB (64-135)	DBFM (72-137)
460-98551-14	FB	108	101	98	109
LCS 460-322338/4	Lab Control Sample	91	91	94	94
MB 460-322338/7	Method Blank	101	95	94	102

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = Bromofluorobenzene
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: LB3 460-312739/1-A
Matrix: Solid
Analysis Batch: 312857

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 312739

Analyte	LB3 Result	LB3 Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.20	U	1.0	0.20	ug/Kg		07/25/15 17:49	07/27/15 08:32	1
Toluene	0.19	U	1.0	0.19	ug/Kg		07/25/15 17:49	07/27/15 08:32	1
Ethylbenzene	0.18	U	1.0	0.18	ug/Kg		07/25/15 17:49	07/27/15 08:32	1
Xylenes, Total	0.11	U	2.0	0.11	ug/Kg		07/25/15 17:49	07/27/15 08:32	1
Methyl tert-butyl ether	0.17	U	1.0	0.17	ug/Kg		07/25/15 17:49	07/27/15 08:32	1
Naphthalene	0.12	U	1.0	0.12	ug/Kg		07/25/15 17:49	07/27/15 08:32	1
1,2,4-Trimethylbenzene	0.34	U	1.0	0.34	ug/Kg		07/25/15 17:49	07/27/15 08:32	1
1,3,5-Trimethylbenzene	0.13	U	1.0	0.13	ug/Kg		07/25/15 17:49	07/27/15 08:32	1
Isopropylbenzene	0.17	U	1.0	0.17	ug/Kg		07/25/15 17:49	07/27/15 08:32	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*70 - 130*	*07/25/15 17:49*	*07/27/15 08:32*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*	*07/25/15 17:49*	*07/27/15 08:32*	*1*
Bromofluorobenzene	*102*		*70 - 130*	*07/25/15 17:49*	*07/27/15 08:32*	*1*
Dibromofluoromethane (Surr)	*101*		*70 - 130*	*07/25/15 17:49*	*07/27/15 08:32*	*1*

Lab Sample ID: LB3 460-312746/1-A
Matrix: Solid
Analysis Batch: 313915

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 312746

Analyte	LB3 Result	LB3 Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.20	U	1.0	0.20	ug/Kg		07/25/15 20:01	07/31/15 09:59	1
Toluene	0.250	J	1.0	0.19	ug/Kg		07/25/15 20:01	07/31/15 09:59	1
Ethylbenzene	0.18	U	1.0	0.18	ug/Kg		07/25/15 20:01	07/31/15 09:59	1
Xylenes, Total	0.11	U	2.0	0.11	ug/Kg		07/25/15 20:01	07/31/15 09:59	1
Methyl tert-butyl ether	0.17	U	1.0	0.17	ug/Kg		07/25/15 20:01	07/31/15 09:59	1
Naphthalene	0.12	U	1.0	0.12	ug/Kg		07/25/15 20:01	07/31/15 09:59	1
1,2,4-Trimethylbenzene	0.34	U	1.0	0.34	ug/Kg		07/25/15 20:01	07/31/15 09:59	1
1,3,5-Trimethylbenzene	0.13	U	1.0	0.13	ug/Kg		07/25/15 20:01	07/31/15 09:59	1
Isopropylbenzene	0.17	U	1.0	0.17	ug/Kg		07/25/15 20:01	07/31/15 09:59	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*70 - 130*	*07/25/15 20:01*	*07/31/15 09:59*	*1*
Toluene-d8 (Surr)	*94*		*70 - 130*	*07/25/15 20:01*	*07/31/15 09:59*	*1*
Bromofluorobenzene	*88*		*70 - 130*	*07/25/15 20:01*	*07/31/15 09:59*	*1*
Dibromofluoromethane (Surr)	*81*		*70 - 130*	*07/25/15 20:01*	*07/31/15 09:59*	*1*

Lab Sample ID: MB 460-312857/7
Matrix: Solid
Analysis Batch: 312857

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.20	U	1.0	0.20	ug/Kg			07/27/15 08:08	1
Toluene	0.19	U	1.0	0.19	ug/Kg			07/27/15 08:08	1
Ethylbenzene	0.18	U	1.0	0.18	ug/Kg			07/27/15 08:08	1
Xylenes, Total	0.11	U	2.0	0.11	ug/Kg			07/27/15 08:08	1
Methyl tert-butyl ether	0.17	U	1.0	0.17	ug/Kg			07/27/15 08:08	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 460-312857/7
Matrix: Solid
Analysis Batch: 312857

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.12	U	1.0	0.12	ug/Kg			07/27/15 08:08	1
1,2,4-Trimethylbenzene	0.34	U	1.0	0.34	ug/Kg			07/27/15 08:08	1
1,3,5-Trimethylbenzene	0.13	U	1.0	0.13	ug/Kg			07/27/15 08:08	1
Isopropylbenzene	0.17	U	1.0	0.17	ug/Kg			07/27/15 08:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*70 - 130*		*07/27/15 08:08*	*1*
Toluene-d8 (Surr)	*91*		*70 - 130*		*07/27/15 08:08*	*1*
Bromofluorobenzene	*98*		*70 - 130*		*07/27/15 08:08*	*1*
Dibromofluoromethane (Surr)	*98*		*70 - 130*		*07/27/15 08:08*	*1*

Lab Sample ID: LCS 460-312857/3
Matrix: Solid
Analysis Batch: 312857

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	21.0		ug/Kg		105	75 - 123
Toluene	20.0	21.1		ug/Kg		105	82 - 117
Ethylbenzene	20.0	22.1		ug/Kg		111	80 - 120
Xylenes, Total	40.0	46.6		ug/Kg		117	78 - 120
Methyl tert-butyl ether	20.0	19.7		ug/Kg		99	75 - 124
Naphthalene	20.0	22.0		ug/Kg		110	73 - 121
1,2,4-Trimethylbenzene	20.0	21.8		ug/Kg		109	80 - 122
1,3,5-Trimethylbenzene	20.0	21.9		ug/Kg		110	79 - 122
Isopropylbenzene	20.0	23.4		ug/Kg		117	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*70 - 130*
Toluene-d8 (Surr)	*90*		*70 - 130*
Bromofluorobenzene	*95*		*70 - 130*
Dibromofluoromethane (Surr)	*94*		*70 - 130*

Lab Sample ID: LCSD 460-312857/4
Matrix: Solid
Analysis Batch: 312857

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	20.5		ug/Kg		103	75 - 123	2	30
Toluene	20.0	20.6		ug/Kg		103	82 - 117	2	30
Ethylbenzene	20.0	21.5		ug/Kg		107	80 - 120	3	30
Xylenes, Total	40.0	44.7		ug/Kg		112	78 - 120	4	30
Methyl tert-butyl ether	20.0	20.1		ug/Kg		101	75 - 124	2	30
Naphthalene	20.0	21.3		ug/Kg		107	73 - 121	3	30
1,2,4-Trimethylbenzene	20.0	21.6		ug/Kg		108	80 - 122	1	30
1,3,5-Trimethylbenzene	20.0	21.7		ug/Kg		108	79 - 122	1	30
Isopropylbenzene	20.0	22.6		ug/Kg		113	80 - 120	3	30

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 460-312857/4
Matrix: Solid
Analysis Batch: 312857

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		70 - 130
Toluene-d8 (Surr)	96		70 - 130
Bromofluorobenzene	100		70 - 130
Dibromofluoromethane (Surr)	100		70 - 130

Lab Sample ID: MB 460-313915/6
Matrix: Solid
Analysis Batch: 313915

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.20	U	1.0	0.20	ug/Kg			07/31/15 04:16	1
Toluene	0.19	U	1.0	0.19	ug/Kg			07/31/15 04:16	1
Ethylbenzene	0.18	U	1.0	0.18	ug/Kg			07/31/15 04:16	1
Xylenes, Total	0.11	U	2.0	0.11	ug/Kg			07/31/15 04:16	1
Methyl tert-butyl ether	0.17	U	1.0	0.17	ug/Kg			07/31/15 04:16	1
Naphthalene	0.12	U	1.0	0.12	ug/Kg			07/31/15 04:16	1
1,2,4-Trimethylbenzene	0.34	U	1.0	0.34	ug/Kg			07/31/15 04:16	1
1,3,5-Trimethylbenzene	0.13	U	1.0	0.13	ug/Kg			07/31/15 04:16	1
Isopropylbenzene	0.17	U	1.0	0.17	ug/Kg			07/31/15 04:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 130		07/31/15 04:16	1
Toluene-d8 (Surr)	103		70 - 130		07/31/15 04:16	1
Bromofluorobenzene	95		70 - 130		07/31/15 04:16	1
Dibromofluoromethane (Surr)	90		70 - 130		07/31/15 04:16	1

Lab Sample ID: LCS 460-313915/3
Matrix: Solid
Analysis Batch: 313915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	20.3		ug/Kg		101	75 - 123
Toluene	20.0	19.5		ug/Kg		98	82 - 117
Ethylbenzene	20.0	19.8		ug/Kg		99	80 - 120
Xylenes, Total	40.0	38.9		ug/Kg		97	78 - 120
Methyl tert-butyl ether	20.0	18.8		ug/Kg		94	75 - 124
Naphthalene	20.0	18.2		ug/Kg		91	73 - 121
1,2,4-Trimethylbenzene	20.0	20.1		ug/Kg		101	80 - 122
1,3,5-Trimethylbenzene	20.0	20.4		ug/Kg		102	79 - 122
Isopropylbenzene	20.0	20.0		ug/Kg		100	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		70 - 130
Toluene-d8 (Surr)	96		70 - 130
Bromofluorobenzene	88		70 - 130
Dibromofluoromethane (Surr)	81		70 - 130

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 460-313915/4
Matrix: Solid
Analysis Batch: 313915

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	20.9		ug/Kg		104	75 - 123	3	30
Toluene	20.0	19.9		ug/Kg		99	82 - 117	2	30
Ethylbenzene	20.0	20.0		ug/Kg		100	80 - 120	1	30
Xylenes, Total	40.0	39.8		ug/Kg		100	78 - 120	2	30
Methyl tert-butyl ether	20.0	18.9		ug/Kg		95	75 - 124	1	30
Naphthalene	20.0	17.9		ug/Kg		89	73 - 121	2	30
1,2,4-Trimethylbenzene	20.0	20.2		ug/Kg		101	80 - 122	0	30
1,3,5-Trimethylbenzene	20.0	20.4		ug/Kg		102	79 - 122	0	30
Isopropylbenzene	20.0	20.3		ug/Kg		102	80 - 120	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*70 - 130*
Toluene-d8 (Surr)	*105*		*70 - 130*
Bromofluorobenzene	*96*		*70 - 130*
Dibromofluoromethane (Surr)	*87*		*70 - 130*

Lab Sample ID: MB 460-313988/6
Matrix: Solid
Analysis Batch: 313988

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.20	U	1.0	0.20	ug/Kg			07/31/15 17:05	1
Toluene	0.19	U	1.0	0.19	ug/Kg			07/31/15 17:05	1
Ethylbenzene	0.18	U	1.0	0.18	ug/Kg			07/31/15 17:05	1
Xylenes, Total	0.11	U	2.0	0.11	ug/Kg			07/31/15 17:05	1
Methyl tert-butyl ether	0.17	U	1.0	0.17	ug/Kg			07/31/15 17:05	1
Naphthalene	0.12	U	1.0	0.12	ug/Kg			07/31/15 17:05	1
1,2,4-Trimethylbenzene	0.34	U	1.0	0.34	ug/Kg			07/31/15 17:05	1
1,3,5-Trimethylbenzene	0.13	U	1.0	0.13	ug/Kg			07/31/15 17:05	1
Isopropylbenzene	0.17	U	1.0	0.17	ug/Kg			07/31/15 17:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 130*		*07/31/15 17:05*	*1*
Toluene-d8 (Surr)	*106*		*70 - 130*		*07/31/15 17:05*	*1*
Bromofluorobenzene	*96*		*70 - 130*		*07/31/15 17:05*	*1*
Dibromofluoromethane (Surr)	*89*		*70 - 130*		*07/31/15 17:05*	*1*

Lab Sample ID: LCS 460-313988/3
Matrix: Solid
Analysis Batch: 313988

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	18.7		ug/Kg		94	75 - 123
Toluene	20.0	18.2		ug/Kg		91	82 - 117
Ethylbenzene	20.0	17.9		ug/Kg		89	80 - 120
Xylenes, Total	40.0	36.7		ug/Kg		92	78 - 120
Methyl tert-butyl ether	20.0	17.2		ug/Kg		86	75 - 124

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 460-313988/3
Matrix: Solid
Analysis Batch: 313988

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	20.0	16.7		ug/Kg		84	73 - 121
1,2,4-Trimethylbenzene	20.0	18.1		ug/Kg		91	80 - 122
1,3,5-Trimethylbenzene	20.0	18.4		ug/Kg		92	79 - 122
Isopropylbenzene	20.0	18.8		ug/Kg		94	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*70 - 130*
Toluene-d8 (Surr)	*96*		*70 - 130*
Bromofluorobenzene	*86*		*70 - 130*
Dibromofluoromethane (Surr)	*81*		*70 - 130*

Lab Sample ID: LCSD 460-313988/4
Matrix: Solid
Analysis Batch: 313988

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	19.4		ug/Kg		97	75 - 123	3	30
Toluene	20.0	18.7		ug/Kg		94	82 - 117	3	30
Ethylbenzene	20.0	18.7		ug/Kg		93	80 - 120	5	30
Xylenes, Total	40.0	37.8		ug/Kg		95	78 - 120	3	30
Methyl tert-butyl ether	20.0	18.2		ug/Kg		91	75 - 124	6	30
Naphthalene	20.0	17.7		ug/Kg		88	73 - 121	5	30
1,2,4-Trimethylbenzene	20.0	18.9		ug/Kg		94	80 - 122	4	30
1,3,5-Trimethylbenzene	20.0	18.8		ug/Kg		94	79 - 122	2	30
Isopropylbenzene	20.0	19.4		ug/Kg		97	80 - 120	3	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 130*
Toluene-d8 (Surr)	*109*		*70 - 130*
Bromofluorobenzene	*98*		*70 - 130*
Dibromofluoromethane (Surr)	*90*		*70 - 130*

Lab Sample ID: MB 460-314501/7
Matrix: Solid
Analysis Batch: 314501

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.20	U	1.0	0.20	ug/Kg			08/04/15 12:36	1
Toluene	0.19	U	1.0	0.19	ug/Kg			08/04/15 12:36	1
Ethylbenzene	0.18	U	1.0	0.18	ug/Kg			08/04/15 12:36	1
Xylenes, Total	0.11	U	2.0	0.11	ug/Kg			08/04/15 12:36	1
Methyl tert-butyl ether	0.17	U	1.0	0.17	ug/Kg			08/04/15 12:36	1
Naphthalene	0.12	U	1.0	0.12	ug/Kg			08/04/15 12:36	1
1,2,4-Trimethylbenzene	0.34	U	1.0	0.34	ug/Kg			08/04/15 12:36	1
1,3,5-Trimethylbenzene	0.13	U	1.0	0.13	ug/Kg			08/04/15 12:36	1
Isopropylbenzene	0.17	U	1.0	0.17	ug/Kg			08/04/15 12:36	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 460-314501/7
Matrix: Solid
Analysis Batch: 314501

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 130		08/04/15 12:36	1
Toluene-d8 (Surr)	101		70 - 130		08/04/15 12:36	1
Bromofluorobenzene	97		70 - 130		08/04/15 12:36	1
Dibromofluoromethane (Surr)	102		70 - 130		08/04/15 12:36	1

Lab Sample ID: LCS 460-314501/3
Matrix: Solid
Analysis Batch: 314501

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	19.3		ug/Kg		97	75 - 123
Toluene	20.0	18.1		ug/Kg		90	82 - 117
Ethylbenzene	20.0	18.0		ug/Kg		90	80 - 120
Xylenes, Total	40.0	36.4		ug/Kg		91	78 - 120
Methyl tert-butyl ether	20.0	18.4		ug/Kg		92	75 - 124
Naphthalene	20.0	18.8		ug/Kg		94	73 - 121
1,2,4-Trimethylbenzene	20.0	19.2		ug/Kg		96	80 - 122
1,3,5-Trimethylbenzene	20.0	19.1		ug/Kg		95	79 - 122
Isopropylbenzene	20.0	18.5		ug/Kg		92	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		70 - 130
Toluene-d8 (Surr)	105		70 - 130
Bromofluorobenzene	95		70 - 130
Dibromofluoromethane (Surr)	99		70 - 130

Lab Sample ID: LCSD 460-314501/4
Matrix: Solid
Analysis Batch: 314501

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	19.7		ug/Kg		99	75 - 123	2	30
Toluene	20.0	18.0		ug/Kg		90	82 - 117	0	30
Ethylbenzene	20.0	17.7		ug/Kg		88	80 - 120	2	30
Xylenes, Total	40.0	36.1		ug/Kg		90	78 - 120	1	30
Methyl tert-butyl ether	20.0	19.2		ug/Kg		96	75 - 124	4	30
Naphthalene	20.0	19.0		ug/Kg		95	73 - 121	1	30
1,2,4-Trimethylbenzene	20.0	18.8		ug/Kg		94	80 - 122	2	30
1,3,5-Trimethylbenzene	20.0	18.7		ug/Kg		94	79 - 122	2	30
Isopropylbenzene	20.0	18.2		ug/Kg		91	80 - 120	1	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		70 - 130
Toluene-d8 (Surr)	108		70 - 130
Bromofluorobenzene	98		70 - 130
Dibromofluoromethane (Surr)	102		70 - 130

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 460-322338/7
Matrix: Water
Analysis Batch: 322338

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.090	U	1.0	0.090	ug/L			07/30/15 23:43	1
Toluene	0.25	U	1.0	0.25	ug/L			07/30/15 23:43	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			07/30/15 23:43	1
Xylenes, Total	0.28	U	2.0	0.28	ug/L			07/30/15 23:43	1
Methyl tert-butyl ether	0.13	U	1.0	0.13	ug/L			07/30/15 23:43	1
Naphthalene	0.26	U	1.0	0.26	ug/L			07/30/15 23:43	1
1,2,4-Trimethylbenzene	0.23	U	1.0	0.23	ug/L			07/30/15 23:43	1
1,3,5-Trimethylbenzene	0.25	U	1.0	0.25	ug/L			07/30/15 23:43	1
Isopropylbenzene	0.32	U	1.0	0.32	ug/L			07/30/15 23:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*		*07/30/15 23:43*	*1*
Toluene-d8 (Surr)	*95*		*70 - 130*		*07/30/15 23:43*	*1*
Bromofluorobenzene	*94*		*64 - 135*		*07/30/15 23:43*	*1*
Dibromofluoromethane (Surr)	*102*		*72 - 137*		*07/30/15 23:43*	*1*

Lab Sample ID: LCS 460-322338/4
Matrix: Water
Analysis Batch: 322338

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	19.8		ug/L		99	69 - 125
Toluene	20.0	19.5		ug/L		97	78 - 120
Ethylbenzene	20.0	19.4		ug/L		97	74 - 120
Xylenes, Total	40.0	38.8		ug/L		97	73 - 122
Methyl tert-butyl ether	20.0	19.8		ug/L		99	73 - 125
Naphthalene	20.0	19.6		ug/L		98	54 - 148
1,2,4-Trimethylbenzene	20.0	19.8		ug/L		99	68 - 127
1,3,5-Trimethylbenzene	20.0	19.4		ug/L		97	67 - 129
Isopropylbenzene	20.0	19.4		ug/L		97	74 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 130*
Toluene-d8 (Surr)	*91*		*70 - 130*
Bromofluorobenzene	*94*		*64 - 135*
Dibromofluoromethane (Surr)	*94*		*72 - 137*

GC/MS VOA

Prep Batch: 312739

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-98551-2	SB-11 (7.5-8')	Total/NA	Solid	5035	
LB3 460-312739/1-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 312746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-98551-1	SB-12 (7.5-8')	Total/NA	Solid	5035	
460-98551-3	SB-12 (23.5-24')	Total/NA	Solid	5035	
460-98551-4	SB-2 (7.5-8')	Total/NA	Solid	5035	
460-98551-5	SB-2 (23.5-24')	Total/NA	Solid	5035	
460-98551-6	SB-4 (7.5-8')	Total/NA	Solid	5035	
460-98551-7	SB-4 (15.5-16')	Total/NA	Solid	5035	
460-98551-8	SB-3 (7.5-8')	Total/NA	Solid	5035	
460-98551-9	SB-3 (23.5-24')	Total/NA	Solid	5035	
460-98551-10	SB-5 (7.5-8')	Total/NA	Solid	5035	
460-98551-11	SB-5 (14.5-5')	Total/NA	Solid	5035	
460-98551-12	SB-13 (7.5-8')	Total/NA	Solid	5035	
460-98551-13	SB-13 (15.5-16')	Total/NA	Solid	5035	
LB3 460-312746/1-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 312857

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB3 460-312739/1-A	Method Blank	Total/NA	Solid	8260B	312739
LCS 460-312857/3	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 460-312857/4	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 460-312857/7	Method Blank	Total/NA	Solid	8260B	

Analysis Batch: 313915

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-98551-1	SB-12 (7.5-8')	Total/NA	Solid	8260B	312746
460-98551-3	SB-12 (23.5-24')	Total/NA	Solid	8260B	312746
460-98551-4	SB-2 (7.5-8')	Total/NA	Solid	8260B	312746
460-98551-5	SB-2 (23.5-24')	Total/NA	Solid	8260B	312746
460-98551-6	SB-4 (7.5-8')	Total/NA	Solid	8260B	312746
460-98551-7	SB-4 (15.5-16')	Total/NA	Solid	8260B	312746
460-98551-8	SB-3 (7.5-8')	Total/NA	Solid	8260B	312746
LB3 460-312746/1-A	Method Blank	Total/NA	Solid	8260B	312746
LCS 460-313915/3	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 460-313915/4	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 460-313915/6	Method Blank	Total/NA	Solid	8260B	

Analysis Batch: 313988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-98551-9	SB-3 (23.5-24')	Total/NA	Solid	8260B	312746
460-98551-10	SB-5 (7.5-8')	Total/NA	Solid	8260B	312746
460-98551-11	SB-5 (14.5-5')	Total/NA	Solid	8260B	312746
460-98551-12	SB-13 (7.5-8')	Total/NA	Solid	8260B	312746
460-98551-13	SB-13 (15.5-16')	Total/NA	Solid	8260B	312746
LCS 460-313988/3	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 460-313988/4	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 460-313988/6	Method Blank	Total/NA	Solid	8260B	

GC/MS VOA (Continued)

Analysis Batch: 314501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-98551-2	SB-11 (7.5-8')	Total/NA	Solid	8260B	312739
LCS 460-314501/3	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 460-314501/4	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 460-314501/7	Method Blank	Total/NA	Solid	8260B	

Analysis Batch: 322338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-98551-14	FB	Total/NA	Water	8260B	
LCS 460-322338/4	Lab Control Sample	Total/NA	Water	8260B	
MB 460-322338/7	Method Blank	Total/NA	Water	8260B	

Lab Chronicle

Client: MIG Consulting LLC
Project/Site: Newtown Square, 3608 West Chester Pike

TestAmerica Job ID: 460-98551-2

Client Sample ID: SB-12 (7.5-8')

Lab Sample ID: 460-98551-1
Date Collected: 07/24/15 12:15
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 76.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:34	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313915	07/31/15 10:24	AAT	TAL EDI

Client Sample ID: SB-11 (7.5-8')

Lab Sample ID: 460-98551-2
Date Collected: 07/23/15 18:45
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 83.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312739	07/25/15 17:50	DAS	TAL EDI
Total/NA	Analysis	8260B		1	314501	08/04/15 14:31	MZS	TAL EDI

Client Sample ID: SB-12 (23.5-24')

Lab Sample ID: 460-98551-3
Date Collected: 07/24/15 12:55
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 77.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:36	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313915	07/31/15 10:48	AAT	TAL EDI

Client Sample ID: SB-2 (7.5-8')

Lab Sample ID: 460-98551-4
Date Collected: 07/24/15 13:20
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 80.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:37	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313915	07/31/15 11:12	AAT	TAL EDI

Client Sample ID: SB-2 (23.5-24')

Lab Sample ID: 460-98551-5
Date Collected: 07/24/15 13:45
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 70.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:39	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313915	07/31/15 11:36	AAT	TAL EDI

Client Sample ID: SB-4 (7.5-8')

Lab Sample ID: 460-98551-6
Date Collected: 07/24/15 14:15
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 82.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:40	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313915	07/31/15 12:00	AAT	TAL EDI

Client Sample ID: SB-4 (15.5-16')

Lab Sample ID: 460-98551-7
Date Collected: 07/24/15 15:00
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 79.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:42	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313915	07/31/15 12:24	AAT	TAL EDI

Client Sample ID: SB-3 (7.5-8')

Lab Sample ID: 460-98551-8
Date Collected: 07/24/15 15:50
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 85.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:43	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313915	07/31/15 12:48	AAT	TAL EDI

Client Sample ID: SB-3 (23.5-24')

Lab Sample ID: 460-98551-9
Date Collected: 07/24/15 16:20
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 80.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:45	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313988	07/31/15 17:54	AAT	TAL EDI

Client Sample ID: SB-5 (7.5-8')

Lab Sample ID: 460-98551-10
Date Collected: 07/24/15 16:55
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 75.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:46	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313988	07/31/15 18:18	AAT	TAL EDI

Client Sample ID: SB-5 (14.5-5')

Lab Sample ID: 460-98551-11
Date Collected: 07/24/15 17:20
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 78.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:48	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313988	07/31/15 18:42	AAT	TAL EDI

Client Sample ID: SB-13 (7.5-8')

Lab Sample ID: 460-98551-12
Date Collected: 07/24/15 17:40
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 72.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:49	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313988	07/31/15 19:07	AAT	TAL EDI

Lab Chronicle

Client: MIG Consulting LLC
Project/Site: Newtown Square, 3608 West Chester Pike

TestAmerica Job ID: 460-98551-2

Client Sample ID: SB-13 (15.5-16')

Lab Sample ID: 460-98551-13
Date Collected: 07/24/15 18:00
Matrix: Solid
Date Received: 07/25/15 11:00
Percent Solids: 81.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			312746	07/25/15 20:51	DAS	TAL EDI
Total/NA	Analysis	8260B		1	313988	07/31/15 19:31	AAT	TAL EDI

Client Sample ID: FB

Lab Sample ID: 460-98551-14
Date Collected: 07/24/15 17:40
Matrix: Water
Date Received: 07/25/15 11:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	322338	07/31/15 03:30	MZS	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Certification Summary

Client: MIG Consulting LLC
Project/Site: Newtown Square, 3608 West Chester Pike

TestAmerica Job ID: 460-98551-2

Laboratory: TestAmerica Edison

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-16
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-15
New Jersey	NELAP	2	12028	06-30-15 *
New York	NELAP	2	11452	03-31-16
Pennsylvania	NELAP	3	68-00522	02-28-16
Rhode Island	State Program	1	LAO00132	12-30-15
USDA	Federal		NJCA-003-08	04-04-17

* Certification renewal pending - certification considered valid.

Method Summary

Client: MIG Consulting LLC
Project/Site: Newtown Square, 3608 West Chester Pike

TestAmerica Job ID: 460-98551-2

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL EDI

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: MIG Consulting LLC
Project/Site: Newtown Square, 3608 West Chester Pike

TestAmerica Job ID: 460-98551-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-98551-1	SB-12 (7.5-8')	Solid	07/24/15 12:15	07/25/15 11:00
460-98551-2	SB-11 (7.5-8')	Solid	07/23/15 18:45	07/25/15 11:00
460-98551-3	SB-12 (23.5-24')	Solid	07/24/15 12:55	07/25/15 11:00
460-98551-4	SB-2 (7.5-8')	Solid	07/24/15 13:20	07/25/15 11:00
460-98551-5	SB-2 (23.5-24')	Solid	07/24/15 13:45	07/25/15 11:00
460-98551-6	SB-4 (7.5-8')	Solid	07/24/15 14:15	07/25/15 11:00
460-98551-7	SB-4 (15.5-16')	Solid	07/24/15 15:00	07/25/15 11:00
460-98551-8	SB-3 (7.5-8')	Solid	07/24/15 15:50	07/25/15 11:00
460-98551-9	SB-3 (23.5-24')	Solid	07/24/15 16:20	07/25/15 11:00
460-98551-10	SB-5 (7.5-8')	Solid	07/24/15 16:55	07/25/15 11:00
460-98551-11	SB-5 (14.5-5')	Solid	07/24/15 17:20	07/25/15 11:00
460-98551-12	SB-13 (7.5-8')	Solid	07/24/15 17:40	07/25/15 11:00
460-98551-13	SB-13 (15.5-16')	Solid	07/24/15 18:00	07/25/15 11:00
460-98551-14	FB	Water	07/24/15 17:40	07/25/15 11:00

New Durham Road
on, New Jersey 08817
le: (732) 549-3900 Fax: (732) 549-3679

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY /

460-98551 Chain of Custody

Page ___ of ___

Name (for report and invoice) LP Singh	Samplers Name (Printed) Raúl K Betancourt	Site/Project Identification 2608 West chester Pike Newtown Square, PA 19073
Company HIG Consulting LLC	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: (PA)
Address 707 Roseton Ave	Analysis Turnaround Time: Standard ☑	Regulatory Program:
City Highland Park State NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone 732-543-1170 Fax 732-543-1171		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	PaDEP Shortlist 8260B	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	Cumene	MTBE	Naphthalene	1,2,4-TMB	1,3,5-TMB	LAB USE ONLY Sample Numbers
SB-12 (7-5-8')	07/24/15	12:45	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	1
SB-11 (7-5-8')	07/23/15	18:45	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	2
SB-12 (23-5-24')	07/24/15	12:55	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	3
SB-2 (7-5-8')	"	13:20	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	4
SB-2 (23-5-24')	"	13:45	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	5
SB-4 (7-5-8')	"	14:15	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	6
SB-4 (15-5-16')	"	15:00	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	7
SB-3 (7-5-8')	"	15:50	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	8
SB-3 (23-5-24')	"	16:20	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	9
SB-5 (7-5-8')	07/24/15	16:55	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	10
					Soil: 7										
					Water: —										

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other ____, 7 = Other As 95

LAB USE ONLY Project No: Job No: 98551

Special Instructions Please analyze for EPA Method 5035/8260B. PA shortlist Water Metals Filtered (Yes/No)? —

Relinquished by	Company	Date / Time	Received by	Company
1)	HIG Consulting	07/25/15 11:30	1)	7/25
Relinquished by 2)	Company	Date / Time	Received by 2)	Company
Relinquished by 3)	Company	Date / Time	Received by 3)	Company
Relinquished by 4)	Company	Date / Time	Received by 4)	Company

SHORT HOLD

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL-0016 (0814)

Massachusetts (M-NJ312), North Carolina (No. 578)

265/28-52#5 no Ice

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

Page ___ of ___

Name (for report and invoice) PP Singh	Samplers Name (Printed) Ravi in Kolavennu	Site/Project Identification 3605 West Chester Pike Newtown Square PA 19703
Company MIG Consulting LLC	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: (PA)
Address 707 Raritan Ave	Analysis Turnaround Time: Standard ☑	Regulatory Program:
City Highland Park State NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	LAB USE ONLY Project No:
Phone 732-543-1150 Fax 732-543-1149		Job No: 98551

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	PaDEP Shortlist 8260B	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	Cumene	MTBE	Naphthalene	1,2,4-TMB	1,3,5-TMB	Sample Numbers
SB-5 (14'-16')	07/24/15	17:30	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	11
SB-13 (7.5-8')	"	17:40	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	12
SB-13 (15.5-16)	"	18:00	S	4		✓	✓	✓	✓	✓	✓	✓	✓	✓	13
FB	07/24/15	17:40	GW	2		✓	✓	✓	✓	✓	✓	✓	✓	✓	14

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other ____, (7) = Other As Ls

Soil: 7
Water: —

Special Instructions Please analyze for EPA Method 5035/8260B. PA shortlist Water Metals Filtered (Yes/No)? —

Relinquished by	Company	Date / Time	Received by	Company
1) Ravi	MIG Consulting	07/24/15 17:00	1) [illegible]	7/25
Relinquished by 2)	Company	Date / Time	Received by 2)	Company
Relinquished by 3)	Company	Date / Time	Received by 3)	Company
Relinquished by 4)	Company	Date / Time	Received by 4)	Company

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL - 0016 (0814)

Massachusetts (M-NJ312), North Carolina (No. 578)

TestAmerica Edison
Receipt Temperature and pH Log

Page ____ of ____

Job Number: 98557

Number of Coolers: 1 IR Gun # 5

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	26.5 °C	28.5 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

EDS-WI-038, Rev 4, 06/09/2014

Initials: _____ Date: 7/25/15

11/5/2015

Login Sample Receipt Checklist

Client: MIG Consulting LLC

Job Number: 460-98551-2

Login Number: 98551
List Number: 1
Creator: Hall, Alonzo

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	768611,76812,76813
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	no ice
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	28.5° C IR #5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	False	Refer to Job Narrative for details.
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

APPENDIX F

PHOENIX
Environmental Laboratories, Inc.

Tuesday, August 04, 2015

Attn: Mr. Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Project ID: 3608 WESTCHESTER AVE
Sample ID#s: BJ63807 - BJ63810

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

August 04, 2015

FOR: Attn: Mr. Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	AIR	Collected by:	RAVI	07/26/15	20:00
Location Code:	MIGCONSULT	Received by:	SW	07/27/15	16:33
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					
Canister Id:	221				

Laboratory Data

SDG ID: GBJ63807
Phoenix ID: BJ63807

Project ID: 3608 WESTCHESTER AVE
Client ID: SVP-2

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Volatiles (TO15)								
1,1,1,2-Tetrachloroethane	ND	*1.46*	ND	*10.0*	07/28/15	KCA	10	1
1,1,1-Trichloroethane	ND	*1.83*	ND	*10.0*	07/28/15	KCA	10	
1,1,2,2-Tetrachloroethane	ND	*1.46*	ND	*10.0*	07/28/15	KCA	10	
1,1,2-Trichloroethane	ND	*1.83*	ND	*10.0*	07/28/15	KCA	10	
1,1-Dichloroethane	ND	*2.47*	ND	*10.0*	07/28/15	KCA	10	
1,1-Dichloroethene	ND	*2.52*	ND	*10.0*	07/28/15	KCA	10	
1,2,4-Trichlorobenzene	ND	*1.35*	ND	*10.0*	07/28/15	KCA	10	
1,2,4-Trimethylbenzene	13.7	*2.04*	67.3	*10.0*	07/28/15	KCA	10	
1,2-Dibromoethane(EDB)	ND	*1.30*	ND	*10.0*	07/28/15	KCA	10	
1,2-Dichlorobenzene	ND	*1.66*	ND	*10.0*	07/28/15	KCA	10	
1,2-Dichloroethane	ND	*2.47*	ND	*10.0*	07/28/15	KCA	10	
1,2-dichloropropane	ND	*2.17*	ND	*10.0*	07/28/15	KCA	10	
1,2-Dichlorotetrafluoroethane	ND	*1.43*	ND	*10.0*	07/28/15	KCA	10	
1,3,5-Trimethylbenzene	3.50	*2.04*	17.2	*10.0*	07/28/15	KCA	10	
1,3-Butadiene	ND	*4.52*	ND	*10.0*	07/28/15	KCA	10	
1,3-Dichlorobenzene	ND	*1.66*	ND	*10.0*	07/28/15	KCA	10	
1,4-Dichlorobenzene	ND	*1.66*	ND	*10.0*	07/28/15	KCA	10	
1,4-Dioxane	ND	*2.78*	ND	*10.0*	07/28/15	KCA	10	
2-Hexanone(MBK)	ND	*2.44*	ND	*10.0*	07/28/15	KCA	10	1
4-Ethyltoluene	2.35	*2.04*	11.5	*10.0*	07/28/15	KCA	10	1
4-Isopropyltoluene	ND	*1.82*	ND	*10.0*	07/28/15	KCA	10	1
4-Methyl-2-pentanone(MIBK)	ND	*2.44*	ND	*10.0*	07/28/15	KCA	10	
Acetone	ND	*4.21*	ND	*10.0*	07/28/15	KCA	10	
Acrylonitrile	ND	*4.61*	ND	*10.0*	07/28/15	KCA	10	
Benzene	34.8	*3.13*	111	*10.0*	07/28/15	KCA	10	
Benzyl chloride	ND	*1.93*	ND	*10.0*	07/28/15	KCA	10	

Project ID: 3608 WESTCHESTER AVE
Client ID: SVP-2

Phoenix I.D.: BJ63807

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Bromodichloromethane	ND	*1.49*	ND	*10.0*	07/28/15	KCA	10	
Bromoform	ND	*0.968*	ND	*10.0*	07/28/15	KCA	10	
Bromomethane	ND	*2.58*	ND	*10.0*	07/28/15	KCA	10	
Carbon Disulfide	ND	*3.21*	ND	*10.0*	07/28/15	KCA	10	
Carbon Tetrachloride	ND	*0.397*	ND	*2.50*	07/28/15	KCA	10	
Chlorobenzene	ND	*2.17*	ND	*10.0*	07/28/15	KCA	10	
Chloroethane	ND	*3.79*	ND	*10.0*	07/28/15	KCA	10	
Chloroform	ND	*2.05*	ND	*10.0*	07/28/15	KCA	10	
Chloromethane	ND	*4.85*	ND	*10.0*	07/28/15	KCA	10	
Cis-1,2-Dichloroethene	ND	*2.52*	ND	*10.0*	07/28/15	KCA	10	
cis-1,3-Dichloropropene	ND	*2.20*	ND	*10.0*	07/28/15	KCA	10	
Cyclohexane	158	*11.6*	544	*39.9*	08/01/15	KCA	4	
Dibromochloromethane	ND	*1.17*	ND	*10.0*	07/28/15	KCA	10	
Dichlorodifluoromethane	ND	*2.02*	ND	*10.0*	07/28/15	KCA	10	
Ethanol	ND	*5.31*	ND	*10.0*	07/28/15	KCA	10	1
Ethyl acetate	ND	*2.78*	ND	*10.0*	07/28/15	KCA	10	1
Ethylbenzene	4.02	*2.30*	17.4	*10.0*	07/28/15	KCA	10	
Heptane	76.0	*2.44*	311	*10.0*	07/28/15	KCA	10	
Hexachlorobutadiene	ND	*0.938*	ND	*10.0*	07/28/15	KCA	10	
Hexane	1400	*11.4*	4930	*40.2*	08/01/15	KCA	4	
Isopropylalcohol	ND	*4.07*	ND	*10.0*	07/28/15	KCA	10	
Isopropylbenzene	ND	*2.04*	ND	*10.0*	07/28/15	KCA	10	
m,p-Xylene	14.2	*2.30*	61.6	*10.0*	07/28/15	KCA	10	
Methyl Ethyl Ketone	ND	*3.39*	ND	*10.0*	07/28/15	KCA	10	
Methyl tert-butyl ether(MTBE)	ND	*2.78*	ND	*10.0*	07/28/15	KCA	10	
Methylene Chloride	ND	*2.88*	ND	*10.0*	07/28/15	KCA	10	
n-Butylbenzene	ND	*1.82*	ND	*10.0*	07/28/15	KCA	10	1
o-Xylene	7.38	*2.30*	32.0	*10.0*	07/28/15	KCA	10	
Propylene	ND	*5.81*	ND	*10.0*	07/28/15	KCA	10	1
sec-Butylbenzene	ND	*1.82*	ND	*10.0*	07/28/15	KCA	10	1
Styrene	ND	*2.35*	ND	*10.0*	07/28/15	KCA	10	
Tetrachloroethene	3.89	*0.369*	26.4	*2.50*	07/28/15	KCA	10	
Tetrahydrofuran	ND	*3.39*	ND	*10.0*	07/28/15	KCA	10	1
Toluene	5.78	*2.66*	21.8	*10.0*	07/28/15	KCA	10	
Trans-1,2-Dichloroethene	ND	*2.52*	ND	*10.0*	07/28/15	KCA	10	
trans-1,3-Dichloropropene	ND	*2.20*	ND	*10.0*	07/28/15	KCA	10	
Trichloroethene	ND	*0.466*	ND	*2.50*	07/28/15	KCA	10	
Trichlorofluoromethane	ND	*1.78*	ND	*10.0*	07/28/15	KCA	10	
Trichlorotrifluoroethane	ND	*1.31*	ND	*10.0*	07/28/15	KCA	10	
Vinyl Chloride	ND	*0.979*	ND	*2.50*	07/28/15	KCA	10	
QA/QC Surrogates								
% Bromofluorobenzene	115	*%*	115	*%*	07/28/15	KCA	10	

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quanitation) ND=Not Detected
BRL=Below Reporting Level

Comments:

An elevated reporting level was reported for TO15 due to a matrix interference of non target compounds.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
August 04, 2015
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

August 04, 2015

FOR: Attn: Mr. Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	AIR	Collected by:	RAVI	07/26/15	20:02
Location Code:	MIGCONSULT	Received by:	SW	07/27/15	16:33
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					
Canister Id:	474				

Laboratory Data

SDG ID: GBJ63807
Phoenix ID: BJ63808

Project ID: 3608 WESTCHESTER AVE
Client ID: SVP-3

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Volatiles (TO15)								
1,1,1,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	07/28/15	KCA	1	1
1,1,1-Trichloroethane	ND	*0.183*	ND	*1.00*	07/28/15	KCA	1	
1,1,2,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	07/28/15	KCA	1	
1,1,2-Trichloroethane	ND	*0.183*	ND	*1.00*	07/28/15	KCA	1	
1,1-Dichloroethane	ND	*0.247*	ND	*1.00*	07/28/15	KCA	1	
1,1-Dichloroethene	ND	*0.252*	ND	*1.00*	07/28/15	KCA	1	
1,2,4-Trichlorobenzene	ND	*0.135*	ND	*1.00*	07/28/15	KCA	1	
1,2,4-Trimethylbenzene	27.0	*0.204*	133	*1.00*	07/28/15	KCA	1	
1,2-Dibromoethane(EDB)	ND	*0.130*	ND	*1.00*	07/28/15	KCA	1	
1,2-Dichlorobenzene	ND	*0.166*	ND	*1.00*	07/28/15	KCA	1	
1,2-Dichloroethane	ND	*0.247*	ND	*1.00*	07/28/15	KCA	1	
1,2-dichloropropane	ND	*0.217*	ND	*1.00*	07/28/15	KCA	1	
1,2-Dichlorotetrafluoroethane	ND	*0.143*	ND	*1.00*	07/28/15	KCA	1	
1,3,5-Trimethylbenzene	11.9	*0.204*	58.5	*1.00*	07/28/15	KCA	1	
1,3-Butadiene	ND	*0.452*	ND	*1.00*	07/28/15	KCA	1	
1,3-Dichlorobenzene	ND	*0.166*	ND	*1.00*	07/28/15	KCA	1	
1,4-Dichlorobenzene	ND	*0.166*	ND	*1.00*	07/28/15	KCA	1	
1,4-Dioxane	ND	*0.278*	ND	*1.00*	07/28/15	KCA	1	
2-Hexanone(MBK)	ND	*0.244*	ND	*1.00*	07/28/15	KCA	1	1
4-Ethyltoluene	6.10	*0.204*	30.0	*1.00*	07/28/15	KCA	1	1
4-Isopropyltoluene	1.15	*0.182*	6.31	*1.00*	07/28/15	KCA	1	1
4-Methyl-2-pentanone(MIBK)	ND	*0.244*	ND	*1.00*	07/28/15	KCA	1	
Acetone	ND	*4.21*	ND	*10.0*	07/28/15	KCA	10	
Acrylonitrile	ND	*0.461*	ND	*1.00*	07/28/15	KCA	1	
Benzene	2.05	*0.313*	6.55	*1.00*	07/28/15	KCA	1	
Benzyl chloride	ND	*0.193*	ND	*1.00*	07/28/15	KCA	1	

Project ID: 3608 WESTCHESTER AVE
Client ID: SVP-3

Phoenix I.D.: BJ63808

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Bromodichloromethane	ND	*0.149*	ND	*1.00*	07/28/15	KCA	1	
Bromoform	ND	*0.097*	ND	*1.00*	07/28/15	KCA	1	
Bromomethane	ND	*0.258*	ND	*1.00*	07/28/15	KCA	1	
Carbon Disulfide	2.37	*0.321*	7.37	*1.00*	07/28/15	KCA	1	
Carbon Tetrachloride	0.072	*0.040*	0.45	*0.25*	07/28/15	KCA	1	
Chlorobenzene	ND	*0.217*	ND	*1.00*	07/28/15	KCA	1	
Chloroethane	ND	*0.379*	ND	*1.00*	07/28/15	KCA	1	
Chloroform	0.904	*0.205*	4.41	*1.00*	07/28/15	KCA	1	
Chloromethane	0.895	*0.485*	1.85	*1.00*	07/28/15	KCA	1	
Cis-1,2-Dichloroethene	ND	*0.252*	ND	*1.00*	07/28/15	KCA	1	
cis-1,3-Dichloropropene	ND	*0.221*	ND	*1.00*	07/28/15	KCA	1	
Cyclohexane	17.9	*0.291*	61.6	*1.00*	07/28/15	KCA	1	
Dibromochloromethane	ND	*0.118*	ND	*1.00*	07/28/15	KCA	1	
Dichlorodifluoromethane	0.249	*0.202*	1.23	*1.00*	07/28/15	KCA	1	
Ethanol	25.7	*0.531*	48.4	*1.00*	07/28/15	KCA	1	1
Ethyl acetate	ND	*0.278*	ND	*1.00*	07/28/15	KCA	1	1
Ethylbenzene	9.87	*0.230*	42.8	*1.00*	07/28/15	KCA	1	
Heptane	59.8	*2.44*	245	*10.0*	07/28/15	KCA	10	
Hexachlorobutadiene	ND	*0.094*	ND	*1.00*	07/28/15	KCA	1	
Hexane	104	*2.84*	366	*10.0*	07/28/15	KCA	10	
Isopropylalcohol	5.06	*0.407*	12.4	*1.00*	07/28/15	KCA	1	
Isopropylbenzene	3.21	*0.204*	15.8	*1.00*	07/28/15	KCA	1	
m,p-Xylene	61.2	*0.230*	266	*1.00*	07/28/15	KCA	1	
Methyl Ethyl Ketone	30.2	*0.339*	89.0	*1.00*	07/28/15	KCA	1	
Methyl tert-butyl ether(MTBE)	ND	*0.278*	ND	*1.00*	07/28/15	KCA	1	
Methylene Chloride	0.581	*0.288*	2.02	*1.00*	07/28/15	KCA	1	
n-Butylbenzene	2.19	*0.182*	12.0	*1.00*	07/28/15	KCA	1	1
o-Xylene	27.9	*0.230*	121	*1.00*	07/28/15	KCA	1	
Propylene	ND	*0.581*	ND	*1.00*	07/28/15	KCA	1	1
sec-Butylbenzene	1.40	*0.182*	7.68	*1.00*	07/28/15	KCA	1	1
Styrene	ND	*0.235*	ND	*1.00*	07/28/15	KCA	1	
Tetrachloroethene	6.54	*0.037*	44.3	*0.25*	07/28/15	KCA	1	
Tetrahydrofuran	ND	*0.339*	ND	*1.00*	07/28/15	KCA	1	1
Toluene	15.4	*0.266*	58.0	*1.00*	07/28/15	KCA	1	
Trans-1,2-Dichloroethene	ND	*0.252*	ND	*1.00*	07/28/15	KCA	1	
trans-1,3-Dichloropropene	ND	*0.221*	ND	*1.00*	07/28/15	KCA	1	
Trichloroethene	ND	*0.047*	ND	*0.25*	07/28/15	KCA	1	
Trichlorofluoromethane	0.236	*0.178*	1.33	*1.00*	07/28/15	KCA	1	
Trichlorotrifluoroethane	ND	*0.131*	ND	*1.00*	07/28/15	KCA	1	
Vinyl Chloride	ND	*0.098*	ND	*0.25*	07/28/15	KCA	1	
QA/QC Surrogates								
% Bromofluorobenzene	134	%	134	%	07/28/15	KCA	1	3

Project ID: 3608 WESTCHESTER AVE
Client ID: SVP-3

Phoenix I.D.: BJ63808

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.
3 = This parameter exceeds laboratory specified limits.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quanitation) ND=Not Detected
BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
August 04, 2015
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

August 04, 2015

FOR: Attn: Mr. Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	AIR	Collected by:	RAVI	07/26/15	20:05
Location Code:	MIGCONSULT	Received by:	SW	07/27/15	16:33
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					
Canister Id:	478				

Laboratory Data

SDG ID: GBJ63807
Phoenix ID: BJ63809

Project ID: 3608 WESTCHESTER AVE
Client ID: OA-1

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Volatiles (TO15)								
1,1,1,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	07/28/15	KCA	1	1
1,1,1-Trichloroethane	ND	*0.183*	ND	*1.00*	07/28/15	KCA	1	
1,1,2,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	07/28/15	KCA	1	
1,1,2-Trichloroethane	ND	*0.183*	ND	*1.00*	07/28/15	KCA	1	
1,1-Dichloroethane	ND	*0.247*	ND	*1.00*	07/28/15	KCA	1	
1,1-Dichloroethene	ND	*0.252*	ND	*1.00*	07/28/15	KCA	1	
1,2,4-Trichlorobenzene	ND	*0.135*	ND	*1.00*	07/28/15	KCA	1	
1,2,4-Trimethylbenzene	0.358	*0.204*	1.76	*1.00*	07/28/15	KCA	1	
1,2-Dibromoethane(EDB)	ND	*0.130*	ND	*1.00*	07/28/15	KCA	1	
1,2-Dichlorobenzene	ND	*0.166*	ND	*1.00*	07/28/15	KCA	1	
1,2-Dichloroethane	ND	*0.247*	ND	*1.00*	07/28/15	KCA	1	
1,2-dichloropropane	ND	*0.217*	ND	*1.00*	07/28/15	KCA	1	
1,2-Dichlorotetrafluoroethane	ND	*0.143*	ND	*1.00*	07/28/15	KCA	1	
1,3,5-Trimethylbenzene	ND	*0.204*	ND	*1.00*	07/28/15	KCA	1	
1,3-Butadiene	ND	*0.452*	ND	*1.00*	07/28/15	KCA	1	
1,3-Dichlorobenzene	ND	*0.166*	ND	*1.00*	07/28/15	KCA	1	
1,4-Dichlorobenzene	ND	*0.166*	ND	*1.00*	07/28/15	KCA	1	
1,4-Dioxane	ND	*0.278*	ND	*1.00*	07/28/15	KCA	1	
2-Hexanone(MBK)	ND	*0.244*	ND	*1.00*	07/28/15	KCA	1	1
4-Ethyltoluene	ND	*0.204*	ND	*1.00*	07/28/15	KCA	1	1
4-Isopropyltoluene	ND	*0.182*	ND	*1.00*	07/28/15	KCA	1	1
4-Methyl-2-pentanone(MIBK)	ND	*0.244*	ND	*1.00*	07/28/15	KCA	1	
Acetone	3.86	*0.421*	9.16	*1.00*	07/28/15	KCA	1	
Acrylonitrile	ND	*0.461*	ND	*1.00*	07/28/15	KCA	1	
Benzene	ND	*0.313*	ND	*1.00*	07/28/15	KCA	1	
Benzyl chloride	ND	*0.193*	ND	*1.00*	07/28/15	KCA	1	

Project ID: 3608 WESTCHESTER AVE
Client ID: OA-1

Phoenix I.D.: BJ63809

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Bromodichloromethane	ND	*0.149*	ND	*1.00*	07/28/15	KCA	1	
Bromoform	ND	*0.097*	ND	*1.00*	07/28/15	KCA	1	
Bromomethane	ND	*0.258*	ND	*1.00*	07/28/15	KCA	1	
Carbon Disulfide	ND	*0.321*	ND	*1.00*	07/28/15	KCA	1	
Carbon Tetrachloride	0.089	*0.040*	0.56	*0.25*	07/28/15	KCA	1	
Chlorobenzene	ND	*0.217*	ND	*1.00*	07/28/15	KCA	1	
Chloroethane	ND	*0.379*	ND	*1.00*	07/28/15	KCA	1	
Chloroform	ND	*0.205*	ND	*1.00*	07/28/15	KCA	1	
Chloromethane	0.574	*0.485*	1.18	*1.00*	07/28/15	KCA	1	
Cis-1,2-Dichloroethene	ND	*0.252*	ND	*1.00*	07/28/15	KCA	1	
cis-1,3-Dichloropropene	ND	*0.221*	ND	*1.00*	07/28/15	KCA	1	
Cyclohexane	ND	*0.291*	ND	*1.00*	07/28/15	KCA	1	
Dibromochloromethane	ND	*0.118*	ND	*1.00*	07/28/15	KCA	1	
Dichlorodifluoromethane	0.352	*0.202*	1.74	*1.00*	07/28/15	KCA	1	
Ethanol	2.68	*0.531*	5.05	*1.00*	07/28/15	KCA	1	1
Ethyl acetate	ND	*0.278*	ND	*1.00*	07/28/15	KCA	1	1
Ethylbenzene	ND	*0.230*	ND	*1.00*	07/28/15	KCA	1	
Heptane	ND	*0.244*	ND	*1.00*	07/28/15	KCA	1	
Hexachlorobutadiene	ND	*0.094*	ND	*1.00*	07/28/15	KCA	1	
Hexane	ND	*0.284*	ND	*1.00*	07/28/15	KCA	1	
Isopropylalcohol	0.432	*0.407*	1.06	*1.00*	07/28/15	KCA	1	
Isopropylbenzene	ND	*0.204*	ND	*1.00*	07/28/15	KCA	1	
m,p-Xylene	0.462	*0.230*	2.00	*1.00*	07/28/15	KCA	1	
Methyl Ethyl Ketone	0.397	*0.339*	1.17	*1.00*	07/28/15	KCA	1	
Methyl tert-butyl ether(MTBE)	ND	*0.278*	ND	*1.00*	07/28/15	KCA	1	
Methylene Chloride	ND	*0.288*	ND	*1.00*	07/28/15	KCA	1	
n-Butylbenzene	ND	*0.182*	ND	*1.00*	07/28/15	KCA	1	1
o-Xylene	ND	*0.230*	ND	*1.00*	07/28/15	KCA	1	
Propylene	ND	*0.581*	ND	*1.00*	07/28/15	KCA	1	1
sec-Butylbenzene	ND	*0.182*	ND	*1.00*	07/28/15	KCA	1	1
Styrene	ND	*0.235*	ND	*1.00*	07/28/15	KCA	1	
Tetrachloroethene	0.213	*0.037*	1.44	*0.25*	07/28/15	KCA	1	
Tetrahydrofuran	ND	*0.339*	ND	*1.00*	07/28/15	KCA	1	1
Toluene	0.743	*0.266*	2.80	*1.00*	07/28/15	KCA	1	
Trans-1,2-Dichloroethene	ND	*0.252*	ND	*1.00*	07/28/15	KCA	1	
trans-1,3-Dichloropropene	ND	*0.221*	ND	*1.00*	07/28/15	KCA	1	
Trichloroethene	ND	*0.047*	ND	*0.25*	07/28/15	KCA	1	
Trichlorofluoromethane	0.247	*0.178*	1.39	*1.00*	07/28/15	KCA	1	
Trichlorotrifluoroethane	ND	*0.131*	ND	*1.00*	07/28/15	KCA	1	
Vinyl Chloride	ND	*0.098*	ND	*0.25*	07/28/15	KCA	1	
QA/QC Surrogates								
% Bromofluorobenzene	106	%	106	%	07/28/15	KCA	1	

Project ID: 3608 WESTCHESTER AVE
Client ID: OA-1

Phoenix I.D.: BJ63809

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quanitation) ND=Not Detected
BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
August 04, 2015
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
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Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

August 04, 2015

FOR: Attn: Mr. Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	AIR	Collected by:	RAVI	07/26/15	20:00
Location Code:	MIGCONSULT	Received by:	SW	07/27/15	16:33
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					
Canister Id:	215				

Laboratory Data

SDG ID: GBJ63807
Phoenix ID: BJ63810

Project ID: 3608 WESTCHESTER AVE
Client ID: SVP-1

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Volatiles (TO15)								
1,1,1,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	07/29/15	KCA	1	1
1,1,1-Trichloroethane	ND	*0.183*	ND	*1.00*	07/29/15	KCA	1	
1,1,2,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	07/29/15	KCA	1	
1,1,2-Trichloroethane	ND	*0.183*	ND	*1.00*	07/29/15	KCA	1	
1,1-Dichloroethane	ND	*0.247*	ND	*1.00*	07/29/15	KCA	1	
1,1-Dichloroethene	ND	*0.252*	ND	*1.00*	07/29/15	KCA	1	
1,2,4-Trichlorobenzene	ND	*0.135*	ND	*1.00*	07/29/15	KCA	1	
1,2,4-Trimethylbenzene	10.9	*0.204*	53.6	*1.00*	07/29/15	KCA	1	
1,2-Dibromoethane(EDB)	ND	*0.130*	ND	*1.00*	07/29/15	KCA	1	
1,2-Dichlorobenzene	ND	*0.166*	ND	*1.00*	07/29/15	KCA	1	
1,2-Dichloroethane	ND	*0.247*	ND	*1.00*	07/29/15	KCA	1	
1,2-dichloropropane	ND	*0.217*	ND	*1.00*	07/29/15	KCA	1	
1,2-Dichlorotetrafluoroethane	ND	*0.143*	ND	*1.00*	07/29/15	KCA	1	
1,3,5-Trimethylbenzene	3.05	*0.204*	15.0	*1.00*	07/29/15	KCA	1	
1,3-Butadiene	ND	*0.452*	ND	*1.00*	07/29/15	KCA	1	
1,3-Dichlorobenzene	ND	*0.166*	ND	*1.00*	07/29/15	KCA	1	
1,4-Dichlorobenzene	ND	*0.166*	ND	*1.00*	07/29/15	KCA	1	
1,4-Dioxane	ND	*0.278*	ND	*1.00*	07/29/15	KCA	1	
2-Hexanone(MBK)	14.2	*0.244*	58.1	*1.00*	07/29/15	KCA	1	1
4-Ethyltoluene	1.56	*0.204*	7.66	*1.00*	07/29/15	KCA	1	1
4-Isopropyltoluene	0.393	*0.182*	2.16	*1.00*	07/29/15	KCA	1	1
4-Methyl-2-pentanone(MIBK)	ND	*0.244*	ND	*1.00*	07/29/15	KCA	1	
Acetone	3100	*101*	7360	*240*	08/01/15	KCA	240	
Acrylonitrile	ND	*0.461*	ND	*1.00*	07/29/15	KCA	1	
Benzene	2.31	*0.313*	7.38	*1.00*	07/29/15	KCA	1	
Benzyl chloride	ND	*0.193*	ND	*1.00*	07/29/15	KCA	1	

Project ID: 3608 WESTCHESTER AVE
Client ID: SVP-1

Phoenix I.D.: BJ63810

Parameter	ppbv Result		ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Bromodichloromethane	ND		*0.149*	ND	*1.00*	07/29/15	KCA	1	
Bromoform	ND		*0.097*	ND	*1.00*	07/29/15	KCA	1	
Bromomethane	ND		*0.258*	ND	*1.00*	07/29/15	KCA	1	
Carbon Disulfide	ND		*0.321*	ND	*1.00*	07/29/15	KCA	1	
Carbon Tetrachloride	0.094		*0.040*	0.59	*0.25*	07/29/15	KCA	1	
Chlorobenzene	ND		*0.217*	ND	*1.00*	07/29/15	KCA	1	
Chloroethane	ND		*0.379*	ND	*1.00*	07/29/15	KCA	1	
Chloroform	ND		*0.205*	ND	*1.00*	07/29/15	KCA	1	
Chloromethane	2.03		*0.485*	4.19	*1.00*	07/29/15	KCA	1	
Cis-1,2-Dichloroethene	ND		*0.252*	ND	*1.00*	07/29/15	KCA	1	
cis-1,3-Dichloropropene	ND		*0.221*	ND	*1.00*	07/29/15	KCA	1	
Cyclohexane	2.99		*0.291*	10.3	*1.00*	07/29/15	KCA	1	
Dibromochloromethane	ND		*0.118*	ND	*1.00*	07/29/15	KCA	1	
Dichlorodifluoromethane	0.312		*0.202*	1.54	*1.00*	07/29/15	KCA	1	
Ethanol	59.1	E	*0.531*	111	*1.00*	07/29/15	KCA	1	1
Ethyl acetate	ND		*0.278*	ND	*1.00*	07/29/15	KCA	1	1
Ethylbenzene	5.37		*0.230*	23.3	*1.00*	07/29/15	KCA	1	
Heptane	7.51		*0.244*	30.8	*1.00*	07/29/15	KCA	1	
Hexachlorobutadiene	ND		*0.094*	ND	*1.00*	07/29/15	KCA	1	
Hexane	9.74		*0.284*	34.3	*1.00*	07/29/15	KCA	1	
Isopropylalcohol	19.8		*0.407*	48.6	*1.00*	07/29/15	KCA	1	
Isopropylbenzene	0.570		*0.204*	2.80	*1.00*	07/29/15	KCA	1	
m,p-Xylene	17.2		*0.230*	74.6	*1.00*	07/29/15	KCA	1	
Methyl Ethyl Ketone	114		*16.3*	336	*48.0*	08/01/15	KCA	48	
Methyl tert-butyl ether(MTBE)	ND		*0.278*	ND	*1.00*	07/29/15	KCA	1	
Methylene Chloride	0.445		*0.288*	1.54	*1.00*	07/29/15	KCA	1	
n-Butylbenzene	0.936		*0.182*	5.13	*1.00*	07/29/15	KCA	1	1
o-Xylene	8.83		*0.230*	38.3	*1.00*	07/29/15	KCA	1	
Propylene	60.4		*27.9*	104	*48.0*	08/01/15	KCA	48	1
sec-Butylbenzene	0.188		*0.182*	1.03	*1.00*	07/29/15	KCA	1	1
Styrene	ND		*0.235*	ND	*1.00*	07/29/15	KCA	1	
Tetrachloroethene	6.78		*0.037*	46.0	*0.25*	07/29/15	KCA	1	
Tetrahydrofuran	ND		*0.339*	ND	*1.00*	07/29/15	KCA	1	1
Toluene	5.97		*0.266*	22.5	*1.00*	07/29/15	KCA	1	
Trans-1,2-Dichloroethene	ND		*0.252*	ND	*1.00*	07/29/15	KCA	1	
trans-1,3-Dichloropropene	ND		*0.221*	ND	*1.00*	07/29/15	KCA	1	
Trichloroethene	ND		*0.047*	ND	*0.25*	07/29/15	KCA	1	
Trichlorofluoromethane	0.210		*0.178*	1.18	*1.00*	07/29/15	KCA	1	
Trichlorotrifluoroethane	ND		*0.131*	ND	*1.00*	07/29/15	KCA	1	
Vinyl Chloride	ND		*0.098*	ND	*0.25*	07/29/15	KCA	1	
QA/QC Surrogates									
% Bromofluorobenzene	108		*%*	108	*%*	07/29/15	KCA	1	

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quanitation) ND=Not Detected
BRL=Below Reporting Level

Comments:

An elevated reporting level was reported for TO15 due to a matrix interference of non target compounds.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
August 04, 2015
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

August 04, 2015

QA/QC Data

SDG I.D.: GBJ63807

Parameter	Blk ppbv	Blk RL ppbv	Blk ug/m3	Blk RL ug/m3	LCS %	Sample Result ug/m3	Sample Dup ug/m3	Sample Result ppbv	Sample Dup ppbv	DUP RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 315308 (ppbv), QC Sample No: BJ63726 (BJ63807 (10X) , BJ63808 (1X, 10X) , BJ63809)													
Volatiles													
1,1,1,2-Tetrachloroethane	ND	0.146	ND	1.00	114	ND	ND	ND	ND	NC	70 - 130	20	
1,1,1-Trichloroethane	ND	0.183	ND	1.00	116	ND	ND	ND	ND	NC	70 - 130	20	
1,1,2,2-Tetrachloroethane	ND	0.146	ND	1.00	98	ND	ND	ND	ND	NC	70 - 130	20	
1,1,2-Trichloroethane	ND	0.183	ND	1.00	122	ND	ND	ND	ND	NC	70 - 130	20	
1,1-Dichloroethane	ND	0.247	ND	1.00	108	ND	ND	ND	ND	NC	70 - 130	20	
1,1-Dichloroethene	ND	0.252	ND	1.00	106	ND	ND	ND	ND	NC	70 - 130	20	
1,2,4-Trichlorobenzene	ND	0.135	ND	1.00	113	ND	ND	ND	ND	NC	70 - 130	20	
1,2,4-Trimethylbenzene	ND	0.204	ND	1.00	103	ND	ND	ND	ND	NC	70 - 130	20	
1,2-Dibromoethane(EDB)	ND	0.130	ND	1.00	108	ND	ND	ND	ND	NC	70 - 130	20	
1,2-Dichlorobenzene	ND	0.166	ND	1.00	105	ND	ND	ND	ND	NC	70 - 130	20	
1,2-Dichloroethane	ND	0.247	ND	1.00	110	ND	ND	ND	ND	NC	70 - 130	20	
1,2-dichloropropane	ND	0.216	ND	1.00	111	ND	ND	ND	ND	NC	70 - 130	20	
1,2-Dichlorotetrafluoroethane	ND	0.143	ND	1.00	113	ND	ND	ND	ND	NC	70 - 130	20	
1,3,5-Trimethylbenzene	ND	0.204	ND	1.00	103	ND	ND	ND	ND	NC	70 - 130	20	
1,3-Butadiene	ND	0.452	ND	1.00	105	ND	ND	ND	ND	NC	70 - 130	20	
1,3-Dichlorobenzene	ND	0.166	ND	1.00	104	ND	ND	ND	ND	NC	70 - 130	20	
1,4-Dichlorobenzene	ND	0.166	ND	1.00	105	ND	ND	ND	ND	NC	70 - 130	20	
1,4-Dioxane	ND	0.278	ND	1.00	110	ND	ND	ND	ND	NC	70 - 130	20	
2-Hexanone(MBK)	ND	0.244	ND	1.00	112	ND	ND	ND	ND	NC	70 - 130	20	
4-Ethyltoluene	ND	0.204	ND	1.00	107	ND	ND	ND	ND	NC	70 - 130	20	
4-Isopropyltoluene	ND	0.182	ND	1.00	102	ND	ND	ND	ND	NC	70 - 130	20	
4-Methyl-2-pentanone(MIBK)	ND	0.244	ND	1.00	100	ND	ND	ND	ND	NC	70 - 130	20	
Acetone	ND	0.421	ND	1.00	95	94.2	96.6	39.7	40.7	2.5	70 - 130	20	
Acrylonitrile	ND	0.461	ND	1.00	105	ND	ND	ND	ND	NC	70 - 130	20	
Benzene	ND	0.313	ND	1.00	109	ND	ND	ND	ND	NC	70 - 130	20	
Benzyl chloride	ND	0.193	ND	1.00	139	ND	ND	ND	ND	NC	70 - 130	20	I
Bromodichloromethane	ND	0.149	ND	1.00	120	ND	ND	ND	ND	NC	70 - 130	20	
Bromoform	ND	0.097	ND	1.00	126	ND	ND	ND	ND	NC	70 - 130	20	
Bromomethane	ND	0.257	ND	1.00	105	ND	ND	ND	ND	NC	70 - 130	20	
Carbon Disulfide	ND	0.321	ND	1.00	118	ND	ND	ND	ND	NC	70 - 130	20	
Carbon Tetrachloride	ND	0.040	ND	0.25	117	0.60	0.61	0.096	0.097	1.0	70 - 130	20	
Chlorobenzene	ND	0.217	ND	1.00	103	ND	ND	ND	ND	NC	70 - 130	20	
Chloroethane	ND	0.379	ND	1.00	103	ND	ND	ND	ND	NC	70 - 130	20	
Chloroform	ND	0.205	ND	1.00	109	2.09	2.14	0.428	0.439	2.5	70 - 130	20	
Chloromethane	ND	0.484	ND	1.00	109	1.22	1.33	0.593	0.643	8.1	70 - 130	20	
Cis-1,2-Dichloroethene	ND	0.256	ND	1.01	109	ND	ND	ND	ND	NC	70 - 130	20	
cis-1,3-Dichloropropene	ND	0.220	ND	1.00	123	ND	ND	ND	ND	NC	70 - 130	20	
Cyclohexane	ND	0.291	ND	1.00	108	ND	ND	ND	ND	NC	70 - 130	20	
Dibromochloromethane	ND	0.117	ND	1.00	120	ND	ND	ND	ND	NC	70 - 130	20	
Dichlorodifluoromethane	ND	0.202	ND	1.00	115	2.35	1.67	0.476	0.337	34.2	70 - 130	20	r
Ethanol	ND	0.531	ND	1.00	101	45.4	47.5	24.1	25.2	4.5	70 - 130	20	

QA/QC Data

SDG I.D.: GBJ63807

Parameter	Blk ppbv	Blk RL ppbv	Blk ug/m3	Blk RL ug/m3	LCS %	Sample Result ug/m3	Sample Dup ug/m3	Sample Result ppbv	Sample Dup ppbv	DUP RPD	% Rec Limits	% RPD Limits	
Ethyl acetate	ND	0.278	ND	1.00	113	3.59	3.71	0.998	1.03	3.2	70 - 130	20	
Ethylbenzene	ND	0.230	ND	1.00	107	ND	ND	ND	ND	NC	70 - 130	20	
Heptane	ND	0.244	ND	1.00	106	1.34	1.14	0.328	0.278	16.5	70 - 130	20	
Hexachlorobutadiene	ND	0.094	ND	1.00	104	ND	ND	ND	ND	NC	70 - 130	20	
Hexane	ND	0.284	ND	1.00	112	ND	ND	ND	ND	NC	70 - 130	20	
Isopropylalcohol	ND	0.407	ND	1.00	108	15.7	15.9	6.40	6.46	0.9	70 - 130	20	
Isopropylbenzene	ND	0.204	ND	1.00	108	ND	ND	ND	ND	NC	70 - 130	20	
m,p-Xylene	ND	0.230	ND	1.00	106	2.74	2.55	0.631	0.587	7.2	70 - 130	20	
Methyl Ethyl Ketone	ND	0.339	ND	1.00	110	1.05	1.09	0.356	0.370	3.9	70 - 130	20	
Methyl tert-butyl ether(MTBE)	ND	0.277	ND	1.00	110	ND	ND	ND	ND	NC	70 - 130	20	
Methylene Chloride	ND	0.288	ND	1.00	105	1.13	1.09	0.326	0.314	3.8	70 - 130	20	
n-Butylbenzene	ND	0.182	ND	1.00	102	ND	ND	ND	ND	NC	70 - 130	20	
o-Xylene	ND	0.230	ND	1.00	101	ND	ND	ND	ND	NC	70 - 130	20	
Propylene	ND	0.581	ND	1.00	122	ND	ND	ND	ND	NC	70 - 130	20	
sec-Butylbenzene	ND	0.182	ND	1.00	100	ND	ND	ND	ND	NC	70 - 130	20	
Styrene	ND	0.235	ND	1.00	110	ND	ND	ND	ND	NC	70 - 130	20	
Tetrachloroethene	ND	0.037	ND	0.25	106	1.23	1.23	0.181	0.182	0.6	70 - 130	20	
Tetrahydrofuran	ND	0.339	ND	1.00	119	ND	ND	ND	ND	NC	70 - 130	20	
Toluene	ND	0.266	ND	1.00	107	2.55	2.56	0.676	0.679	0.4	70 - 130	20	
Trans-1,2-Dichloroethene	ND	0.252	ND	1.00	111	ND	ND	ND	ND	NC	70 - 130	20	
trans-1,3-Dichloropropene	ND	0.220	ND	1.00	148	ND	ND	ND	ND	NC	70 - 130	20	I
Trichloroethene	ND	0.047	ND	0.25	104	0.32	0.32	0.060	0.060	0.0	70 - 130	20	
Trichlorofluoromethane	ND	0.178	ND	1.00	105	1.24	1.25	0.220	0.223	1.4	70 - 130	20	
Trichlorotrifluoroethane	ND	0.131	ND	1.00	104	ND	ND	ND	ND	NC	70 - 130	20	
Vinyl Chloride	ND	0.098	ND	0.25	105	ND	ND	ND	ND	NC	70 - 130	20	
% Bromofluorobenzene	99	%	99	%	99	103	104	103	104	1.0	70 - 130	20	
QA/QC Batch 315506 (ppbv), QC Sample No: BJ63810 (BJ63810)													
Volatiles													
1,1,1,2-Tetrachloroethane	ND	0.146	ND	1.00	115	ND	ND	ND	ND	NC	70 - 130	20	
1,1,1-Trichloroethane	ND	0.183	ND	1.00	112	ND	ND	ND	ND	NC	70 - 130	20	
1,1,2,2-Tetrachloroethane	ND	0.146	ND	1.00	98	ND	ND	ND	ND	NC	70 - 130	20	
1,1,2-Trichloroethane	ND	0.183	ND	1.00	47	ND	ND	ND	ND	NC	70 - 130	20	I
1,1-Dichloroethane	ND	0.247	ND	1.00	101	ND	ND	ND	ND	NC	70 - 130	20	
1,1-Dichloroethene	ND	0.252	ND	1.00	102	ND	ND	ND	ND	NC	70 - 130	20	
1,2,4-Trichlorobenzene	ND	0.135	ND	1.00	111	ND	ND	ND	ND	NC	70 - 130	20	
1,2,4-Trimethylbenzene	ND	0.204	ND	1.00	104	53.6	52.1	10.9	10.6	2.8	70 - 130	20	
1,2-Dibromoethane(EDB)	ND	0.130	ND	1.00	103	ND	ND	ND	ND	NC	70 - 130	20	
1,2-Dichlorobenzene	ND	0.166	ND	1.00	105	ND	ND	ND	ND	NC	70 - 130	20	
1,2-Dichloroethane	ND	0.247	ND	1.00	107	ND	ND	ND	ND	NC	70 - 130	20	
1,2-dichloropropane	ND	0.216	ND	1.00	108	ND	ND	ND	ND	NC	70 - 130	20	
1,2-Dichlorotetrafluoroethane	ND	0.143	ND	1.00	92	ND	ND	ND	ND	NC	70 - 130	20	
1,3,5-Trimethylbenzene	ND	0.204	ND	1.00	103	15.0	14.8	3.05	3.01	1.3	70 - 130	20	
1,3-Butadiene	ND	0.452	ND	1.00	102	ND	ND	ND	ND	NC	70 - 130	20	
1,3-Dichlorobenzene	ND	0.166	ND	1.00	103	ND	ND	ND	ND	NC	70 - 130	20	
1,4-Dichlorobenzene	ND	0.166	ND	1.00	105	ND	ND	ND	ND	NC	70 - 130	20	
1,4-Dioxane	ND	0.278	ND	1.00	107	ND	ND	ND	ND	NC	70 - 130	20	
2-Hexanone(MBK)	ND	0.244	ND	1.00	106	58.1	40.7	14.2	9.94	35.3	70 - 130	20	r
4-Ethyltoluene	ND	0.204	ND	1.00	106	7.66	10.4	1.56	2.12	30.4	70 - 130	20	r
4-Isopropyltoluene	ND	0.182	ND	1.00	101	2.16	2.00	0.393	0.365	7.4	70 - 130	20	
4-Methyl-2-pentanone(MIBK)	ND	0.244	ND	1.00	96	ND	ND	ND	ND	NC	70 - 130	20	
Acrylonitrile	ND	0.461	ND	1.00	96	ND	ND	ND	ND	NC	70 - 130	20	
Benzene	ND	0.313	ND	1.00	104	7.38	7.50	2.31	2.35	1.7	70 - 130	20	

QA/QC Data

SDG I.D.: GBJ63807

Parameter	Blk ppbv	Blk RL ppbv	Blk ug/m3	Blk RL ug/m3	LCS %	Sample Result ug/m3	Sample Dup ug/m3	Sample Result ppbv	Sample Dup ppbv	DUP RPD	% Rec Limits	% RPD Limits	
Benzyl chloride	ND	0.193	ND	1.00	132	ND	ND	ND	ND	NC	70 - 130	20	l
Bromodichloromethane	ND	0.149	ND	1.00	118	ND	ND	ND	ND	NC	70 - 130	20	
Bromoform	ND	0.097	ND	1.00	128	ND	ND	ND	ND	NC	70 - 130	20	
Bromomethane	ND	0.257	ND	1.00	101	ND	ND	ND	ND	NC	70 - 130	20	
Carbon Disulfide	ND	0.321	ND	1.00	113	ND	ND	ND	ND	NC	70 - 130	20	
Carbon Tetrachloride	ND	0.040	ND	0.25	115	0.59	0.57	0.094	0.090	4.3	70 - 130	20	
Chlorobenzene	ND	0.217	ND	1.00	102	ND	ND	ND	ND	NC	70 - 130	20	
Chloroethane	ND	0.379	ND	1.00	99	ND	ND	ND	ND	NC	70 - 130	20	
Chloroform	ND	0.205	ND	1.00	105	ND	ND	ND	ND	NC	70 - 130	20	
Chloromethane	ND	0.484	ND	1.00	103	4.19	3.78	2.03	1.83	10.4	70 - 130	20	
Cis-1,2-Dichloroethene	ND	0.256	ND	1.01	105	ND	ND	ND	ND	NC	70 - 130	20	
cis-1,3-Dichloropropene	ND	0.220	ND	1.00	117	ND	ND	ND	ND	NC	70 - 130	20	
Cyclohexane	ND	0.291	ND	1.00	101	10.3	11.1	2.99	3.22	7.4	70 - 130	20	
Dibromochloromethane	ND	0.117	ND	1.00	118	ND	ND	ND	ND	NC	70 - 130	20	
Dichlorodifluoromethane	ND	0.202	ND	1.00	106	1.54	1.48	0.312	0.299	4.3	70 - 130	20	
Ethanol	ND	0.531	ND	1.00	97	111	111	59.1	59.1	0.0	70 - 130	20	
Ethyl acetate	ND	0.278	ND	1.00	105	ND	ND	ND	ND	NC	70 - 130	20	
Ethylbenzene	ND	0.230	ND	1.00	105	23.3	23.1	5.37	5.33	0.7	70 - 130	20	
Heptane	ND	0.244	ND	1.00	101	30.8	30.5	7.51	7.44	0.9	70 - 130	20	
Hexachlorobutadiene	ND	0.094	ND	1.00	106	ND	ND	ND	ND	NC	70 - 130	20	
Hexane	ND	0.284	ND	1.00	106	34.2	35.6	9.7	10.1	4.0	70 - 130	20	
Isopropylalcohol	ND	0.407	ND	1.00	100	48.6	50.1	19.8	20.4	3.0	70 - 130	20	
Isopropylbenzene	ND	0.204	ND	1.00	106	2.80	2.79	0.570	0.568	0.4	70 - 130	20	
m,p-Xylene	ND	0.230	ND	1.00	106	74.6	72.9	17.2	16.8	2.4	70 - 130	20	
Methyl tert-butyl ether(MTBE)	ND	0.277	ND	1.00	102	ND	ND	ND	ND	NC	70 - 130	20	
Methylene Chloride	ND	0.288	ND	1.00	100	1.54	1.26	0.445	0.363	20.3	70 - 130	20	
n-Butylbenzene	ND	0.182	ND	1.00	103	5.13	5.04	0.936	0.919	1.8	70 - 130	20	
o-Xylene	ND	0.230	ND	1.00	101	38.3	37.4	8.83	8.61	2.5	70 - 130	20	
sec-Butylbenzene	ND	0.182	ND	1.00	101	1.03	ND	0.188	ND	NC	70 - 130	20	
Styrene	ND	0.235	ND	1.00	108	ND	ND	ND	ND	NC	70 - 130	20	
Tetrachloroethene	ND	0.037	ND	0.25	103	46.0	46.4	6.78	6.84	0.9	70 - 130	20	
Tetrahydrofuran	ND	0.339	ND	1.00	104	ND	ND	ND	ND	NC	70 - 130	20	
Toluene	ND	0.266	ND	1.00	102	22.5	54.2	5.97	14.4	82.8	70 - 130	20	r
Trans-1,2-Dichloroethene	ND	0.252	ND	1.00	105	ND	ND	ND	ND	NC	70 - 130	20	
trans-1,3-Dichloropropene	ND	0.220	ND	1.00	127	ND	ND	ND	ND	NC	70 - 130	20	
Trichloroethene	ND	0.047	ND	0.25	104	ND	ND	ND	ND	NC	70 - 130	20	
Trichlorofluoromethane	ND	0.178	ND	1.00	103	1.18	1.11	0.210	0.197	6.4	70 - 130	20	
Trichlorotrifluoroethane	ND	0.131	ND	1.00	102	ND	ND	ND	ND	NC	70 - 130	20	
Vinyl Chloride	ND	0.098	ND	0.25	100	ND	ND	ND	ND	NC	70 - 130	20	
% Bromofluorobenzene	103	%	103	%	100	108	106	108	106	1.9	70 - 130	20	
QA/QC Batch 315718 (ppbv), QC Sample No: BJ66928 (BJ63807 (4X) , BJ63810 (48X, 240X))													
Volatiles													
Acetone	ND	0.421	ND	1.00	89	57.2	56.7	24.1	23.9	0.8	70 - 130	20	
Cyclohexane	ND	0.291	ND	1.00	104	ND	ND	ND	ND	NC	70 - 130	20	
Hexane	ND	0.284	ND	1.00	107	ND	ND	ND	ND	NC	70 - 130	20	
Methyl Ethyl Ketone	ND	0.339	ND	1.00	100	5.92	6.10	2.01	2.07	2.9	70 - 130	20	
Propylene	ND	0.581	ND	1.00	115	ND	ND	ND	ND	NC	70 - 130	20	

l = This parameter is outside laboratory lcs/lcsd specified recovery limits.
r = This parameter is outside laboratory rpd specified recovery limits.

QA/QC Data

SDG I.D.: GBJ63807

Parameter	Blk ppbv	Blk RL ppbv	Blk ug/m3	Blk RL ug/m3	LCS %	Sample Result ug/m3	Sample Dup ug/m3	Sample Result ppbv	Sample Dup ppbv	DUP RPD	% Rec Limits	% RPD Limits

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
August 04, 2015

Sample Criteria Exceedences Report

GBJ63807 - MIGCONSULT

Criteria: None

State: PA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

CHAIN OF CUSTODY RECORD
AIR ANALYSES

PHOENIX Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Telephone: 860.645.1102 • Fax: 860.645.0823

800-827-5426
email: greg@phoenixlabs.com

P.O. # _____ Page _____ of _____

Data Delivery:
- ☑ Fax #: 732-543-1148
- ☑ Email: migconsultingllc@gmail.com
- ☐ Phone #: 347-448-5843

Report to: Ravi
Customer: GC-Env.
Address: 701 Raritan Avenue
Highland Park, NJ

Invoice to:
I P Singh
707 Raritan Avenue
Highland Park, NJ

Sampled by: Ravi

Project Name: 3608 Westchester Pike Newtown Square, PA 19703

Requested Deliverable:
RCP ☐ ASP CAT B ☐
MCP ☐ NJ Deliverables ☐

State where samples collected: PA

Phoenix ID #	Client Sample ID	Canister ID #	Canister Size (L)	Outgoing Canister Pressure (" Hg)	Incoming Canister Pressure ("Hg)	Flow Regulator ID #	Flow Controller Setting (mL/min)	Sampling Start Time	Sampling End Time	Sample Start Date	Canister Pressure at Start (" Hg)	Canister Pressure at End ("Hg)	MATRIX: Ambient/Indoor Air	MATRIX: Soil Gas	MATRIX: Grab (G) Composite (C)	ANALYSES: TO-14	ANALYSES: TO-15
		THIS SECTION FOR LAB USE ONLY															
	(NOT SAMPLED) NS	228 ✓	6.0	-30		5351	10.4	—	—	—	—	—					
603E07	SVP-2	221 ✓	6.0	-30	-8	5674 ✓		11:53	20:00	07/24/15	-30	-6.0					✓
603E08	SVP-3	474 ✓	6.0	-30	-12	5648 ✓		12:00	20:02	07/24/15	-30	-7.0					✓
603E09	OA-1	478 ✓	6.0	-30	-8	4492 ✓		12:03	20:05	07/24/15	-30	-6.0					✓
	(NOT SAMPLED) NS	12857	6.0	-30		3870 ✓		—	—	—	—	—					
603E10	SVP-1	215 ✓	6.0	-30	-8	4491 ✓	✓	11:48	20:00	07/24/15	-30	-6.0					✓
	6L 8hr																

Relinquished by: _____ _____

Accepted by: _____ Date: 7/27/15 Time: 822
_____ 7/27/15 1033

Data Format:
Excel ☑ Equis ☐ GISKey ☐
PDF ☑ Other: ☐

SPECIAL INSTRUCTIONS, QC REQUIREMENTS, REGULATORY INFORMATION:
Please email the results to migconsultingllc@gmail.com

Requested Criteria

Quote Number: _____

I attest that all media released by Phoenix Environmental Laboratories, Inc. have been received in good working condition and agree to the terms and conditions as listed on the back of this document:

Signature: _____ Date: _____

PHOENIX
Environmental Laboratories, Inc.

Wednesday, March 16, 2016

Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Sample ID#s: BK77802 - BK77805

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 16, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	AIR	Collected by:	JM	03/10/16	22:20
Location Code:	MIGCONSULT	Received by:	LB	03/11/16	18:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					
Canister Id:	12873				

Laboratory Data

SDG ID: GBK77802
Phoenix ID: BK77802

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Client ID: SVP-2

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Volatiles (TO15)								
1,1,1,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	03/14/16	KCA	1	1
1,1,1-Trichloroethane	ND	*0.183*	ND	*1.00*	03/14/16	KCA	1	
1,1,2,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	03/14/16	KCA	1	
1,1,2-Trichloroethane	ND	*0.183*	ND	*1.00*	03/14/16	KCA	1	
1,1-Dichloroethane	ND	*0.247*	ND	*1.00*	03/14/16	KCA	1	
1,1-Dichloroethene	ND	*0.252*	ND	*1.00*	03/14/16	KCA	1	
1,2,4-Trichlorobenzene	ND	*0.135*	ND	*1.00*	03/14/16	KCA	1	
1,2,4-Trimethylbenzene	0.348	*0.204*	1.71	*1.00*	03/14/16	KCA	1	
1,2-Dibromoethane(EDB)	ND	*0.130*	ND	*1.00*	03/14/16	KCA	1	
1,2-Dichlorobenzene	ND	*0.166*	ND	*1.00*	03/14/16	KCA	1	
1,2-Dichloroethane	ND	*0.247*	ND	*1.00*	03/14/16	KCA	1	
1,2-dichloropropane	ND	*0.217*	ND	*1.00*	03/14/16	KCA	1	
1,2-Dichlorotetrafluoroethane	ND	*0.143*	ND	*1.00*	03/14/16	KCA	1	
1,3,5-Trimethylbenzene	ND	*0.204*	ND	*1.00*	03/14/16	KCA	1	
1,3-Butadiene	ND	*0.452*	ND	*1.00*	03/14/16	KCA	1	
1,3-Dichlorobenzene	ND	*0.166*	ND	*1.00*	03/14/16	KCA	1	
1,4-Dichlorobenzene	ND	*0.166*	ND	*1.00*	03/14/16	KCA	1	
1,4-Dioxane	ND	*0.278*	ND	*1.00*	03/14/16	KCA	1	
2-Hexanone(MBK)	ND	*0.244*	ND	*1.00*	03/14/16	KCA	1	1
4-Ethyltoluene	ND	*0.204*	ND	*1.00*	03/14/16	KCA	1	1
4-Isopropyltoluene	ND	*0.182*	ND	*1.00*	03/14/16	KCA	1	1
4-Methyl-2-pentanone(MIBK)	ND	*0.244*	ND	*1.00*	03/14/16	KCA	1	
Acetone	147	*2.11*	349	*5.01*	03/14/16	KCA	5	
Acrylonitrile	ND	*0.461*	ND	*1.00*	03/14/16	KCA	1	
Benzene	0.375	*0.313*	1.20	*1.00*	03/14/16	KCA	1	
Benzyl chloride	ND	*0.193*	ND	*1.00*	03/14/16	KCA	1	

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Client ID: SVP-2

Phoenix I.D.: BK77802

Parameter	ppbv Result		ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Bromodichloromethane	ND		*0.149*	ND	*1.00*	03/14/16	KCA	1	
Bromoform	ND		*0.097*	ND	*1.00*	03/14/16	KCA	1	
Bromomethane	ND		*0.258*	ND	*1.00*	03/14/16	KCA	1	
Carbon Disulfide	ND		*0.321*	ND	*1.00*	03/14/16	KCA	1	
Carbon Tetrachloride	0.042		*0.040*	0.26	*0.25*	03/14/16	KCA	1	
Chlorobenzene	ND		*0.217*	ND	*1.00*	03/14/16	KCA	1	
Chloroethane	ND		*0.379*	ND	*1.00*	03/14/16	KCA	1	
Chloroform	ND		*0.205*	ND	*1.00*	03/14/16	KCA	1	
Chloromethane	ND		*0.485*	ND	*1.00*	03/14/16	KCA	1	
Cis-1,2-Dichloroethene	ND		*0.252*	ND	*1.00*	03/14/16	KCA	1	
cis-1,3-Dichloropropene	ND		*0.221*	ND	*1.00*	03/14/16	KCA	1	
Cyclohexane	ND		*0.291*	ND	*1.00*	03/14/16	KCA	1	
Dibromochloromethane	ND		*0.118*	ND	*1.00*	03/14/16	KCA	1	
Dichlorodifluoromethane	0.320		*0.202*	1.58	*1.00*	03/14/16	KCA	1	
Ethanol	12.9		*0.531*	24.3	*1.00*	03/14/16	KCA	1	1
Ethyl acetate	56.8		*1.39*	205	*5.01*	03/14/16	KCA	5	1
Ethylbenzene	0.239		*0.230*	1.04	*1.00*	03/14/16	KCA	1	
Heptane	ND		*0.244*	ND	*1.00*	03/14/16	KCA	1	
Hexachlorobutadiene	ND		*0.094*	ND	*1.00*	03/14/16	KCA	1	
Hexane	0.945	S	*0.284*	3.33	*1.00*	03/14/16	KCA	1	
Isopropylalcohol	1.52	S	*0.407*	3.73	*1.00*	03/14/16	KCA	1	
Isopropylbenzene	ND		*0.204*	ND	*1.00*	03/14/16	KCA	1	
m,p-Xylene	0.543		*0.230*	2.36	*1.00*	03/14/16	KCA	1	
Methyl Ethyl Ketone	3.79		*0.339*	11.2	*1.00*	03/14/16	KCA	1	
Methyl tert-butyl ether(MTBE)	ND		*0.278*	ND	*1.00*	03/14/16	KCA	1	
Methylene Chloride	0.920	S	*0.288*	3.19	*1.00*	03/14/16	KCA	1	
n-Butylbenzene	ND		*0.182*	ND	*1.00*	03/14/16	KCA	1	1
o-Xylene	0.366		*0.230*	1.59	*1.00*	03/14/16	KCA	1	
Propylene	3.78		*0.581*	6.50	*1.00*	03/14/16	KCA	1	1
sec-Butylbenzene	ND		*0.182*	ND	*1.00*	03/14/16	KCA	1	1
Styrene	ND		*0.235*	ND	*1.00*	03/14/16	KCA	1	
Tetrachloroethene	6.99		*0.037*	47.4	*0.25*	03/14/16	KCA	1	
Tetrahydrofuran	ND		*0.339*	ND	*1.00*	03/14/16	KCA	1	1
Toluene	0.722		*0.266*	2.72	*1.00*	03/14/16	KCA	1	
Trans-1,2-Dichloroethene	ND		*0.252*	ND	*1.00*	03/14/16	KCA	1	
trans-1,3-Dichloropropene	ND		*0.221*	ND	*1.00*	03/14/16	KCA	1	
Trichloroethene	ND		*0.047*	ND	*0.25*	03/14/16	KCA	1	
Trichlorofluoromethane	0.204		*0.178*	1.15	*1.00*	03/14/16	KCA	1	
Trichlorotrifluoroethane	ND		*0.131*	ND	*1.00*	03/14/16	KCA	1	
Vinyl Chloride	ND		*0.098*	ND	*0.25*	03/14/16	KCA	1	
QA/QC Surrogates									
% Bromofluorobenzene	106		*%*	106	*%*	03/14/16	KCA	1	

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Client ID: SVP-2

Phoenix I.D.: BK77802

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

S - Laboratory solvent, contamination is possible.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
March 16, 2016
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 16, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	AIR	Collected by:	JM	03/10/16	22:20
Location Code:	MIGCONSULT	Received by:	LB	03/11/16	18:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					
Canister Id:	156				

Laboratory Data

SDG ID: GBK77802
Phoenix ID: BK77803

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Client ID: OA-1

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Volatiles (TO15)								
1,1,1,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	03/14/16	KCA	1	1
1,1,1-Trichloroethane	ND	*0.183*	ND	*1.00*	03/14/16	KCA	1	
1,1,2,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	03/14/16	KCA	1	
1,1,2-Trichloroethane	ND	*0.183*	ND	*1.00*	03/14/16	KCA	1	
1,1-Dichloroethane	ND	*0.247*	ND	*1.00*	03/14/16	KCA	1	
1,1-Dichloroethene	ND	*0.252*	ND	*1.00*	03/14/16	KCA	1	
1,2,4-Trichlorobenzene	ND	*0.135*	ND	*1.00*	03/14/16	KCA	1	
1,2,4-Trimethylbenzene	ND	*0.204*	ND	*1.00*	03/14/16	KCA	1	
1,2-Dibromoethane(EDB)	ND	*0.130*	ND	*1.00*	03/14/16	KCA	1	
1,2-Dichlorobenzene	ND	*0.166*	ND	*1.00*	03/14/16	KCA	1	
1,2-Dichloroethane	ND	*0.247*	ND	*1.00*	03/14/16	KCA	1	
1,2-dichloropropane	ND	*0.217*	ND	*1.00*	03/14/16	KCA	1	
1,2-Dichlorotetrafluoroethane	ND	*0.143*	ND	*1.00*	03/14/16	KCA	1	
1,3,5-Trimethylbenzene	ND	*0.204*	ND	*1.00*	03/14/16	KCA	1	
1,3-Butadiene	ND	*0.452*	ND	*1.00*	03/14/16	KCA	1	
1,3-Dichlorobenzene	ND	*0.166*	ND	*1.00*	03/14/16	KCA	1	
1,4-Dichlorobenzene	ND	*0.166*	ND	*1.00*	03/14/16	KCA	1	
1,4-Dioxane	ND	*0.278*	ND	*1.00*	03/14/16	KCA	1	
2-Hexanone(MBK)	ND	*0.244*	ND	*1.00*	03/14/16	KCA	1	1
4-Ethyltoluene	ND	*0.204*	ND	*1.00*	03/14/16	KCA	1	1
4-Isopropyltoluene	ND	*0.182*	ND	*1.00*	03/14/16	KCA	1	1
4-Methyl-2-pentanone(MIBK)	ND	*0.244*	ND	*1.00*	03/14/16	KCA	1	
Acetone	4.78	*0.421*	11.3	*1.00*	03/14/16	KCA	1	
Acrylonitrile	ND	*0.461*	ND	*1.00*	03/14/16	KCA	1	
Benzene	ND	*0.313*	ND	*1.00*	03/14/16	KCA	1	
Benzyl chloride	ND	*0.193*	ND	*1.00*	03/14/16	KCA	1	

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Client ID: OA-1

Phoenix I.D.: BK77803

Parameter	ppbv Result		ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Bromodichloromethane	ND		*0.149*	ND	*1.00*	03/14/16	KCA	1	
Bromoform	ND		*0.097*	ND	*1.00*	03/14/16	KCA	1	
Bromomethane	ND		*0.258*	ND	*1.00*	03/14/16	KCA	1	
Carbon Disulfide	ND		*0.321*	ND	*1.00*	03/14/16	KCA	1	
Carbon Tetrachloride	0.080		*0.040*	0.50	*0.25*	03/14/16	KCA	1	
Chlorobenzene	ND		*0.217*	ND	*1.00*	03/14/16	KCA	1	
Chloroethane	ND		*0.379*	ND	*1.00*	03/14/16	KCA	1	
Chloroform	ND		*0.205*	ND	*1.00*	03/14/16	KCA	1	
Chloromethane	0.700		*0.485*	1.44	*1.00*	03/14/16	KCA	1	
Cis-1,2-Dichloroethene	ND		*0.252*	ND	*1.00*	03/14/16	KCA	1	
cis-1,3-Dichloropropene	ND		*0.221*	ND	*1.00*	03/14/16	KCA	1	
Cyclohexane	ND		*0.291*	ND	*1.00*	03/14/16	KCA	1	
Dibromochloromethane	ND		*0.118*	ND	*1.00*	03/14/16	KCA	1	
Dichlorodifluoromethane	0.347		*0.202*	1.71	*1.00*	03/14/16	KCA	1	
Ethanol	4.41	S	*0.531*	8.30	*1.00*	03/14/16	KCA	1	1
Ethyl acetate	ND		*0.278*	ND	*1.00*	03/14/16	KCA	1	1
Ethylbenzene	ND		*0.230*	ND	*1.00*	03/14/16	KCA	1	
Heptane	ND		*0.244*	ND	*1.00*	03/14/16	KCA	1	
Hexachlorobutadiene	ND		*0.094*	ND	*1.00*	03/14/16	KCA	1	
Hexane	ND		*0.284*	ND	*1.00*	03/14/16	KCA	1	
Isopropylalcohol	0.583	S	*0.407*	1.43	*1.00*	03/14/16	KCA	1	
Isopropylbenzene	ND		*0.204*	ND	*1.00*	03/14/16	KCA	1	
m,p-Xylene	0.266		*0.230*	1.15	*1.00*	03/14/16	KCA	1	
Methyl Ethyl Ketone	0.463		*0.339*	1.36	*1.00*	03/14/16	KCA	1	
Methyl tert-butyl ether(MTBE)	ND		*0.278*	ND	*1.00*	03/14/16	KCA	1	
Methylene Chloride	ND		*0.288*	ND	*1.00*	03/14/16	KCA	1	
n-Butylbenzene	ND		*0.182*	ND	*1.00*	03/14/16	KCA	1	1
o-Xylene	ND		*0.230*	ND	*1.00*	03/14/16	KCA	1	
Propylene	ND		*0.581*	ND	*1.00*	03/14/16	KCA	1	1
sec-Butylbenzene	ND		*0.182*	ND	*1.00*	03/14/16	KCA	1	1
Styrene	ND		*0.235*	ND	*1.00*	03/14/16	KCA	1	
Tetrachloroethene	0.055		*0.037*	0.37	*0.25*	03/14/16	KCA	1	
Tetrahydrofuran	ND		*0.339*	ND	*1.00*	03/14/16	KCA	1	1
Toluene	0.525		*0.266*	1.98	*1.00*	03/14/16	KCA	1	
Trans-1,2-Dichloroethene	ND		*0.252*	ND	*1.00*	03/14/16	KCA	1	
trans-1,3-Dichloropropene	ND		*0.221*	ND	*1.00*	03/14/16	KCA	1	
Trichloroethene	ND		*0.047*	ND	*0.25*	03/14/16	KCA	1	
Trichlorofluoromethane	0.231		*0.178*	1.30	*1.00*	03/14/16	KCA	1	
Trichlorotrifluoroethane	ND		*0.131*	ND	*1.00*	03/14/16	KCA	1	
Vinyl Chloride	ND		*0.098*	ND	*0.25*	03/14/16	KCA	1	
QA/QC Surrogates									
% Bromofluorobenzene	100		%	100	%	03/14/16	KCA	1	

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Client ID: OA-1

Phoenix I.D.: BK77803

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

S - Laboratory solvent, contamination is possible.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
March 16, 2016
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
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Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 16, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	AIR	Collected by:	JM	03/10/16	22:20
Location Code:	MIGCONSULT	Received by:	LB	03/11/16	18:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					
Canister Id:	18851				

Laboratory Data

SDG ID: GBK77802
Phoenix ID: BK77804

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Client ID: SVP-1

Parameter	ppbv Result	ppbv RL		ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Volatiles (TO15)									
1,1,1,2-Tetrachloroethane	ND	*0.146*		ND	*1.00*	03/14/16	KCA	1	1
1,1,1-Trichloroethane	ND	*0.183*		ND	*1.00*	03/14/16	KCA	1	
1,1,2,2-Tetrachloroethane	ND	*0.146*		ND	*1.00*	03/14/16	KCA	1	
1,1,2-Trichloroethane	ND	*0.183*		ND	*1.00*	03/14/16	KCA	1	
1,1-Dichloroethane	ND	*0.247*		ND	*1.00*	03/14/16	KCA	1	
1,1-Dichloroethene	ND	*0.252*		ND	*1.00*	03/14/16	KCA	1	
1,2,4-Trichlorobenzene	ND	*0.135*		ND	*1.00*	03/14/16	KCA	1	
1,2,4-Trimethylbenzene	0.302	*0.204*		1.48	*1.00*	03/14/16	KCA	1	
1,2-Dibromoethane(EDB)	ND	*0.130*		ND	*1.00*	03/14/16	KCA	1	
1,2-Dichlorobenzene	ND	*0.166*		ND	*1.00*	03/14/16	KCA	1	
1,2-Dichloroethane	ND	*0.247*		ND	*1.00*	03/14/16	KCA	1	
1,2-dichloropropane	ND	*0.217*		ND	*1.00*	03/14/16	KCA	1	
1,2-Dichlorotetrafluoroethane	ND	*0.143*		ND	*1.00*	03/14/16	KCA	1	
1,3,5-Trimethylbenzene	ND	*0.204*		ND	*1.00*	03/14/16	KCA	1	
1,3-Butadiene	ND	*0.452*		ND	*1.00*	03/14/16	KCA	1	
1,3-Dichlorobenzene	ND	*0.166*		ND	*1.00*	03/14/16	KCA	1	
1,4-Dichlorobenzene	ND	*0.166*		ND	*1.00*	03/14/16	KCA	1	
1,4-Dioxane	ND	*0.278*		ND	*1.00*	03/14/16	KCA	1	
2-Hexanone(MBK)	ND	*0.244*		ND	*1.00*	03/14/16	KCA	1	1
4-Ethyltoluene	ND	*0.204*		ND	*1.00*	03/14/16	KCA	1	1
4-Isopropyltoluene	ND	*0.182*		ND	*1.00*	03/14/16	KCA	1	1
4-Methyl-2-pentanone(MIBK)	ND	*0.244*		ND	*1.00*	03/14/16	KCA	1	
Acetone	89.6	S	*16.8*	213	*39.9*	03/14/16	KCA	40	
Acrylonitrile	ND	*0.461*		ND	*1.00*	03/14/16	KCA	1	
Benzene	0.447	*0.313*		1.43	*1.00*	03/14/16	KCA	1	
Benzyl chloride	ND	*0.193*		ND	*1.00*	03/14/16	KCA	1	

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Client ID: SVP-1

Phoenix I.D.: BK77804

Parameter	ppbv Result		ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Bromodichloromethane	ND		*0.149*	ND	*1.00*	03/14/16	KCA	1	
Bromoform	ND		*0.097*	ND	*1.00*	03/14/16	KCA	1	
Bromomethane	ND		*0.258*	ND	*1.00*	03/14/16	KCA	1	
Carbon Disulfide	ND		*0.321*	ND	*1.00*	03/14/16	KCA	1	
Carbon Tetrachloride	0.053		*0.040*	0.33	*0.25*	03/14/16	KCA	1	
Chlorobenzene	ND		*0.217*	ND	*1.00*	03/14/16	KCA	1	
Chloroethane	ND		*0.379*	ND	*1.00*	03/14/16	KCA	1	
Chloroform	ND		*0.205*	ND	*1.00*	03/14/16	KCA	1	
Chloromethane	ND		*0.485*	ND	*1.00*	03/14/16	KCA	1	
Cis-1,2-Dichloroethene	ND		*0.252*	ND	*1.00*	03/14/16	KCA	1	
cis-1,3-Dichloropropene	ND		*0.221*	ND	*1.00*	03/14/16	KCA	1	
Cyclohexane	ND		*0.291*	ND	*1.00*	03/14/16	KCA	1	
Dibromochloromethane	ND		*0.118*	ND	*1.00*	03/14/16	KCA	1	
Dichlorodifluoromethane	0.353		*0.202*	1.74	*1.00*	03/14/16	KCA	1	
Ethanol	51.7	S	*21.2*	97.4	*39.9*	03/14/16	KCA	40	1
Ethyl acetate	483		*11.1*	1740	*40.0*	03/14/16	KCA	40	1
Ethylbenzene	ND		*0.230*	ND	*1.00*	03/14/16	KCA	1	
Heptane	ND		*0.244*	ND	*1.00*	03/14/16	KCA	1	
Hexachlorobutadiene	ND		*0.094*	ND	*1.00*	03/14/16	KCA	1	
Hexane	ND		*0.284*	ND	*1.00*	03/14/16	KCA	1	
Isopropylalcohol	5.17		*0.407*	12.7	*1.00*	03/14/16	KCA	1	
Isopropylbenzene	ND		*0.204*	ND	*1.00*	03/14/16	KCA	1	
m,p-Xylene	0.235		*0.230*	1.02	*1.00*	03/14/16	KCA	1	
Methyl Ethyl Ketone	3.61		*0.339*	10.6	*1.00*	03/14/16	KCA	1	
Methyl tert-butyl ether(MTBE)	ND		*0.278*	ND	*1.00*	03/14/16	KCA	1	
Methylene Chloride	0.544	S	*0.288*	1.89	*1.00*	03/14/16	KCA	1	
n-Butylbenzene	ND		*0.182*	ND	*1.00*	03/14/16	KCA	1	1
o-Xylene	ND		*0.230*	ND	*1.00*	03/14/16	KCA	1	
Propylene	2.87		*0.581*	4.94	*1.00*	03/14/16	KCA	1	1
sec-Butylbenzene	ND		*0.182*	ND	*1.00*	03/14/16	KCA	1	1
Styrene	ND		*0.235*	ND	*1.00*	03/14/16	KCA	1	
Tetrachloroethene	7.28		*0.037*	49.3	*0.25*	03/14/16	KCA	1	
Tetrahydrofuran	ND		*0.339*	ND	*1.00*	03/14/16	KCA	1	1
Toluene	0.523		*0.266*	1.97	*1.00*	03/14/16	KCA	1	
Trans-1,2-Dichloroethene	ND		*0.252*	ND	*1.00*	03/14/16	KCA	1	
trans-1,3-Dichloropropene	ND		*0.221*	ND	*1.00*	03/14/16	KCA	1	
Trichloroethene	ND		*0.047*	ND	*0.25*	03/14/16	KCA	1	
Trichlorofluoromethane	0.282		*0.178*	1.58	*1.00*	03/14/16	KCA	1	
Trichlorotrifluoroethane	ND		*0.131*	ND	*1.00*	03/14/16	KCA	1	
Vinyl Chloride	ND		*0.098*	ND	*0.25*	03/14/16	KCA	1	
QA/QC Surrogates									
% Bromofluorobenzene	112		*%*	112	*%*	03/14/16	KCA	1	

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Client ID: SVP-1

Phoenix I.D.: BK77804

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

S - Laboratory solvent, contamination is possible.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
March 16, 2016
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 16, 2016

FOR: Ravi Kolaventi
MIG Consulting, LLC
707 Raritan Ave, Suite 203
Highland Park, NJ 08904

Sample Information		Custody Information		Date	Time
Matrix:	AIR	Collected by:	JM	03/10/16	22:20
Location Code:	MIGCONSULT	Received by:	LB	03/11/16	18:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					
Canister Id:	12858				

Laboratory Data

SDG ID: GBK77802
Phoenix ID: BK77805

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Client ID: SVP-3

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Volatiles (TO15)								
1,1,1,2-Tetrachloroethane	ND	*8.75*	ND	*60.0*	03/14/16	KCA	60	1
1,1,1-Trichloroethane	ND	*11.0*	ND	*60.0*	03/14/16	KCA	60	
1,1,2,2-Tetrachloroethane	ND	*8.75*	ND	*60.0*	03/14/16	KCA	60	
1,1,2-Trichloroethane	ND	*11.0*	ND	*60.0*	03/14/16	KCA	60	
1,1-Dichloroethane	ND	*14.8*	ND	*59.9*	03/14/16	KCA	60	
1,1-Dichloroethene	ND	*15.1*	ND	*59.8*	03/14/16	KCA	60	
1,2,4-Trichlorobenzene	ND	*8.09*	ND	*60.0*	03/14/16	KCA	60	
1,2,4-Trimethylbenzene	ND	*12.2*	ND	*59.9*	03/14/16	KCA	60	
1,2-Dibromoethane(EDB)	ND	*7.81*	ND	*60.0*	03/14/16	KCA	60	
1,2-Dichlorobenzene	ND	*9.99*	ND	*60.0*	03/14/16	KCA	60	
1,2-Dichloroethane	ND	*14.8*	ND	*59.9*	03/14/16	KCA	60	
1,2-dichloropropane	ND	*13.0*	ND	*60.0*	03/14/16	KCA	60	
1,2-Dichlorotetrafluoroethane	ND	*8.59*	ND	*60.0*	03/14/16	KCA	60	
1,3,5-Trimethylbenzene	ND	*12.2*	ND	*59.9*	03/14/16	KCA	60	
1,3-Butadiene	ND	*27.1*	ND	*59.9*	03/14/16	KCA	60	
1,3-Dichlorobenzene	ND	*9.99*	ND	*60.0*	03/14/16	KCA	60	
1,4-Dichlorobenzene	ND	*9.99*	ND	*60.0*	03/14/16	KCA	60	
1,4-Dioxane	ND	*16.7*	ND	*60.2*	03/14/16	KCA	60	
2-Hexanone(MBK)	ND	*14.7*	ND	*60.2*	03/14/16	KCA	60	1
4-Ethyltoluene	ND	*12.2*	ND	*59.9*	03/14/16	KCA	60	1
4-Isopropyltoluene	ND	*10.9*	ND	*59.8*	03/14/16	KCA	60	1
4-Methyl-2-pentanone(MIBK)	ND	*14.7*	ND	*60.2*	03/14/16	KCA	60	
Acetone	ND	*25.3*	ND	*60.1*	03/14/16	KCA	60	
Acrylonitrile	ND	*27.7*	ND	*60.1*	03/14/16	KCA	60	
Benzene	154	*18.8*	492	*60.0*	03/14/16	KCA	60	
Benzyl chloride	ND	*11.6*	ND	*60.0*	03/14/16	KCA	60	

Project ID: 3608 WESTCHESTER PIKE NEWTOWN SQUARE, PA
Client ID: SVP-3

Phoenix I.D.: BK77805

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Bromodichloromethane	ND	*8.96*	ND	*60.0*	03/14/16	KCA	60	
Bromoform	ND	*5.81*	ND	*60.0*	03/14/16	KCA	60	
Bromomethane	ND	*15.5*	ND	*60.1*	03/14/16	KCA	60	
Carbon Disulfide	ND	*19.3*	ND	*60.1*	03/14/16	KCA	60	
Carbon Tetrachloride	ND	*2.38*	ND	*15.0*	03/14/16	KCA	60	
Chlorobenzene	ND	*13.0*	ND	*59.8*	03/14/16	KCA	60	
Chloroethane	ND	*22.8*	ND	*60.1*	03/14/16	KCA	60	
Chloroform	ND	*12.3*	ND	*60.0*	03/14/16	KCA	60	
Chloromethane	ND	*29.1*	ND	*60.1*	03/14/16	KCA	60	
Cis-1,2-Dichloroethene	ND	*15.1*	ND	*59.8*	03/14/16	KCA	60	
cis-1,3-Dichloropropene	ND	*13.2*	ND	*59.9*	03/14/16	KCA	60	
Cyclohexane	3420	*34.9*	11800	*120*	03/14/16	KCA	120	
Dibromochloromethane	ND	*7.05*	ND	*60.0*	03/14/16	KCA	60	
Dichlorodifluoromethane	ND	*12.1*	ND	*59.8*	03/14/16	KCA	60	
Ethanol	ND	*31.9*	ND	*60.1*	03/14/16	KCA	60	1
Ethyl acetate	ND	*16.7*	ND	*60.1*	03/14/16	KCA	60	1
Ethylbenzene	ND	*13.8*	ND	*59.9*	03/14/16	KCA	60	
Heptane	ND	*14.6*	ND	*59.8*	03/14/16	KCA	60	
Hexachlorobutadiene	ND	*5.63*	ND	*60.0*	03/14/16	KCA	60	
Hexane	4130	*34.1*	14500	*120*	03/14/16	KCA	120	
Isopropylalcohol	ND	*24.4*	ND	*59.9*	03/14/16	KCA	60	
Isopropylbenzene	ND	*12.2*	ND	*59.9*	03/14/16	KCA	60	
m,p-Xylene	ND	*13.8*	ND	*59.9*	03/14/16	KCA	60	
Methyl Ethyl Ketone	ND	*20.4*	ND	*60.1*	03/14/16	KCA	60	
Methyl tert-butyl ether(MTBE)	ND	*16.7*	ND	*60.2*	03/14/16	KCA	60	
Methylene Chloride	ND	*17.3*	ND	*60.1*	03/14/16	KCA	60	
n-Butylbenzene	ND	*10.9*	ND	*59.8*	03/14/16	KCA	60	1
o-Xylene	ND	*13.8*	ND	*59.9*	03/14/16	KCA	60	
Propylene	ND	*34.9*	ND	*60.0*	03/14/16	KCA	60	1
sec-Butylbenzene	ND	*10.9*	ND	*59.8*	03/14/16	KCA	60	1
Styrene	ND	*14.1*	ND	*60.0*	03/14/16	KCA	60	
Tetrachloroethene	6.66	*2.21*	45.1	*15.0*	03/14/16	KCA	60	
Tetrahydrofuran	ND	*20.4*	ND	*60.1*	03/14/16	KCA	60	1
Toluene	21.3	*15.9*	80.2	*59.9*	03/14/16	KCA	60	
Trans-1,2-Dichloroethene	ND	*15.1*	ND	*59.8*	03/14/16	KCA	60	
trans-1,3-Dichloropropene	ND	*13.2*	ND	*59.9*	03/14/16	KCA	60	
Trichloroethene	ND	*2.79*	ND	*15.0*	03/14/16	KCA	60	
Trichlorofluoromethane	ND	*10.7*	ND	*60.1*	03/14/16	KCA	60	
Trichlorotrifluoroethane	ND	*7.83*	ND	*60.0*	03/14/16	KCA	60	
Vinyl Chloride	ND	*5.87*	ND	*15.0*	03/14/16	KCA	60	
QA/QC Surrogates								
% Bromofluorobenzene	114	*%*	114	*%*	03/14/16	KCA	60	

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

An elevated reporting level was reported due to the presences of non target compounds.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
March 16, 2016
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

March 16, 2016

QA/QC Data

SDG I.D.: GBK77802

Parameter	Blk ppbv	Blk RL ppbv	Blk ug/m3	Blk RL ug/m3	LCS %	Sample Result ug/m3	Sample Dup ug/m3	Sample Result ppbv	Sample Dup ppbv	DUP RPD	% Rec Limits	% RPD Limits
QA/QC Batch 337934 (ppbv), QC Sample No: BK77648 (BK77802 (1X, 5X) , BK77803, BK77804 (1X, 40X) , BK77805 (60X, 120X))												
Volatiles												
1,1,1,2-Tetrachloroethane	ND	0.146	ND	1.00	129	ND	ND	ND	ND	NC	70 - 130	20
1,1,1-Trichloroethane	ND	0.183	ND	1.00	106	ND	ND	ND	ND	NC	70 - 130	20
1,1,2,2-Tetrachloroethane	ND	0.146	ND	1.00	107	ND	ND	ND	ND	NC	70 - 130	20
1,1,2-Trichloroethane	ND	0.183	ND	1.00	120	ND	ND	ND	ND	NC	70 - 130	20
1,1-Dichloroethane	ND	0.247	ND	1.00	99	ND	ND	ND	ND	NC	70 - 130	20
1,1-Dichloroethene	ND	0.252	ND	1.00	99	ND	ND	ND	ND	NC	70 - 130	20
1,2,4-Trichlorobenzene	ND	0.135	ND	1.00	153	ND	ND	ND	ND	NC	70 - 130	20
1,2,4-Trimethylbenzene	ND	0.204	ND	1.00	107	3.51	3.39	0.714	0.689	3.6	70 - 130	20
1,2-Dibromoethane(EDB)	ND	0.130	ND	1.00	122	ND	ND	ND	ND	NC	70 - 130	20
1,2-Dichlorobenzene	ND	0.166	ND	1.00	102	ND	ND	ND	ND	NC	70 - 130	20
1,2-Dichloroethane	ND	0.247	ND	1.00	101	ND	ND	ND	ND	NC	70 - 130	20
1,2-dichloropropane	ND	0.216	ND	1.00	79	ND	ND	ND	ND	NC	70 - 130	20
1,2-Dichlorotetrafluoroethane	ND	0.143	ND	1.00	114	ND	ND	ND	ND	NC	70 - 130	20
1,3,5-Trimethylbenzene	ND	0.204	ND	1.00	103	1.14	1.15	0.233	0.235	0.9	70 - 130	20
1,3-Butadiene	ND	0.452	ND	1.00	103	ND	ND	ND	ND	NC	70 - 130	20
1,3-Dichlorobenzene	ND	0.166	ND	1.00	107	ND	ND	ND	ND	NC	70 - 130	20
1,4-Dichlorobenzene	ND	0.166	ND	1.00	109	ND	ND	ND	ND	NC	70 - 130	20
1,4-Dioxane	ND	0.278	ND	1.00	91	ND	ND	ND	ND	NC	70 - 130	20
2-Hexanone(MBK)	ND	0.244	ND	1.00	126	65.9	58.1	16.1	14.2	12.5	70 - 130	20
4-Ethyltoluene	ND	0.204	ND	1.00	110	1.15	1.17	0.235	0.238	1.3	70 - 130	20
4-Isopropyltoluene	ND	0.182	ND	1.00	113	ND	ND	ND	ND	NC	70 - 130	20
4-Methyl-2-pentanone(MIBK)	ND	0.244	ND	1.00	125	ND	ND	ND	ND	NC	70 - 130	20
Acetone	ND	0.421	ND	1.00	98	97.1	87.6	40.9	36.9	10.3	70 - 130	20
Acrylonitrile	ND	0.461	ND	1.00	97	ND	ND	ND	ND	NC	70 - 130	20
Benzene	ND	0.313	ND	1.00	89	2.58	2.43	0.807	0.760	6.0	70 - 130	20
Benzyl chloride	ND	0.193	ND	1.00	130	ND	ND	ND	ND	NC	70 - 130	20
Bromodichloromethane	ND	0.149	ND	1.00	81	ND	ND	ND	ND	NC	70 - 130	20
Bromoform	ND	0.097	ND	1.00	124	ND	ND	ND	ND	NC	70 - 130	20
Bromomethane	ND	0.257	ND	1.00	97	ND	ND	ND	ND	NC	70 - 130	20
Carbon Disulfide	ND	0.321	ND	1.00	101	28.5	26.7	9.17	8.57	6.8	70 - 130	20
Carbon Tetrachloride	ND	0.040	ND	0.25	98	0.57	0.53	0.091	0.084	8.0	70 - 130	20
Chlorobenzene	ND	0.217	ND	1.00	103	ND	ND	ND	ND	NC	70 - 130	20
Chloroethane	ND	0.379	ND	1.00	97	ND	ND	ND	ND	NC	70 - 130	20
Chloroform	ND	0.205	ND	1.00	99	4.43	4.19	0.907	0.859	5.4	70 - 130	20
Chloromethane	ND	0.484	ND	1.00	106	ND	ND	ND	ND	NC	70 - 130	20
Cis-1,2-Dichloroethene	ND	0.256	ND	1.01	100	ND	ND	ND	ND	NC	70 - 130	20
cis-1,3-Dichloropropene	ND	0.220	ND	1.00	120	ND	ND	ND	ND	NC	70 - 130	20
Cyclohexane	ND	0.291	ND	1.00	75	5.85	5.81	1.70	1.69	0.6	70 - 130	20
Dibromochloromethane	ND	0.117	ND	1.00	126	ND	ND	ND	ND	NC	70 - 130	20
Dichlorodifluoromethane	ND	0.202	ND	1.00	111	2.36	2.17	0.478	0.440	8.3	70 - 130	20
Ethanol	ND	0.531	ND	1.00	91	39.4	36.9	20.9	19.6	6.4	70 - 130	20

QA/QC Data

SDG I.D.: GBK77802

Parameter	Blk ppbv	Blk RL ppbv	Blk ug/m3	Blk RL ug/m3	LCS %	Sample Result ug/m3	Sample Dup ug/m3	Sample Result ppbv	Sample Dup ppbv	DUP RPD	% Rec Limits	% RPD Limits
Ethyl acetate	ND	0.278	ND	1.00	109	ND	ND	ND	ND	NC	70 - 130	20
Ethylbenzene	ND	0.230	ND	1.00	106	3.49	3.51	0.804	0.809	0.6	70 - 130	20
Heptane	ND	0.244	ND	1.00	76	31.4	29.1	7.66	7.11	7.4	70 - 130	20
Hexachlorobutadiene	ND	0.094	ND	1.00	102	ND	ND	ND	ND	NC	70 - 130	20
Hexane	ND	0.284	ND	1.00	100	37.7	36.3	10.7	10.3	3.8	70 - 130	20
Isopropylalcohol	ND	0.407	ND	1.00	100	3.41 S	3.22 S	1.39 S	1.31 S	5.9	70 - 130	20
Isopropylbenzene	ND	0.204	ND	1.00	116	ND	ND	ND	ND	NC	70 - 130	20
m,p-Xylene	ND	0.230	ND	1.00	111	16.2	15.9	3.74	3.66	2.2	70 - 130	20
Methyl Ethyl Ketone	ND	0.339	ND	1.00	101	295	271	100	92.0	8.3	70 - 130	20
Methyl tert-butyl ether(MTBE)	ND	0.277	ND	1.00	104	ND	ND	ND	ND	NC	70 - 130	20
Methylene Chloride	ND	0.288	ND	1.00	100	2.81 S	3.23 S	0.808 S	0.931 S	14.1	70 - 130	20
n-Butylbenzene	ND	0.182	ND	1.00	121	ND	ND	ND	ND	NC	70 - 130	20
o-Xylene	ND	0.230	ND	1.00	109	6.12	5.90	1.41	1.36	3.6	70 - 130	20
Propylene	ND	0.581	ND	1.00	105	29.1	27.0	16.9	15.7	7.4	70 - 130	20
sec-Butylbenzene	ND	0.182	ND	1.00	117	ND	ND	ND	ND	NC	70 - 130	20
Styrene	ND	0.235	ND	1.00	110	ND	ND	ND	ND	NC	70 - 130	20
Tetrachloroethene	ND	0.037	ND	0.25	107	92.2	92.2	13.6	13.6	0.0	70 - 130	20
Tetrahydrofuran	ND	0.339	ND	1.00	103	ND	ND	ND	ND	NC	70 - 130	20
Toluene	ND	0.266	ND	1.00	119	21.9	20.5	5.82	5.45	6.6	70 - 130	20
Trans-1,2-Dichloroethene	ND	0.252	ND	1.00	100	ND	ND	ND	ND	NC	70 - 130	20
trans-1,3-Dichloropropene	ND	0.220	ND	1.00	126	ND	ND	ND	ND	NC	70 - 130	20
Trichloroethene	ND	0.047	ND	0.25	99	3.34	3.54	0.622	0.660	5.9	70 - 130	20
Trichlorofluoromethane	ND	0.178	ND	1.00	101	3.75	3.39	0.668	0.604	10.1	70 - 130	20
Trichlorotrifluoroethane	ND	0.131	ND	1.00	102	ND	ND	ND	ND	NC	70 - 130	20
Vinyl Chloride	ND	0.098	ND	0.25	103	ND	ND	ND	ND	NC	70 - 130	20
% Bromofluorobenzene	98	%	98	%	102	103	104	103	104	1.0	70 - 130	20

I = This parameter is outside laboratory LCS/LCSD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
March 16, 2016

Sample Criteria Exceedences Report

GBK77802 - MIGCONSULT

Criteria: None

State: PA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

CHAIN OF CUSTODY RECORD
AIR ANALYSES

PHOENIX Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Telephone: 860.645.1102 • Fax: 860.645.0823
800-827-5426
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P.O. # Page 1 of 1

Data Delivery:
☑ Fax #: 732-543-1148
☑ Email: Mjgconsultingllc@gmail.com
☑ Phone #: 732-543-1150

Report to: Ravi Kolaventi
Customer: MIG
Address: 707 Raritan Ave
Highland Park, NJ 08904

Invoice to: Accounts Payable
MJG Consulting LLC
Highland Park, NJ 08904

Sampled by: John Maire

Project Name: 3608 West Chester Pike Newtown Square, PA

Requested Deliverable:
RCP ☐ ASP CAT B ☐
MCP ☐ NJ Deliverables ☐

State where samples collected: PA

Phoenix ID #	Client Sample ID	Canister ID #	Canister Size (L)	Outgoing Canister Pressure (" Hg)	Incoming Canister Pressure ("Hg)	Flow Regulator ID #	Flow Controller Setting (mL/min)	Sampling Start Time	Sampling End Time	Sample Start Date	Canister Pressure at Start (" Hg)	Canister Pressure at End ("Hg)	MATRIX: Ambient/Indoor Air	MATRIX: Soil Gas	MATRIX: Grab (G) Composite (C)	ANALYSES: TO-14	ANALYSES: TO-15
		THIS SECTION FOR LAB USE ONLY															
77802	SVP-2	12873	6.0	-30	-5	4991	10.4	1420	2220	-30	-6						✓
		465	6.0	-30		3249											
77803	OA-1	156	6.0	-30	-6	3190		1415	2220	-30	-8						✓
		464	6.0	-30		3410											
77804	SVP-1	18851	6.0	-30	-8	5060		1410	2220	-30	-10						✓
77805	SVP-3	12858	6.0	-30	-7	4499	↓	1430	2220	-30	-7						✓
	6L 8hrs																

Relinquished by:	Accepted by:	Date:	Time:
	Brad Cox	3-11-16	1251
Brad Cox		3-11-16	18:45

Data Format:
Excel ☑ Equis ☐ GISKey ☐
PDF ☑ Other: ☐

SPECIAL INSTRUCTIONS, QC REQUIREMENTS, REGULATORY INFORMATION:

Requested Criteria
TO-15

Quote Number:

I attest that all media released by Phoenix Environmental Laboratories, Inc. have been received in good working condition and agree to the terms and conditions as listed on the back of this document:

Signature: Date:

APPENDIX G

ENVIROPROBE SERVICE INCORPORATED

GEOPHYSICAL INVESTIGATION REPORT

PERFORMED AT:

3608 West Chester Pike
Newtown Square, PA 19073

PREPARED FOR:

MIG Consulting
707 Raritan Avenue, Suite 203
Highland Park, NJ 08904

PREPARED BY:

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July 10, 2015

1.0 INTRODUCTION

Enviroprobe Service, Inc. (Enviroprobe) is an environmental investigation services firm which provides monitoring well installation (HSA), Geoprobe (DPT) drilling services and Environmental & Engineering Geophysics (EEG) services to the environmental consulting and engineering community.

Enviroprobe conducted a subsurface geophysical investigation at the subject property within client-specified areas of concern. Due to conditions and objectives, the investigation utilized a Geophysical Survey Systems, Inc (GSSI) SIR-3000 cart-mounted ground penetrating radar (GPR) unit with a 270 MHz antenna, a Radiodetection receiver, a Radiodetection transmitter and a Fisher TW-6 metallic locator.

GPR is a geophysical method that has been developed over the past thirty years for shallow, high-resolution, subsurface investigations of the earth. GPR uses high frequency pulsed electromagnetic waves (generally 10 MHz to 2,000 MHz) to acquire subsurface information. An EM wave is propagated downward into the ground by a transmitting antenna. Where abrupt changes in electrical properties occur in the subsurface, a portion of the energy is reflected back to the surface. This reflected wave is detected by a receiver antenna and transmitted to a control unit for real time processing and display. The penetration depth of the GPR unit varies from several inches to tens of feet according to site-specific conditions. The penetration depth decreases with increased soil conductivity. The penetration depth is the greatest in ice, dry sands, and fine gravels. Clayey, highly saline or saturated soils, areas covered by concrete, foundry slag, or other highly conductive materials greatly reduce GPR penetration. GPR is a method commonly used for environmental, engineering, archaeological, and other shallow investigations.

The Radiodetection (RD) transmitter and receiver are commonly used for pipe and cable locating. The multi-frequency transmitter can be directly connected, clamped, or used to induce a signal in a target line while the multi-frequency receiver is used to measure the signal from energized lines.

The Fisher TW-6 metallic locator is designed to find pipes, cables and other metallic objects such as underground storage tanks (USTs). The TW-6 transmitter generates an electromagnetic field that induces electrical currents in the subsurface. These currents produce a secondary electromagnetic field that is measured by the TW-6 receiver. One surveyor can carry both the transmitter and receiver together to search for underground metallic objects, although the TW-6 response can also be affected by the electrical properties of non-metallic materials in the subsurface.

2.0 SCOPE OF WORK

On July 8, 2015, a geophysicist from Enviroprobe Service Inc. was mobilized to the subject property to perform a geophysical investigation. The purpose of the investigation was to detect possible USTs, designate underground conduits/utilities, and

investigate proposed drilling locations within client-specified areas of the property. The survey area included all accessible exterior portions of the subject property. An area in the adjacent property to the east was also surveyed. The ground surface of the survey area consisted of asphalt, concrete and landscaped surfaces.

3.0 SURVEY RESULTS

The utility survey was conducted using a cart-mounted GPR unit and a RD unit. The RD unit was used to trace common utilities from sources in and around the survey area. The RD receiver was also used in the passive mode to search for live underground electrical power cables and other utilities emitting 60Hz electromagnetic signals. When possible, the location of utilities was confirmed with the GPR. The GPR survey was also performed in a grid pattern in at least two orthogonal directions to search for evident and non-evident underground utilities. Whenever possible and necessary, the manhole covers in and around the survey area were opened and the manholes were visually inspected for underground utilities. Designated utilities were marked on-site with spray paint using the following colors: red – electric, blue – water, orange – communications, green – sanitary sewer, and pink – vent, product and unknown utility. **Note that the survey was not very effective over where the ground surface was covered by concrete such as the area where B-13 and SVP-3 were proposed.** A site sketch showing detected underground utilities is filed with this report separately.

A TW-6 survey was conducted to search for potential unknown USTs. Throughout the survey area, no significant underground metallic objects were detected. In areas with ground or aboveground objects containing metals where the TW-6 survey was not effective, the GPR survey was conducted and no signals consistent with USTs were found from the GPR data.

4.0 LIMITATIONS

In areas covered by concrete, the survey was not very effective due to interferences from the reinforcement in the concrete and very limited GPR penetration depth.

In the survey areas, there were obstructions including vehicles, vegetation, fences, and curb stops, etc. These objects prevented a thorough investigation of the spaces beneath and immediately adjacent to them.

Due to surface conditions and subsurface content, the GPR penetration depth was estimated as about 3 feet in the majority of the survey area. This penetration was reduced in areas of concrete cover.

The TW-6 survey was kept up to 6 feet away from aboveground objects containing metals depending on the sizes, shapes and positions of the metal objects. The

TW-6 survey was not effective in areas with reinforced concrete.

Due to the dielectric properties of the subsurface, plastic polymer and fiberglass utilities may not have been detected.

The underground utility survey was conducted in compliance with the industry standard of care guidelines found in ASCE 38-02 (Level B).

5.0 WARRANTIES

The field observations and measurements reported herein are considered sufficient in detail and scope for this project. Enviroprobe Service, Inc. warrants that the findings and conclusions contained herein have been promulgated in accordance with generally accepted environmental engineering methods. There is a possibility that conditions may exist which could not be identified within the scope of this project and were not apparent during the site activities performed for this project.

Enviroprobe represents that the services were performed in a manner consistent with that level of care and skill ordinarily exercised by environmental consultants under similar circumstances. No other representations to Client, express or implied, and no warranty or guarantee is included or intended in this agreement, or in any report, document, or otherwise.

Enviroprobe Service, Inc. believes that the information provided in this report is reliable. However, Enviroprobe cannot warrant or guarantee that the information provided by others is complete or accurate. No other warranties or guarantees are implied or expressed.

GPR data is subject to signal anomalies and operator interpretation. The GPR data is intended to provide the locations of areas of concern requiring additional investigation or the approximate location of underground structures and utilities. Great care must be utilized when excavating and/or drilling around underground structures and utilities since GPR data can only be used for estimation purposes and GPR data is subject to misinterpretation. Enviroprobe can not guarantee that utilities, post-tension cables, and/or rebar will not be incurred during drilling, cutting, coring, or excavating activities.

This report was prepared pursuant to the contract Enviroprobe has with the Client. That contractual relationship included an exchange of information about the property that was unique and between Enviroprobe and its client and serves as the basis upon which this report was prepared. Because of the importance of the communication between Enviroprobe and its client, reliance or any use of this report by anyone other than the Client, for whom it was prepared, is prohibited and therefore not foreseeable to Enviroprobe.

Reliance or use by any such third party without explicit authorization in the report does not make said third party a third party beneficiary to Enviroprobe contract with the

Client. Any such unauthorized reliance on or use of this report, including any of its information or conclusions, will be at the third party's risk. For the same reasons, no warranties or representations, expressed or implied in this report, are made to any such third party.

APPENDIX H

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Newtown Square, PA		
Date:	4/11/2016	Prepared by:	MIG Consulting LLC
		Contaminant:	Benzene (MW-1 to MW-8)

NEW QUICK_DOMENICO.XLS

SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

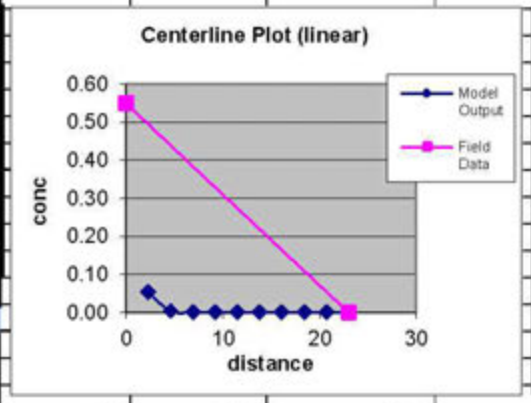
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
0.55	2.30E+00	2.30E-01	5.75E-02	0.0035	91	5	859

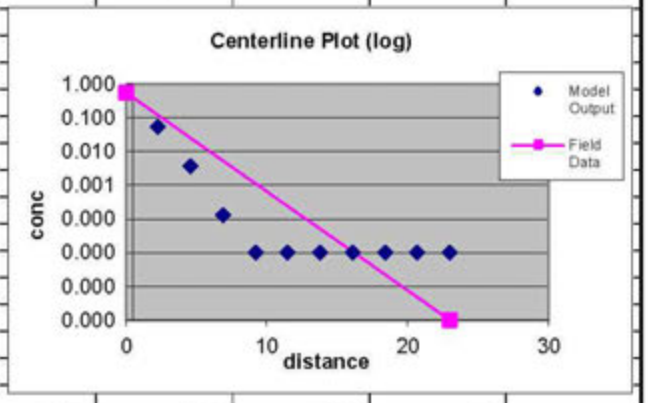
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
4.00E-01	0.00236	0.42	1.537	58	5.00E-03	2.061261905	0.001090409

Point Concentration

x(ft)	y(ft)	z(ft)
23	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	23	0	0
at	859	days =	0.000 mg/l





	AREAL MODEL	CALCULATION DOMAIN
	Length (ft)	23
	Width (ft)	91

	2.3	4.6	6.9	9.2	11.5	13.8	16.1	18.4	20.7	23
91	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
45.5	0.026	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.052	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-45.5	0.026	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-91	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Field Data:	Centerline C Concentration	0.55	0.0000001
	Distance from Source	0	23

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Newtown Square, PA		
Date:	4/15/2016	Prepared by:	MIG Consulting LLC
		Contaminant:	MTBE (MW-1 to MW-8) Calibration

NEW QUICK_DOMENICO.XLS

SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

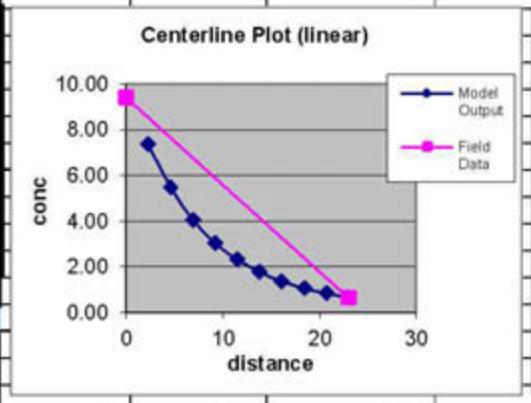
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
9.4	2.55E+02	3.32E+01	1.53E+00	0.0019	91	5	859

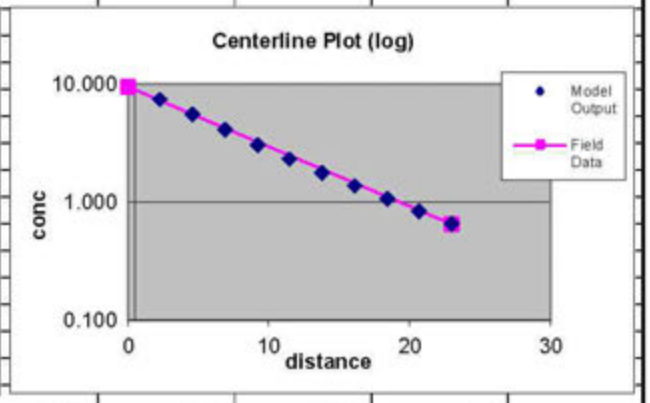
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
4.00E-01	0.00236	0.42	1.537	12	5.00E-03	1.219571429	0.001842958

Point Concentration

x(ft)	y(ft)	z(ft)
23	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	23	0	0
at	859	days =	**0.650** mg/l





	AREAL MODEL	CALCULATION DOMAIN
	Length (ft)	23
	Width (ft)	91

	2.3	4.6	6.9	9.2	11.5	13.8	16.1	18.4	20.7	23
91	0.001	0.025	0.070	0.106	0.127	0.135	0.133	0.126	0.116	0.105
45.5	3.675	2.749	2.091	1.623	1.277	1.014	0.810	0.650	0.523	0.421
0	7.347	5.447	4.043	3.034	2.302	1.763	1.362	1.059	0.828	0.650
-45.5	3.675	2.749	2.091	1.623	1.277	1.014	0.810	0.650	0.523	0.421
-91	0.001	0.025	0.070	0.106	0.127	0.135	0.133	0.126	0.116	0.105

Field Data:			
	Centerline C Concentration	9.4	0.65
	Distance from Source	0	23

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Newtown Square, PA		
Date:	4/15/2016	Prepared by:	MIG Consulting LLC
		Contaminant:	MTBE (MW-1 to MW-8) Plume Length

NEW QUICK_DOMENICO.XLS

SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

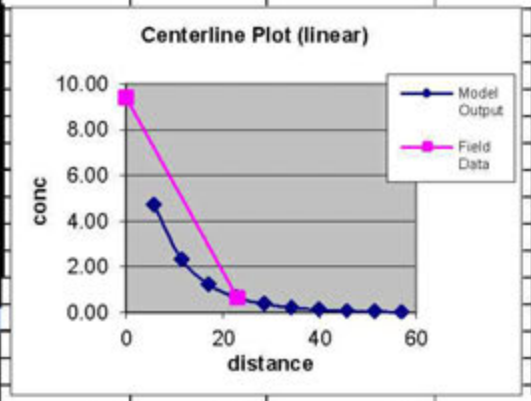
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
9.4	2.55E+02	3.32E+01	1.53E+00	0.0019	91	5	859

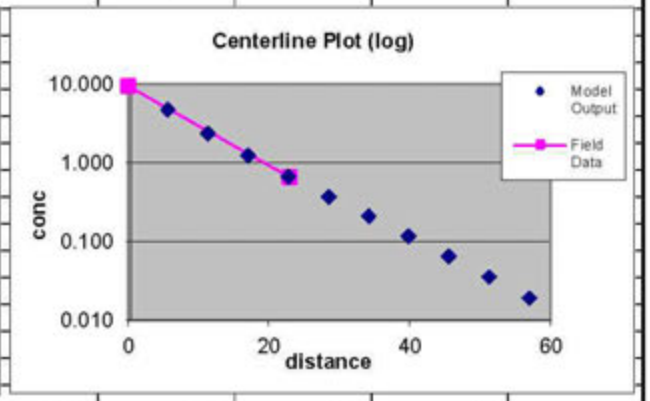
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
4.00E-01	0.00236	0.42	1.537	12	5.00E-03	1.219571429	0.001842958

Point Concentration

x(ft)	y(ft)	z(ft)
57	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	57	0	0
at	859	days =	0.019 mg/l





	AREAL MODEL	CALCULATION DOMAIN									
	Length (ft)	57									
	Width (ft)	91									
	5.7	11.4	17.1	22.8	28.5	34.2	39.9	45.6	51.3	57	
91	0.046	0.126	0.131	0.106	0.077	0.052	0.034	0.021	0.013	0.008	
45.5	2.405	1.290	0.736	0.429	0.251	0.147	0.085	0.049	0.027	0.015	
0	4.718	2.329	1.220	0.663	0.368	0.206	0.115	0.064	0.035	0.019	
-45.5	2.405	1.290	0.736	0.429	0.251	0.147	0.085	0.049	0.027	0.015	
-91	0.046	0.126	0.131	0.106	0.077	0.052	0.034	0.021	0.013	0.008	
Field Data:	Centerline C Concentration			9.4	0.65						
	Distance from Source			0	23						

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Newtown Square, PA		
Date:	4/15/2016	Prepared by:	MIG Consulting LLC
		Contaminant:	MTBE (MW-1 to MW-10) Calibration

NEW QUICK_DOMENICO.XLS

SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

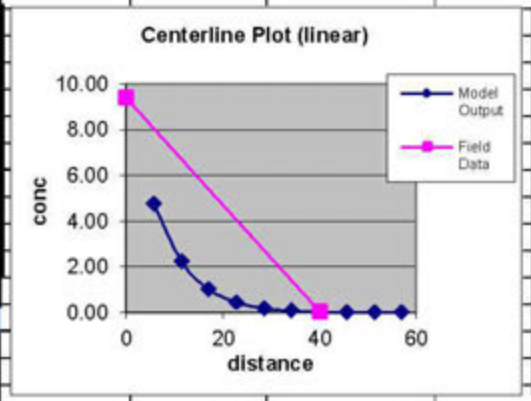
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
9.4	9.70E+01	1.26E+01	5.82E-01	0.0019	91	5	859

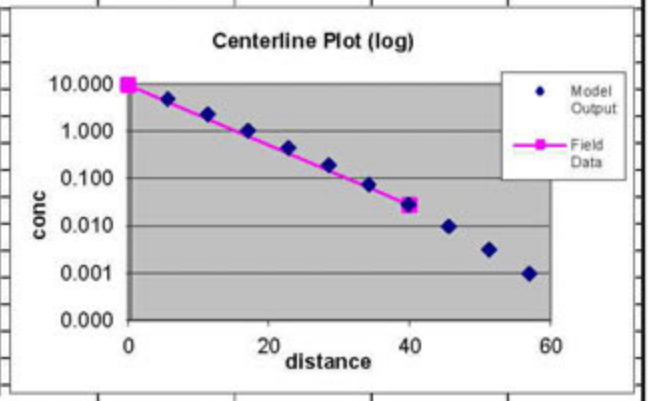
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
4.00E-01	0.00236	0.42	1.537	12	5.00E-03	1.219571429	0.001842958

Point Concentration

x(ft)	y(ft)	z(ft)
40	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	40	0	0
at	859	days =	0.027 mg/l





	AREAL MODEL	CALCULATION DOMAIN								
	Length (ft)	57								
	Width (ft)	91								
	5.7	11.4	17.1	22.8	28.5	34.2	39.9	45.6	51.3	57
91	0.000	0.008	0.015	0.013	0.009	0.005	0.002	0.001	0.000	0.000
45.5	2.371	1.118	0.517	0.233	0.101	0.042	0.016	0.006	0.002	0.001
0	4.742	2.220	1.004	0.439	0.184	0.073	0.027	0.010	0.003	0.001
-45.5	2.371	1.118	0.517	0.233	0.101	0.042	0.016	0.006	0.002	0.001
-91	0.000	0.008	0.015	0.013	0.009	0.005	0.002	0.001	0.000	0.000

Field Data:			
	Centerline C Concentration	9.4	0.027
	Distance from Source	0	40

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Newtown Square, PA		
Date:	4/15/2016	Prepared by:	MIG Consulting LLC
		Contaminant:	MTBE (MW-1 to MW-10) plume length

NEW QUICK_DOMENICO.XLS

SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

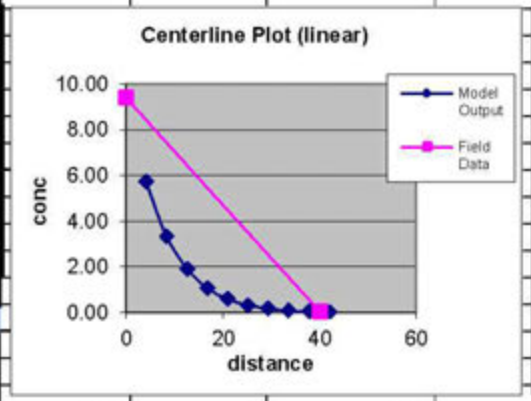
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
9.4	9.70E+01	1.26E+01	5.82E-01	0.0019	91	5	859

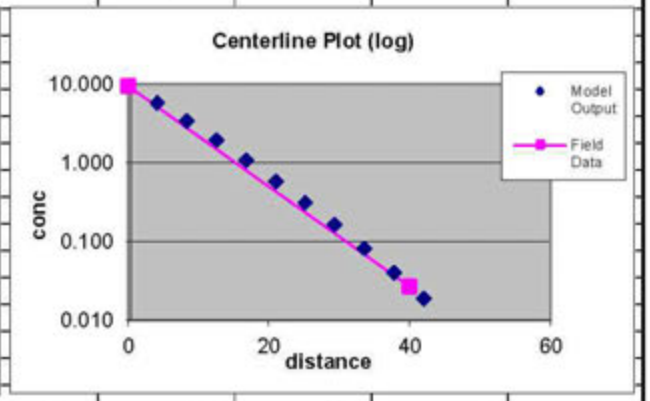
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
4.00E-01	0.00236	0.42	1.537	12	5.00E-03	1.219571429	0.001842958

Point Concentration

x(ft)	y(ft)	z(ft)
42	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	42	0	0
at	859	days =	0.019 mg/l





	AREAL MODEL	CALCULATION DOMAIN								
	Length (ft)	42								
	Width (ft)	91								
	4.2	8.4	12.6	16.8	21	25.2	29.4	33.6	37.8	42
91	0.000	0.003	0.010	0.015	0.014	0.012	0.008	0.005	0.003	0.002
45.5	2.862	1.667	0.952	0.539	0.301	0.165	0.088	0.046	0.023	0.011
0	5.724	3.329	1.884	1.048	0.573	0.306	0.160	0.081	0.040	0.019
-45.5	2.862	1.667	0.952	0.539	0.301	0.165	0.088	0.046	0.023	0.011
-91	0.000	0.003	0.010	0.015	0.014	0.012	0.008	0.005	0.003	0.002
Field Data:	Centerline C Concentration			9.4	0.027					
	Distance from Source			0	40					

DOMENICO

SPREADSHEET ANALYTICAL MODEL

MANUAL

Weixing Tong, Ph. D. and Yue Rong, Ph. D.

Underground Storage Tank Section
California Regional Water Quality Control Board - Los Angeles Region
320 West 4th Street, Suite 200, Los Angeles, CA 90013

December 1, 1999

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1.0 Introduction

Domenico analytical model (1987) presented in this manual is an analytical solution to the advection-dispersion partial-differential equation of organic contaminant transport processes in groundwater as shown in section below. The model contains one dimensional groundwater velocity, longitudinal, transverse, and vertical dispersion, the first order degradation rate constant, finite contaminant source dimensions, the steady state source condition, and the estimated concentration at the plume centerline. The analytical solution form is programmed into a Microsoft Excel spreadsheet. The analytical model is applied to estimate the plume length for dissolved organic contaminant in groundwater. The use of the analytical model requires contaminant spatial concentration data at a minimum of one source well and one to two downgradient wells. The groundwater data must show a reasonable plume pattern (i.e., contaminant concentration is highest in the source well and gradually decreasing in the downgradient monitoring wells). Model is calibrated by adjusting three model input parameters to fit groundwater concentration spatial pattern based on the spatial concentration distribution data. The model after calibration is then used to predict the horizontal plume length in groundwater. Prior to applying the spreadsheet model and interpreting the model results, understanding of model assumptions is strongly advised.

2.0 Domenico Analytical Model

The Domenico analytical model is based on the advection-dispersion partial-differential equation for organic contaminant transport processes in groundwater as described below (Domenico and Robbins 1985):

$$\frac{\partial C}{\partial t} = D_x \frac{\partial^2 C}{\partial x^2} + D_y \frac{\partial^2 C}{\partial y^2} + D_z \frac{\partial^2 C}{\partial z^2} - v \frac{\partial C}{\partial x} \qquad (1)$$

Where,

C - contaminant concentration in groundwater (mg/L),
t - time (day),
v - groundwater seepage velocity (ft/day),
x, y, z - coordinates to the three dimensions (ft),
D_x, D_y, D_z - dispersion coefficients for the x, y, z dimensions (ft^2/day), respectively.

To solve equation (1) analytically, under conditions of the steady-state source and finite continuous source dimension with one-dimensional groundwater velocity, three-

dimensional dispersion, and a first order degradation rate constant, the analytical solution can be expressed as (Domenico 1987):

$$\frac{C_x}{C_0} = \exp\left\{\frac{x}{2\alpha_x}\left[1-\left(1+\frac{4\lambda\alpha_x}{\upsilon}\right)^{\frac{1}{2}}\right]\right\} erf\left[\frac{Y}{4(\alpha_y x)^{\frac{1}{2}}}\right] erf\left[\frac{Z}{4(\alpha_z x)^{\frac{1}{2}}}\right] \qquad (2)$$

Where,

C_x - contaminant concentration in a downgradient well along the plume centerline at a distance x (mg/L),
C_0 - contaminant concentration in the source well (mg/L),
x - centerline distance between the downgradient well and source well (ft),
α_x, α_y, and α_z - longitudinal, transverse, and vertical dispersivity (ft), respectively, $D_x=\alpha_x\times v$, $D_y=\alpha_y\times v$, $D_z=\alpha_z\times v$,
λ - degradation rate constant (1/day), $\lambda=0.693/t_{1/2}$ (where $t_{1/2}$ is the degradation half-life of the compound).
v - groundwater velocity (ft/day),
Y - source width (ft),
Z - source depth (ft),
erf - error function,
exp - exponential function.

The Domenico Analytical Model assumes:

(1) The finite source dimension,
(2) The steady state source,
(3) Homogeneous aquifer properties,
(4) One dimensional groundwater flow,
(5) First order degradation rate,
(6) Contaminant concentration estimated at the centerline of the plume,
(7) Molecular diffusion based on concentration gradient is neglected,
(8) No retardation (e.g., sorption) in transport process.

Understanding model assumptions is crucial to simulate transport process for a specific contaminant in groundwater. For example, MTBE has a very low potential of being sorbed onto soil particles due to its low K_{oc} value and therefore the No. 8 assumption above may not be an influential factor. Whereas, PCE has relatively high retardation potential and the model described in this manual needs to be modified before it can be applied for simulating PCE transport process in groundwater.

3.0 Estimation of Centerline Distance

One of the conditions for using Domenico Analytical Model is that the selected downgradient monitoring well must be along the plume centerline. In most contamination cases, downgradient monitoring wells may be off the centerline. In order to apply Domenico Analytic Model to these cases, the distance between these off-centerline wells and source wells must be converted to the centerline distance.

In this manual, an ellipse trigonometry method is used to convert an off-centerline distance to a centerline distance. The method is based on an assumption about the contaminant plume geometry, which can be described as an ellipse shape (Figure 1). This ellipse shape is idealized and assumed based on the observations that the plume migrates fastest along groundwater flow direction and the longitudinal dispersivity is greater than transverse dispersivity in general. This assumption is consistent with the shape in a similar study by Martin-Hayden and Robbins (1997).

Based on the assumption of the ellipse plume shape, the following offers the calculation of converting a distance from an off-centerline well to a centerline well. First, it is assumed that (1) the ellipse width = 0.33 ellipse length (since most studies assume $\alpha_y=0.33\alpha_x$) (the ellipse length/width ratio can be adjusted based on the field data collected from every individual site) and (2) the ellipse is the contaminant isoconcentration line.

The equation for an ellipse with a horizontal major axis:

$$\frac{X^2}{a^2}+\frac{Y^2}{b^2}=1 \qquad (3)$$

Where, a = the length of the major axis, b = the length of the minor axis, $a > b > 0$. X and Y are the coordinates to the x and y dimension, respectively. If the source well is assumed at close to one end of the ellipse and one downgradient well located on the ellipse (see Figure 1) with an off-centerline distance L', given the angle θ, the centerline distance can be calculated as follows.

Since $b = 0.33 \times a$, $x_1 = \text{Cos}\ \theta \times L' - a$, $y_1 = \text{Sin}\ \theta \times L'$, where θ = the angle between off-centerline and centerline ($\theta < 90°$) and $2a$ = the distance (x) between source well and projected downgradient centerline well on the isoconcentration line.

Therefore,

$$\frac{(Cos\theta \times L' - a)^2}{a^2}+\frac{(Sin\theta \times L')^2}{(0.33 \times a)^2}=1$$

$$(Cos\theta \times L' - a)^2 + 9.18 \times (Sin\theta \times L')^2 = a^2$$

$$(Cos\,\theta \times L')^2 + 9.18 \times (Sin\,\theta \times L')^2 = 2 \times a \times Cos\,\theta \times L'$$

$$X = 2a = \frac{Cos^2\theta \times L' + 9.18 \times Sin^2\theta \times L'}{Cos\theta} = L'(Cos\theta + 9.18 \times Tan\theta \times Sin\theta) \qquad (4)$$

($\theta < 90°$)

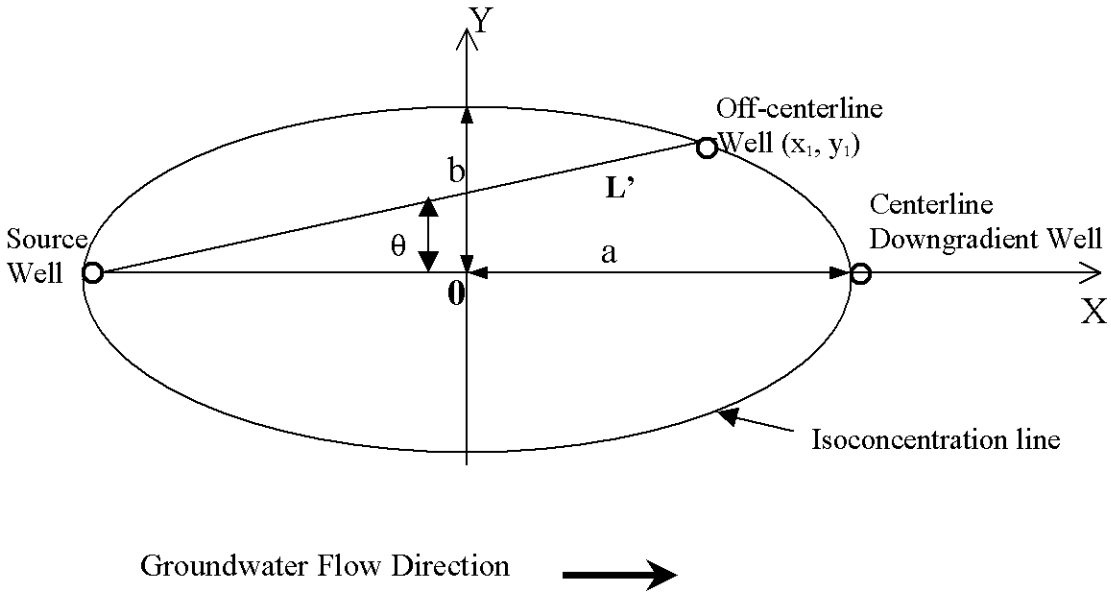


Figure 1. Plane view of regular plume geometry and groundwater monitoring system

4.0 Spreadsheet Analytical Model

The analytical model can be applied to estimate the plume length for organic contaminant in groundwater. Figure 2 presents a flowchart of the analytical model application. First, groundwater monitoring data provide concentrations at the source well and at one or two downgradient wells (known C_0, C_1, and X_1, where C_1 = downgradient well concentration, X_1 downgradient well distance from the source well). Second, the ellipse trigonometry method is used to convert the off-centerline distance to centerline distance. Third, the field data are plotted on semi-logarithmic chart (C_1/C_o vs. X_1). Fourth, the known C_0, C_1, and X_1 are used to choose values for model parameters α_x, ν, and λ by trial and error to fit the data points on the plot generated in step three. Fifth, the calibrated values of the parameters α_x, ν, and λ are to be used to predict the concentration C_x at a downgradient distance x. The distance x is the plume length at the plume centerline.

Model Flowchart

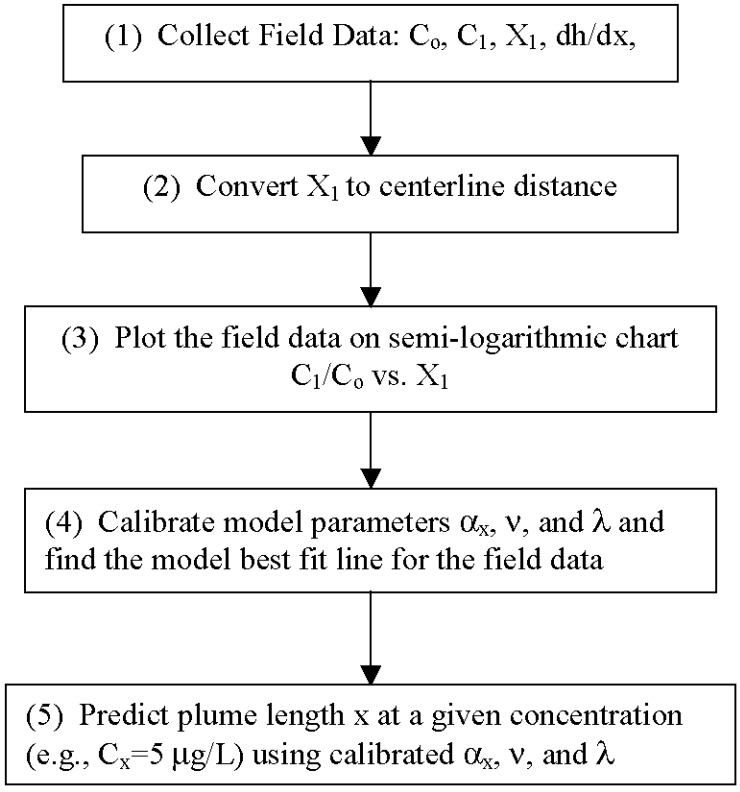


Figure 2. Domenico Analytic Model Flowchart

The Domenico Analytical Model solution form has been programmed into a user-friendly spreadsheet in Microsoft Excel (version 7.0). The groundwater monitoring data from a

specific site are used to determine C_0, C_1, X_1, C_2, and X_2, which are plotted on a semi-logarithmic chart (C_1/C_o vs. X_1, C_2/C_o vs. X_2, etc.). By trial and error method, the model parameters α_x, ν, and λ are altered within the reasonable ranges until a best fit curve to the spatial concentration distribution field data is identified. A plot is used to visually fit the field data (see example in Figure 4, Section 7.0). After a "best fit" curve is established, the calibrated values of α_x, ν, and λ are used to predict the concentration C_x at a downgradient distance x. The distance x is the plume length at the plume centerline. An example of Excel spreadsheet is demonstrated in Table 6, Section 7.0.

5.0 Sensitivity Analysis

A sensitivity analysis is conducted for the Domenico Analytical Model in the same way as presented in Rong et al. (1998). Model runs under the condition of varying input parameter values, one at a time, within reasonable ranges. Then model outputs from various input values are compared with the "baseline" cases. The sensitivity analysis results, as presented in Table 1, indicate that model output is sensitive to model input parameters α_x, ν, x, and λ. Coincidentally, these four parameters are used to calibrate the model by changing the values of these parameters to fit in the field data.

6.0 Model Input Parameters

As indicated in sensitivity analysis, model input parameters α_x, ν, and λ would have great impacts on model output. Therefore, selections of these parameters have great effects to the model outcome. This section provides a summary of those parameter values from available references.

6.1 Dispersivity (α_x)

One of the primary parameters that control the fate and transport of contaminant is dispersivity of the aquifer. Domenico Analytic Model uses longitudinal (α_x), transverse (α_y), and vertical (α_z) dispersivities to describe the mechanical spreading and mixing caused by dispersion. The spreading of a contaminant caused by molecular diffusion is assumed to be small relative to mechanical dispersion in groundwater movement and is ignored in the model. Various dispersivity values have been used in previous studies. Table 2 is a summary of the three dimensional dispersivity values in literatures.

Table 1. Sensitivity Analysis Results for Domenico Analytical Model

Input Parameter	Factor of Input Change from Baseline	Model Output C_w (µg/L)	Factor of C_w Difference from Baseline
α_x (ft)			
1 (baseline)	-	5	-
4	4	1	0.2
0.1	0.1	50	10
ν (ft/day)			
0.1 (baseline)	-	5	-
0.5	5	1,020	204
0.05	0.5	0.008	0.0016
x (ft)			
670 (baseline)	-	5	-
335	0.5	268	53.6
1,000	1.49	0.13	0.026
Y (ft)			
20 (baseline)	-	5	-
10	0.5	3	0.6
30	1.5	7	1.4
Z (ft)			
5 (baseline)	-	5	-
1	0.2	1	0.2
10	2	10	2
λ (1/day)			
0.001 (baseline)	-	5	-
0.002	2	0.0076	0.00152
0.0005	0.5	139	27.8

6.2 Groundwater Velocity (ν)

Groundwater velocity in the geologic material is controlled by hydraulic conductivity, hydraulic gradient in the vicinity of the study area, and effective porosity of the geologic material. Based on the Darcy's Law, the average groundwater velocity can be calculated using the following equation:

$$\nu = K \times \frac{dh}{dx} \times \frac{1}{n_e} \qquad (5)$$

Table 2. Dispersivity Values In Literature

Dispersivity Values	Reference
α_x = 0.1 X α_y = 0.33 α_x α_z = 0.056 α_x	Gelhar and Axness (1981)
α_x = 0.1 X α_y = 0.1 α_x α_z = 0.025 α_x	Gelhar et al. (1992)
α_x = 14 – 323 (ft) α_y = 0.13 α_x α_z = 0.006 α_x	USEPA (1996)
α_x = 16.4 (ft) α_y = 0.1 α_x α_z = 0.002 α_x	Martin-Hayden and Robbins (1997)
α_x = 0.33 – 328 (ft) α_y = 0.1 α_x α_z = 0.1 α_x	AT123D (1998)

X = the distance to the downgradient well (ft), α_x = the longitudinal dispersivity (ft), α_y = the transverse dispersivity (ft), α_z = the vertical dispersivity (ft).

Where,

ν - Groundwater velocity (ft/day)
K - Hydraulic conductivity (ft/day)
dh/dx - Hydraulic gradient (ft/ft)
n_e - Effective porosity (dimensionless)

The groundwater hydraulic gradient can be determined from field data. The hydraulic conductivity and effective porosity are also preferably obtained from site-specific testing. The hydraulic conductivity and effective porosity are mainly affected by the geologic material grain size. In cases where site-specific data are absent, to estimate groundwater velocity, the lithologic boring logs can be analyzed and hydraulic conductivity and effective porosity can be estimated to be consistent with value ranges from published references (see Tables 3 and 4).

Table 3. Hydraulic Conductivity Range for Various Classes of Geologic Materials

Material	Hydraulic Conductivity, ft/day			
	Todd 1980	Bouwer 1978	Freeze & Cherry 1979	Dawson & Istok 1991
Gravel	$5 \times 10^{2} - 1 \times 10^{3}$	$3 \times 10^{2} - 3 \times 10^{3}$	$3 \times 10^{2} - 3 \times 10^{5}$	$3 \times 10^{3} - 3 \times 10^{5}$
Coarse Sand	1×10^{2}	$7 \times 10^{1} - 3 \times 10^{2}$	$3 \times 10^{-2} - 3 \times 10^{3}$	
Medium Sand	4×10^{1}	$2 \times 10^{1} - 7 \times 10^{1}$		$3 - 3 \times 10^{3}$
Fine Sand	10^{1}	$3 - 2 \times 10^{1}$		$3 \times 10^{-2} - 3$
Silt and Clay	$10^{-3} - 3 \times 10^{-1}$	$3 \times 10^{-8} - 3 \times 10^{-2}$	$3 \times 10^{-7} - 3 \times 10^{-3}$	$3 \times 10^{-6} - 3 \times 10^{-1}$

Table 4. Total Porosities and Effective Porosities of Well-sorted, Unconsolidated Formations

Material	Diameter (mm)	Total Porosity (%)	Effective Porosity (%)
Gravel			
Coarse	64.0 – 16.0	28	23
Medium	16.0 – 8.0	32	24
Fine	8.0 – 2.0	34	25
Sand			
Coarse	2.5 – 0.5	39	27
Medium	0.5 – 0.25	39	28
Fine	0.25 – 0.162	43	23
Silt	0.162 – 0.004	46	8
Clay	<0.004	42	3

Source: Roscoe Moss Company, 1990

6.3 Degradation Rate Constant (λ)

Table 5 lists degradation constant and half-life for various hydrocarbon compounds in soil and groundwater (Howard, et al., 1991).

7.0 Case Study

A case study example is included in this manual to demonstrate the modeling procedures for estimating MTBE plume length. The case study is a real case from an underground storage tank site in the City of Los Angeles, California. Figure 3 shows the site layout and

Table 5. Degradation Constant and Half-Life (Howard et al., 1991)

Compound Names	t 1/2 =half-life	Soil		Groundwater	
	λ =degradation const	high	low	high	low
Benzene	t 1/2 (day)	16	5	730	10
	λ (1/day)	0.0433125	0.1386	0.000949315	0.0693
Carbon Tetrachloride	t 1/2 (day)	365	183	365	7
	λ (1/day)	0.0018986	0.00379	0.00189863	0.099
Chloroethane	t 1/2 (day)	28	7	56	14
	λ (1/day)	0.02475	0.099	0.012375	0.0495
Chloroform	t 1/2 (day)	183	28	1825	56
	λ (1/day)	0.0037869	0.02475	0.000379726	0.012375
Dichlorodifluoromethane (Freon 12)	t 1/2 (day)	183	28	365	56
	λ (1/day)	0.0037869	0.02475	0.00189863	0.012375
Dichloromethane (Methylene Chloride)	t 1/2 (day)	28	7	56	14
	λ (1/day)	0.02475	0.099	0.012375	0.0495
1,1-Dichloroethane (1,1-DCA)	t 1/2 (day)	154	32	154	64
	λ (1/day)	0.0045	0.02166	0.0045	0.0108281
1,2-Dichloroethane (1,2-DCA)	t 1/2 (day)	183	100	365	100
	λ (1/day)	0.0037869	0.00693	0.00189863	0.00693
1,1-Dichloroethylene (1,1-DCE)	t 1/2 (day)	183	28	132	56
	λ (1/day)	0.0037869	0.02475	0.00525	0.012375
1,2-Dichloroethylene (1,2-DCE)	t 1/2 (day)	183	28	2890	56
	λ (1/day)	0.0037869	0.02475	0.000239792	0.012375
Ethylbenzene	t 1/2 (day)	10	3	228	6
	λ (1/day)	0.0693	0.231	0.003039474	0.1155
Methyl t-buthyl ether (MTBE)	t 1/2 (day)	183	28	365	56
	λ (1/day)	0.0037869	0.02475	0.00189863	0.012375
tert-Butyl alchohol (TBA)	t 1/2 (day)	200	15	365	56
	λ (1/day)	0.003465	0.0462	0.00189863	0.012375
1,1,1,2-Tetrachloroethane (1112-PCA)	t 1/2 (day)	66.8	0.7	66.8	0.7
	λ (1/day)	0.0103743	0.99	0.010374251	0.99
1,1,2,2-Tetrachloroethane (1122-PCA)	t 1/2 (day)	45	0.4	45	0.4
	λ (1/day)	0.0154	1.7325	0.0154	1.7325
Tetrachloroethylene (PCE)	t 1/2 (day)	365	183	730	365
	λ (1/day)	0.0018986	0.00379	0.000949315	0.0018986
Toluene	t 1/2 (day)	22	4	28	7
	λ (1/day)	0.0315	0.17325	0.02475	0.099
1,1,1-Trichloroethane (1,1,1-TCA)	t 1/2 (day)	273	140	546	140
	λ (1/day)	0.0025385	0.00495	0.001269231	0.00495
1,1,2-Trichloroethane (1,1,2-TCA)	t 1/2 (day)	365	135	730	135
	λ (1/day)	0.0018986	0.00513	0.000949315	0.0051333
Trichloroethylene (TCE)	t 1/2 (day)	365	183	1642.5	321
	λ (1/day)	0.0018986	0.00379	0.000421918	0.0021589
Trichlorofluoromethane (Freon 11)	t 1/2 (day)	365	183	730	365
	λ (1/day)	0.0018986	0.00379	0.000949315	0.0018986
1,1,2-Trichloro-trifluoroethane (Freon 113)	t 1/2 (day)	365	183	730	365
	λ (1/day)	0.0018986	0.00379	0.000949315	0.0018986

Vinyl chloride (VC)	t 1/2 (day)	183	28	2890	56
	λ (1/day)	0.0037869	0.02475	0.000239792	0.012375
m-Xylene	t 1/2 (day)	28	7	56	14
	λ (1/day)	0.02475	0.099	0.012375	0.0495
o-Xylene	t 1/2 (day)	28	7	365	14
	λ (1/day)	0.02475	0.099	0.00189863	0.0495
p-Xylene	t 1/2 (day)	28	7	56	14
	λ (1/day)	0.02475	0.099	0.012375	0.0495
	λ = 0.693 / t 1/2				

the site groundwater contour map. The modeling procedures are described in details as the following steps:

Step 1:

Find one source monitoring well (usually in the source area with highest MTBE concentration) and one to two downgradient well(s) along or close to the centerline with decreasing MTBE concentrations.

As shown on the Figure 3, the groundwater flow direction is towards northwest with a gradient of 0.02 ft/ft. The monitoring well MW-3 had the highest MTBE concentration (25,000 µg/L). Monitoring wells MW-1 and MW-4 are downgradient wells with declining MTBE concentrations (3,600 µg/L and 67 µg/L, respectively). The boring logs for these monitoring wells indicate that soil materials are predominantly poorly graded sands.

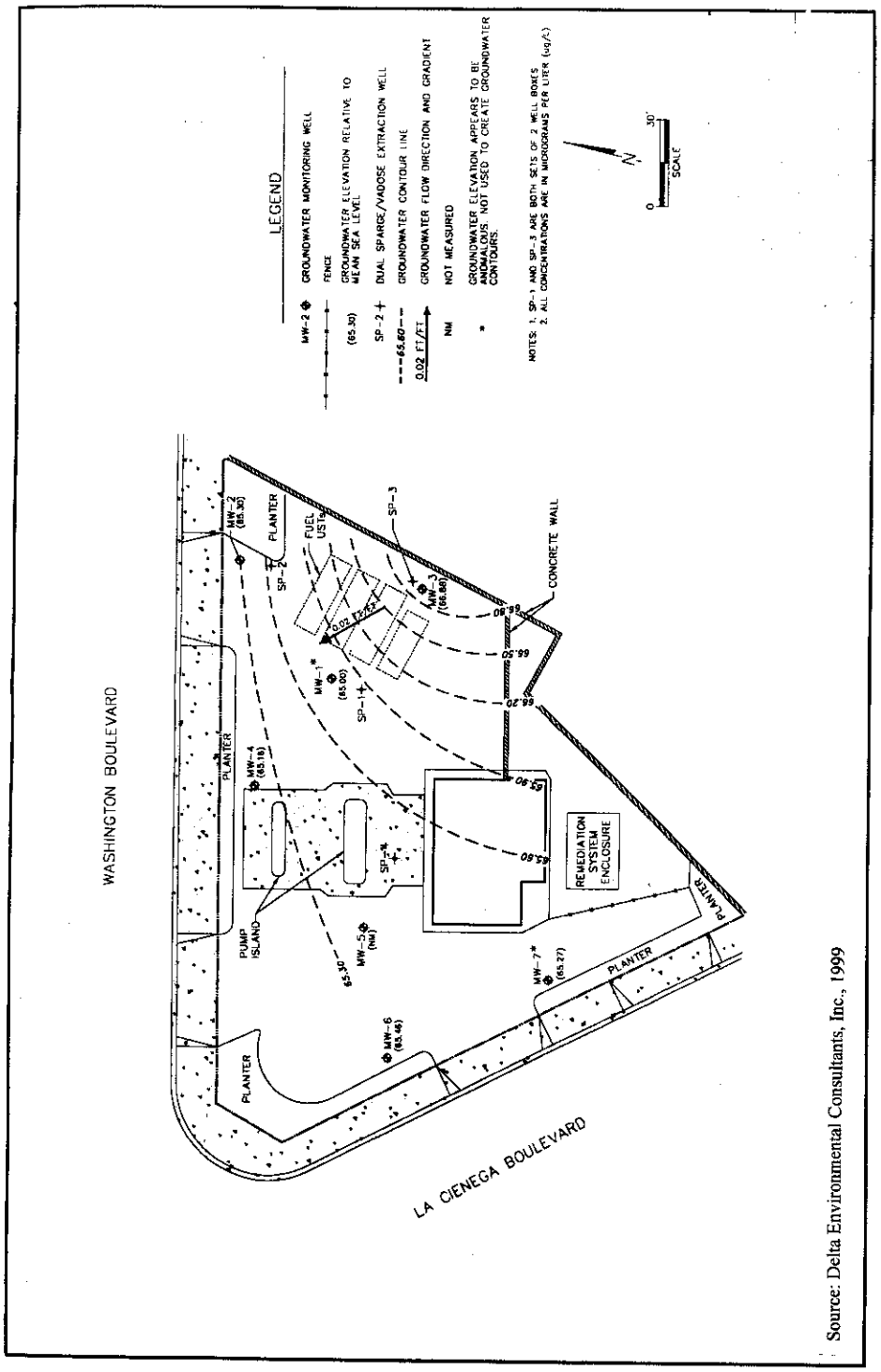
Step 2:

Measure the distance between the source well and the downgradient wells; measure the off-centerline angle if any. Use the ellipse trigonometry method presented in this manual to estimate centerline distance. Use equation (4): given L' = 90 ft, θ = 15°,

$$X = L'(Cos\theta + 9.18 \times Tan\theta \times Sin\theta)$$
$$= 144 \text{ (ft)}$$

Fill out the form below:

Case Name:	**Source Well**	**Downgradient Wells**	
	MW-3	MW-1	MW-4
MTBE Concentration [µg/L]	25,000	3,600	67
Distance to Source Well [ft]	-	45	90
Off-centerline Angle θ [degree]	-	0	15
Centerline Distance to Source Well [ft]	-	45	144



Source: Delta Environmental Consultants, Inc., 1999

Figure 3. Site map for sample case

Table 6. Model Parameter And Field Data For Sample Case

Model Parameters

Source well concentration	C_0	25,000	ug/L
X axis dispersivity	α_x	4.00	ft
Y axis dispersivity	α_y	1.32	ft
Z axis dispersivity	α_z	0.22	ft
Groundwater velocity	v	0.25	ft/day
Source dimension Y	Y	20	ft
Source dimension Z	Z	5	ft
First order attenuation rate	λ	0.005	1/day
Predicted plume length	X	264	ft
Plume edge concentration	C_x	5	ug/L

Field Data

	Well Name	Centerline Distance in ft, X	MTBE Concentration, ug/L
Source Well	MW-3	0	25,000
Downgradient Well 1	MW-1	45	3,600
Downgradient Well 2	MW-4	144	67

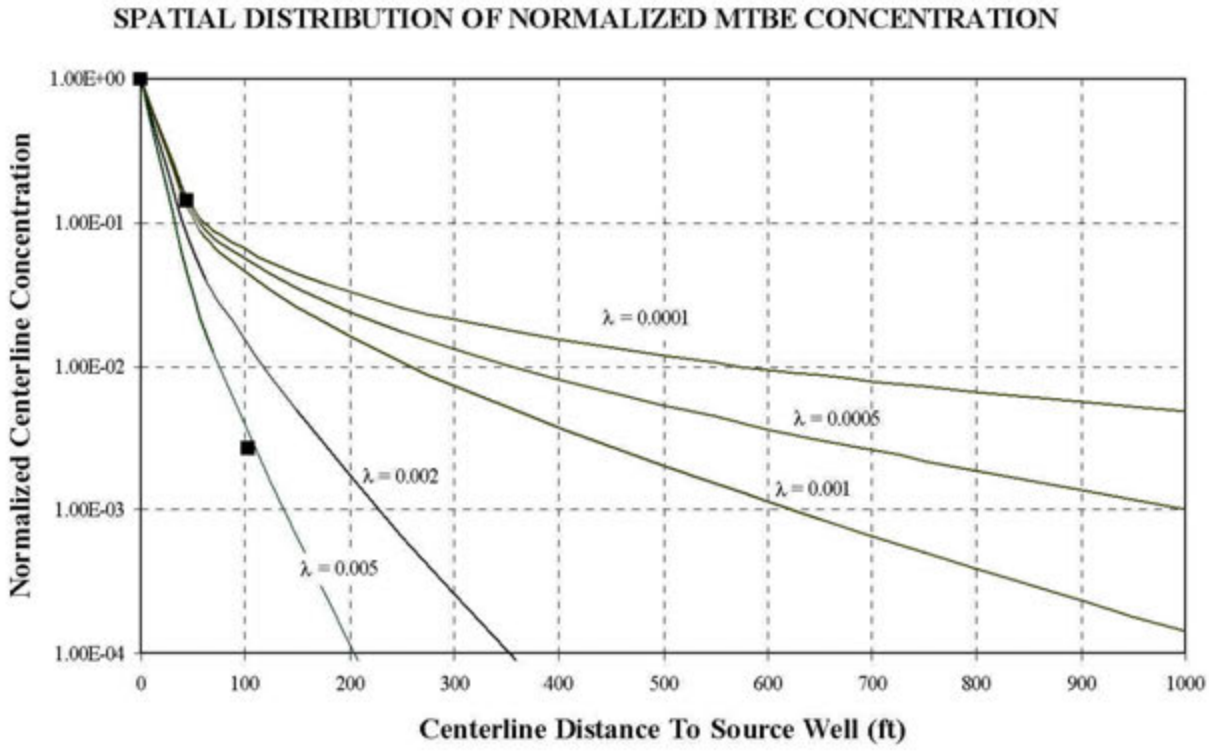


Figure 4. Spatial distribution of normalized MTBE concentration for model case study

Step 3:

A. Open the Microsoft Excel file "Domenico," (included in this manual)
B. Use "distance" sheet to calculate centerline distance to source well,
C. Use "MTBE" sheet to find the best-fit curve on the plot of concentration versus distance:
   - Enter case information: case name, address and ID
   - Enter case data: C_0 = 25,000 µg/L, X_1 = 45 ft, C_1 = 3,600 µg/L, X_2 = 144 ft, C_2 = 67 µg/L
   - Manipulate model parameters (α_x: 0.35 – 4 ft, ν: 0.01 – 0.5 ft/day, and λ: 0.1 – 0.001 /day) to find best-fit curve (Based on references in Table 2, the following value ranges are used in this case study: α_x = [0.35 ft, 4 ft], α_y = [$0.33\alpha_x$, $0.65\alpha_x$], $\alpha_z = 0.056\alpha_x$) (see Table 6 for model data entry and Figure 4 for plot)
   - Record plume parameters after the "best fit" curve is established

     α_x = 4 ft; λ = 0.005 1/day; ν = 0.25 ft/day; dh/dx = 0.02 (ft/ft)

D. Change distance X value until C_X = 5 µg/L
E. Record X value: MTBE plume length X = 264 ft
F. Save the file

8.0 Troubleshooting for the Spreadsheet Analytical Model

Trouble 1: By changing the values of either α_x, ν, or λ, the model calculation and curve on the chart do not response.
Solution: Go to "Add-In" option in Excel under the "Tools" menu bar and select the "Analysis Toolpak."

Trouble 2: Some field data do not show on the chart
Solution: Change the Y axis range by double clicking the Y axis, and add one or two more decimals for minimum range in Scale sheet.

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User's Manual for the Quick Domenico Groundwater Fate-and-Transport Model

Environmental Cleanup and Brownfields

Version No. 3b

28 February 2014

pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

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Preface

This Quick Domenico user's manual documents the application of QD to groundwater fate-and-transport problems and is intended to encourage more consistent use of the model. It should help users appreciate the many factors that come into play with modeling. It has been written with an emphasis on the use of sound science and a conservative approach in fate-and-transport analyses. At the same time, it is recognized that the solution of these problems is limited by the data available. Some professional judgment is always involved in deciding how to apply QD to each site.

The contents of this manual reflect the experience of the Department of Environmental Protection with performing and reviewing fate-and-transport models. This document does not constitute formal DEP guidance. The responsibility for submitting an acceptable fate-and-transport analysis rests with the licensed professional geologist who seals the report submitted to DEP.

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1. Introduction

1.1. Purpose of Quick Domenico

The Quick Domenico (QD) spreadsheet was developed by the Pennsylvania Department of Environmental Protection (DEP) to solve the groundwater transport equation for dissolved contaminant plumes. It incorporates a constant planar source, one-dimensional advection, three-dimensional dispersion, adsorption, and first-order decay. Solutions are presented at a point, on the centerline, and in a two-dimensional plan-view grid at any simulation time. QD is intended as a simple tool made available to the regulated community for fate-and-transport analyses.

Fate-and-transport modeling, including QD, has many important applications in site cleanups.

- Modeling is used to estimate the length of contaminant plumes to assess potential offsite impacts.
- QD predicts the plume area to determine what downgradient properties should be included in an environmental covenant.
- Fate-and-transport analyses are used to assess plume stability; that is, whether contamination will migrate in the future.
- Domenico-type models may be applied to sites for evaluating natural attenuation as a remediation strategy.
- The DEP spreadsheet SWLOAD5 implements the QD solution to indicate if a groundwater plume diffusing into surface water may cause an exceedence of water quality standards.

Fate-and-transport modeling is commonly performed for Act 2 (voluntary cleanup) and corrective action (storage tank) sites, and models are submitted for DEP review and approval. Fate and transport analyses are referred to and/or required throughout the Act 2 and Act 32 regulations (e.g., Title 25 Pa. Code Sections 250.204(f)(5) & (g), 250.303(b)(1)(ii), 250.309(c), 250.406(c), 250.408(a), 250.604(b), 250.702(b)(3)(i), 250.704(d)(2), and 250.707(a)(2)(x)(B) ; Section 245.313(b)(4)). A general discussion of groundwater fate-and-transport analyses is presented in the *Land Recycling Program Technical Guidance Manual*, Section IV.A.2. The TGM outlines the approach to modeling and DEP's reporting expectations.

Documentation is available for other Domenico-type models including EPA's BIOSCREEN, FootPrint, and BIOCHLOR. Some states have also developed documentation for their Domenico models (e.g., California). DEP has presented training on fate-and-transport modeling [*URS*, 2008]. This manual replaces DEP's QD "Introduction" document (last revised in August 2011).

Fate-and-transport analyses involve interpretations of hydrogeological conditions and they require the oversight of a licensed professional geologist. The environmental professional who submits a model to DEP is entirely responsible for using it correctly, selecting appropriate input parameter values, properly justifying his or her methods, and adequately documenting the work. Following the recommendations in this manual does not guarantee that the model will be successful or that it will be approved by DEP.

1.2. Overview of Manual

The objective of this *User's Manual for Quick Domenico* is to encourage better modeling by QD users and to improve the consistency of QD model reviews by DEP.

Quick Domenico is a solution to the solute transport equation published by *Domenico* [1987]. Its mathematical derivation is described in Appendix 1 and references therein. Section 3 defines and explains the variables in this problem (i.e., the model input parameters). More detailed discussions of two important variables, hydraulic conductivity and mechanical dispersivity, are found in Appendix 2 and Appendix 3. The QD output format is outlined in Section 4.

Procedures for calibrating Domenico models are lacking in most available documentation, and this is provided in Section 5. Section 6 describes how to run a predictive model. Two example problems are given in Appendix 4. Although *Domenico* [1987] presented an analytical solution, it is important to recognize that it is not an exact solution. Section 2 and Appendix 1 offer a critical review of the assumptions and limitations of QD modeling as well as common user errors.

1.3. System Requirements

QD may be downloaded from DEP's Land Recycling Program website. QD is written as a Microsoft Excel spreadsheet. It requires Excel version 5.0 or later. The Analysis ToolPak must be running. For Microsoft Excel 2010, do the following:

1. Click the **File** tab, click **Options**, and then click the **Add-Ins** category.
2. In the **Manage** box at the bottom, select **Excel Add-ins** and then click **Go**.
3. In the **Add-ins** box, select **Analysis ToolPak**, and then click **OK**.

2. QD Applicability

The solution of the differential equation for solute transport requires several key assumptions, and it is important to be aware of these when using QD. In addition, QD is not applicable to all groundwater contaminant transport problems, and there are some geological restrictions to its use.

Perhaps the most important limitation to any fate-and-transport analysis is the adequacy of the site data to run and calibrate the model. When data are sparse, extremely conservative input values must be used and the results may give very weak constraints. On the other hand, a properly applied and calibrated QD model can successfully simulate conditions at the site and predict contaminant distributions.

QD model assumptions and mathematical approximations are described in Appendix 1. Four critical assumptions are that aquifer properties are homogeneous and isotropic, the groundwater flow field is homogeneous and unidirectional, groundwater flow is in steady state, and the contaminant source remains constant in time. The following two sections discuss limitations to applying the model and common user errors.

2.1. Site Limitations

The user must consider conditions such as the local hydrogeology, contaminants of concern, and remedial activities to determine the applicability of QD to the site.

- QD was developed for aquifers in porous media. The conceptual site model should support the decision that this condition has been met. QD is *absolutely not* applicable to karst formations. QD modeling of contaminant transport in fractured bedrock should be performed with care and it must include calibration.

- QD simulates only the first-order decay of dissolved contaminants during transport. For instance, it is appropriate for petroleum hydrocarbons and polycyclic aromatic hydrocarbons (PAHs), and it can also represent radioactive decay. It does not account for the formation of daughter products from parent compounds (e.g., trichloroethylene → cis-1,2-dichloroethylene → vinyl chloride). Biochlor is a preferable model for chlorinated VOCs.

- QD is intended for modeling organic contaminants. Nonreactive inorganic solutes do not experience natural degradation, and the first-order decay constant (λ) should be set to zero. The sorption of inorganics on soil particles is a complex process which is not adequately represented by the linear isotherm of QD. Therefore, the user should also input the adsorption parameters (K_{oc} and f_{oc}) as zero when modeling inorganics.

- QD is applicable to problems of natural attenuation of contaminants. Extreme caution should be exercised with its use at sites where there has been active remediation. A calibration to conditions before or during remediation may not be appropriate for the post-remediation period. Likewise, a calibration to onsite wells in the vicinity of the remedial work may not extrapolate to offsite conditions.

- Similarly, QD does not simulate decaying sources. If there is evidence for source decay (as opposed to transport decay) the user should consider using Bioscreen-AT (see Example A4.2).

- Ethanol is now a standard component of gasoline, and it has a significant influence on the fate and transport of petroleum contaminants. Because ethanol degrades faster than other constituents, electron acceptors in the aquifer are depleted, preventing the biodegradation of BTEX and other hydrocarbons. With time and distance, ethanol concentrations in the plume decline, and this makes biodegradation of other contaminants favorable. QD cannot simulate longitudinally variable values of the decay constant (λ). An alternative model is EPA's FootPrint.

- QD cannot be used to model the fate and transport of non-aqueous phase liquids (NAPL), also known as separate phase liquids or free product. However, with adequate supporting information QD can represent the dissolved plume originating from a NAPL source by inputting effective solubilities of the contaminants for the source concentrations.

2.2. Common Errors

DEP has repeatedly seen the following mistakes by QD users. DEP may reject the submitted model and report for any of these reasons.

- **Modeling a plume without any downgradient calibration points within the zone of impact** (see Section 5).
  Under some circumstances extremely conservative models may be accepted without calibrations, but they require careful selection of parameter values. The first-order decay rate should be zero or very low. Calibration is usually essential to a defensible model.

- **Using inconsistent data for calibration, such as well data collected at different times**.
  Contaminant concentrations should be measured at the same time (or period) for the source and calibration wells.

- **Selecting and/or varying input parameters without justification** (see Section 3).
  Values should be based on site-specific data, calibrations, and appropriate literature references. Uncertain parameters must be adequately conservative, and all values must fall within physically plausible ranges.

- **Using an inappropriate degradation rate (λ)** (see Section 3.3).
  A site-specific natural (bulk) attenuation rate may be estimated from onsite contaminant measurements. When using values from Ch. 250, Table 5A (labeled as "degradation coefficient (K)"), which are only representative empirical rates, one must convert from inverse years (yr^{-1}) to inverse days (day^{-1}) for input in QD. The degradation rate should generally be a calibration variable. Conservative models may assume $\lambda = 0$.

- **Choosing an unsupported hydraulic conductivity (K)** (see Section 3.7 and Appendix 2).
  Hydraulic conductivity is ideally based on multiple well tests at the site. Data and solutions for

the conductivity must be fully documented. When using a literature value of K, the choice must be explained and properly referenced. It should be a conservative choice taken from representative values for the hydrostratigraphic unit. When treating K as a calibration variable, its value should be within a reasonable range. We recommend uncertainty analyses to understand the influence of K.

- **Using excessively large dispersivities (α)** (see Section 3.2 and Appendix 3).
  Insofar as dispersivity scales with plume length, users often presume that longer plumes and correspondingly higher dispersivities are always more conservative. However, larger dispersivities can spread the plume out, reducing centerline concentrations. Large values of α may introduce errors in the QD solution (Section A1.3). Dispersivity should be scaled with respect to the distance to the nearest calibration point and/or receptor within the plume.

- **Modeling with QD when groundwater flow is complicated**.
  Groundwater flow should be unidirectional and relatively constant in time.

- **Appling QD to contaminants that degrade to regulated breakdown products**.
  QD is not recommended for chlorinated VOCs. EPA's Biochlor is an alternative for plumes undergoing reductive dechlorination.

- **Using QD for inorganic contaminants**.
  Inorganics may be modeled under certain circumstances. Parameter values must be chosen carefully, and the approach must be justified.

- **Using old data to develop a QD model**.
  The QD solution should be based on recent monitoring data.

- **Demonstrating attainment with QD.**
  A remediator cannot use a fate-and-transport model to demonstrate attainment of a groundwater standard at the point of compliance. Act 2 requires that this be accomplished with the statistical analysis of monitoring well data (Title 25 Pa. Code Section 250.704(b)).

- **Failing to map the observed area of impact**.
  Concentration maps using contemporaneous monitoring well data should be submitted for all contaminants of concern. (Refer, for example, to Title 25 Pa. Code Section 245.313(b)(4)(i).)

- **Failing to plot the modeled plume area on a map, with the centerline shown**.
  The maximum plume extent in plan view should be depicted.

- **Failing to map impacted downgradient properties**.
  All potentially affected properties (both down- and side-gradient), as predicted by the QD solution, should be depicted on the map. This is essential if there is to be an environmental covenant.

- **Submitting a report without the seal of a licensed professional geologist**.
  Fate-and-transport modeling constitutes a subsurface interpretation. A professional seal is required for such analyses under DEP's regulations (e.g., Title 25 Pa. Code Sections 245.314 and 250.408(a)).

3. QD Model Input Parameters

This section describes each of the input parameters in the QD model. The user must ensure that appropriate site-specific values are input for each parameter, as the default selections are not generally applicable, and that the units are correct. We emphasize the selection of conservative values.

The sensitivity of the model to changes in the values is indicated below in a qualitative manner. More attention should be paid to high-sensitivity parameters in the calibration. The sensitivity of the solution should be evaluated by the user for every site model (Section 5.2). Keep in mind that different aspects of the solution (e.g., centerline concentrations, plume length, plume width, mass loading) are not all sensitive to the same parameters. Here sensitivity is indicated with respect to centerline concentrations.

The QD coordinate system is defined as:

- x—flow direction (longitudinal)
- y—perpendicular to flow (transverse)
- z—vertical.

The QD spreadsheet cells have been color-coded to assist in data entry.

- Light green—these cells are for the input parameters
- Light yellow—these cells are locked and they are calculated by the spreadsheet
- Other colors—these cells are used for labels and other information not critical to using QD.

3.1. Source Concentration

Symbol: C_0	**Units:** mg/L	**Sensitivity:** High

The model assumes a uniform, constant aqueous phase source concentration. That is, the contaminant source does not vary spatially, and it does not decay with time. The source takes the form of a vertical plane oriented perpendicular to the groundwater flow direction. It should be located at the downgradient limit of the identified source area. This might be the zone of impacted soils, the extent of LNAPL, the area of maximum groundwater concentrations, the tank field, or the spill area.

The source concentration should be selected from well data that is concurrent with the calibration point data. Therefore, one should not use historic source concentrations and current calibration well concentrations. If C_0 is uncertain (e.g., there are no wells at the source), then it should be a variable, in which case measured values would serve as a lower bound.

If the source concentration has decayed significantly over time, then QD is *not an appropriate model*. Source decay occurs via mass loss from dissolution and other processes. EPA's Bioscreen or the Bioscreen-AT model may be used to simulate an exponentially decaying source; see Example A4.2. Historical data may be used to estimate the decay rate or source half-life. Applying QD to problems where there has been source loss may *not* be conservative.

3.2. Dispersivities

Symbol: α	Units: ft	Sensitivity: High

Dispersion is the process of mechanical mixing of a solute in groundwater. Dispersion is a property of the aquifer, not the contaminant. It causes some spreading of the contamination forward of the advective front as well as laterally. The user inputs three dispersivities: longitudinal (α_x), transverse (α_y), and vertical (α_z).

Dispersivities cannot be measured in the field, and values must be estimated (Appendix 3). It is important to recognize that dispersion is a function of the transport scale; the larger the scale, the larger the dispersion. Therefore, dispersion likely increases with x rather than having a fixed value as in QD.

Several relationships for dispersivity have been published. DEP recommends an initial value of $\alpha_x = 0.1x$ where x is the distance to a calibration point, the nearest receptor, or the plume length, depending on the scale of concern.

The transverse dispersivity is commonly defined as $\alpha_y = 0.1\alpha_x$. Calibrating α_y could be accomplished if there is sufficient site data to delineate the plume width. The vertical dispersivity should be small for conservative modeling ($\alpha_z = 0.001$ ft) as this approximates two-dimensional transport. Larger values of α_z might be used if vertical contaminant profiles support estimation and calibration of downward dispersion of the plume.

Fate and transport modeling has a significant sensitivity to the dispersivities. If dispersivities are zero or are too small, then the modeled plume length and width will be underestimated. If the dispersivities are too large, then the plume will be spread out in an unrealistic manner, reducing the centerline concentrations. A common error is to assume a long plume and consequently a large value of α_x. This is not necessarily a conservative approach, and modeled concentrations at the nearest receptor may be underestimated.

Further information on dispersivities is found in Appendix 3. The mathematical errors associated with excessively large dispersivities are described in Section A1.3.

3.3. Decay Constant

Symbol: λ	Units: day^{-1}	Sensitivity: High

The first-order decay rate represents the degradation of the contaminant as it moves through the aquifer with time. We call this the *transport decay*, and it is distinct from the *source decay*. The decay constant is related to the half-life by $\lambda = 0.693/t_{1/2}$. The degradation rate is a critical parameter because it influences the downgradient change in contaminant concentrations more than any other.

There is a large uncertainty in degradation rates, and actual rates depend on site-specific conditions. Therefore, λ should be a calibration parameter in most QD models. Starting values may be found in the literature [e.g., *Howard et al.*, 1991] or Ch. 250, Appendix A, Table 5A.

However, these are estimated values or ranges based on limited field studies or experiments; the user cannot assume that they reflect conditions at every site. For instance, anaerobic conditions in an aquifer might cause decay rates to be much slower than measured in an aerobic environment. Initial site-specific values may also be estimated from the bulk attenuation rate constant derived from field data [*Newell et al.*, 2002].

When calibrating the model, it is important for the user to be able to recognize source decay and distinguish it from transport decay. Note that the constant-source assumption in QD (zero source decay) means that concentrations throughout the plume will only increase and reach a constant value at steady state. Decay of a source will result in the eventual decline of downgradient concentrations with time, and a calibrated value of λ in QD can be exaggerated. Applying QD to problems with source decay is not conservative. Refer to Example A4.2 for a comparison of models with and without source decay.

If site data do not exhibit transport decay, then the decay constant should be input as zero. When modeling inorganic contaminant transport, $\lambda = 0$.

3.4. Source Width

Symbol: Y	**Units:** ft	**Sensitivity:** Medium

The source width should equal the maximum width of known or inferred groundwater contamination at the site. This could be indicated by impacted soils from sampling or visual observations, the presence of NAPL, or elevated dissolved concentrations in monitoring wells. The source is oriented perpendicular to the direction of groundwater flow in the model.

Centerline concentrations tend to increase with increasing source widths (though this relationship depends on the value of α_y). The source width will control the plume width, so it can be significant for identifying impacted properties cross-gradient to the plume centerline. The source width is critical to the plume mass loading. Therefore, when modeling stream impacts this parameter must be accurate.

3.5. Source Thickness

Symbol: Z	**Units:** ft	**Sensitivity:** Low

The source thickness should equal the maximum depth range of contamination in the aquifer at the source (i.e., below the seasonally high water table). For petroleum contaminants this is the smear zone. The depth of contamination in the saturated zone is best determined using nested wells to vertically delineate the source.

The predicted centerline concentrations and plume length have virtually no sensitivity to the source thickness. However, the source thickness is critical to the plume mass loading. Therefore, when modeling stream impacts this parameter must be defined carefully.

3.6. Time

Symbol: t	Units: days	Sensitivity: Medium

Time is measured from the date of the release. Steady state is achieved when the farthest downgradient concentrations no longer change with increasing time. The user should determine when steady state occurs because thereafter the calibrations and predictions will not be sensitive to the age of the plume. Under typical conditions steady state is realized within a few years. When there is source decay (e.g., in Bioscreen models) time is much more important because the model never attains steady state.

3.7. Hydraulic Conductivity

Symbol: K	Units: ft/day	Sensitivity: High

Contaminant transport is dominated by advective groundwater flow. The groundwater velocity is primarily controlled by the hydraulic conductivity and hydraulic gradient. Properly selecting the hydraulic conductivity with well test data, model calibration, or appropriately conservative literature values is essential for a valid analysis. Refer to Appendix 2 for more information on hydraulic conductivity.

The recommended sources of hydraulic conductivity are the results of pump tests or multiple slug tests at the site. These results should not be considered exact values of hydraulic conductivity for the site because there can be large spatial and directional variations. Therefore, hydraulic conductivity should be a calibration parameter in the model solutions.

If there is no well test data, then other information sources may be used (Appendix 2). However, calibration is key for such models. Under some circumstances a very conservative value of K may be selected without calibrating the model. The user should not assume that only large values of K are conservative (Example A4.1).

If there is no transport decay ($\lambda = 0$), steady state QD model results will have no dependence on K.

3.8. Hydraulic Gradient

Symbol: i	Units: ft/ft	Sensitivity: Medium

Hydraulic gradient is the slope of the potentiometric surface in the direction of groundwater flow. It is calculated from static water level measurements at monitoring wells. This parameter must be based on site measurements and not be an estimate. Any longitudinal variation of the gradient should be evaluated. A useful calculator for determining the maximum gradient of a planar surface fit to hydraulic head measurements may be found at EPA's Online Tools for Site Assessment website.

The groundwater flow velocity is proportional to the hydraulic gradient. The gradient should not be a calibration variable in the QD model because the uncertainty in the flow velocity is accounted for by varying the hydraulic conductivity (Section 3.7).

3.9. Effective Porosity

Symbol: n_e	Units: —	Sensitivity: Low

Effective porosity is the nondimensional ratio of interconnected void space to the bulk volume of the aquifer material. (It is less than the total porosity which includes all void spaces.) Values for unconsolidated sediments can vary greatly, from 0.01 to ~0.40. An appropriate value for porous media is 0.3, but the user should select a porosity corresponding to the aquifer material at the site.

The groundwater flow velocity is inversely proportional to the effective porosity. It is also a factor in the retardation factor calculation (Section 3.16). The effective porosity should not be a calibration variable in the QD model because the uncertainty in the flow velocity is better accounted for by varying the hydraulic conductivity (Section 3.7).

3.10. Bulk Density

Symbol: ρ_b	Units: g/cm^3	Sensitivity: Low

The aquifer matrix bulk density is input on a dry basis. A typical value for unconsolidated materials is 1.7 g/cm^3.

The bulk density is used to calculate the solute adsorption, or retardation, factor, R (Section 3.16). The retardation, in turn, affects the contaminant velocity. Therefore, the bulk density should not be varied in the QD calibration; the uncertainty in the velocity is accounted for by varying the hydraulic conductivity (Section 3.7).

3.11. Organic Carbon Partition Coefficient

Symbol: K_{oc}	Units: L/kg	Sensitivity: Low

The partition coefficient relates the affinity of the dissolved contaminant for organic carbon in the soil. Values are chemical specific. Larger values reflect a greater tendency to adsorb onto the soil. The user should input values found in Ch. 250, Appendix A, Table 5A. Alternative values should be fully justified.

The organic carbon partition coefficient is used to calculate the solute adsorption, or retardation, factor, R (Section 3.16). The retardation, in turn, affects the contaminant velocity. K_{oc} is a relatively well determined quantity, and it should never be treated as a variable when calibrating QD. For inorganic solutes $K_{oc} = 0$.

3.12. Fraction of Organic Carbon

Symbol: f_{oc}	Units: —	Sensitivity: Low

This is the weight fraction of natural organic carbon in the uncontaminated aquifer soil matrix. It determines the organic carbon available for hydrocarbons to adsorb to the solid phase. It is desirable to measure this quantity in samples from the site, but it is more commonly estimated. Typical values are 0.0002–0.005. An appropriate default value is 0.002. A conservative value in some bedrock formations would be zero.

The fraction of organic carbon is used to calculate the solute adsorption, or retardation, factor, R (Section 3.16). The retardation, in turn, affects the contaminant velocity. Therefore, the f_{oc} should not be a variable in the QD calibration; the uncertainty in the velocity should be accounted for by adjusting the hydraulic conductivity (Section 3.7). For inorganic solutes $f_{oc} = 0$.

3.13. Point Concentration Location

Symbol: (x_s,y_s,z_s)	**Units:** ft	**Sensitivity:** None

The user may calculate a contaminant concentration at a solution point in the aquifer (x_s, y_s, z_s). Maximum surface centerline concentrations are at (x_s, 0, 0). These coordinates are not model variables and they only affect the output information.

3.14. Model Calculation Domain

Symbol: L, W	**Units:** ft	**Sensitivity:** None

The user inputs the length and width of the area where a solution is desired. The length (L) is the distance downgradient from the source. The width (W) is actually the half-width perpendicular to the flow direction (the true width is twice the input value). The solution is obtained at the same depth (z_s) as the point concentration location (Section 3.13). These distances are not model variables and they only affect the output information.

3.15. Field Data

Symbol: x_i	**Units:** ft	**Sensitivity:** None
Symbol: C_i	**Units:** mg/L	**Sensitivity:** None

The user enters analytical data from one or more downgradient wells to calibrate and validate the model. The centerline concentration (C_i) should be from wells on or near the plume centerline. The longitudinal distance from the source (x_i) is entered for each well. Care must be taken in selecting the data for calibration, and we recommend using average concentrations (Section 5.2).

The model-calculated solution is not affected by the calibration point data entered in the worksheet. However, the user-calibrated solution is highly sensitive to these values.

3.16. Calculated Quantities

The groundwater velocity and retardation factor are important parameters that are not input by the user because they are calculated by the model from other variables.

The interstitial **groundwater velocity** (v), or seepage velocity, is determined as follows:

$$v = \frac{Ki}{n_e}$$

K: hydraulic conductivity
i: hydraulic gradient
n_e: effective porosity

The Domenico solution is a function of the contaminant velocity. This may be less than the groundwater flow velocity owing to solute adsorption. Only one of the parameters in v (typically K) should be used as a calibration variable while best estimates of the others should be selected.

The **retardation factor** (R) is defined as:

$$R = 1 + \frac{K_{oc} f_{oc} \rho_b}{n_e}$$

K_{oc}: organic carbon partition coefficient
f_{oc}: fraction organic carbon
ρ_b: bulk density
n_e: effective porosity.

The contaminant velocity (v_c) equals the groundwater velocity reduced in proportion to the retardation factor: $v_c = v/R$. The retardation factor should equal one for inorganic substances (i.e., $K_{oc} = f_{oc} = 0$).

4. QD Model Output

Quick Domenico displays numerical and graphical outputs of the model solution.

A point concentration (mg/L) is calculated for the coordinates and time that were input. Also, contaminant concentrations (mg/L) are determined on a two-dimensional horizontal grid for the domain specified by the length and width input parameters. The grid has ten columns in the *x* direction (downgradient) and five rows in the *y* direction (cross-gradient), including the centerline.

Modeled centerline concentrations are plotted with distance from the source. Graphs with linear and logarithmic concentration scales are displayed. The centerline field data are also plotted for comparison and calibration.

5. Calibrating the QD Model

5.1. Objective

Calibration is a crucial part of fate-and-transport modeling. It allows the user to refine the parameter values by matching the simulation to field data. If successful, calibration demonstrates that the model can reproduce actual measurements, and it gives us some confidence that it can therefore be used to predict plume concentrations at other locations and times. The objective is to constrain the parameter values to improve the accuracy of the model.

Fate-and-transport model calibrations are not unique because there are several poorly determined sensitive variables (namely the first-order decay rate, the hydraulic conductivity, and the dispersivities). A successful calibration does not guarantee that the model will accurately predict conditions throughout the plume or in the future.

Although we always recommend use of calibration points, in some cases it may be acceptable to use QD without a calibration. It is not always feasible to install calibration wells at the site, and an uncertainty analysis may demonstrate that conservative parameter values result in a satisfactory outcome. In general, without a calibration the model must be run with very conservative inputs, and the parameter choices must be fully justified (e.g., see Appendix 2 and Appendix 3). The licensed professional geologist submitting the report is responsible for defending the analysis with or without a calibration.

5.2. Methodology

DEP advocates a systematic approach to model calibration. This manual describes calibration with only three significant variables: hydraulic conductivity (K), longitudinal dispersivity (α_x), and decay rate (λ). It is important to evaluate the sensitivity of the model to different combinations of these parameter values to find the most conservative result.

The user must consider whether or not a well with nondetect results is a suitable calibration point. If the plume is in steady state, and the well is truly directly downgradient of the source, we know that contamination has not and presumably will not extend that far. However, calibrating to nondetect field data will usually give only a lower bound on the transport decay rate.

We recommend the following steps to calibrate QD models.

1. **Select the calibration well(s).** Normally modeling is conducted after monitoring wells have been installed and data have been collected. The wells chosen for calibration must be downgradient of the source and close to the centerline. Off-centerline wells might be suitable if they are close enough, relative to the source width, such that the contaminant concentrations are fairly uniform across the plume. If not, then you could attempt to calculate the concentration at the off-centerline location (i.e., $y \neq 0$). If no existing wells will serve as calibration points, then one or more new wells may need to be installed. Generally, when there are more wells available for calibration the model will be better constrained, though in some instances no solution will match the field data from all of the calibration wells. In this

situation you must exercise your judgment to fit the model and decide which wells best represent the contaminant distribution.

2. **Measure the distance of the well(s) from the source.** This should be done with proper accuracy.

3. **Determine the calibration values.** Concentration data should be available for the wells in at least four consecutive quarters for the final model. Concentrations may vary significantly from quarter to quarter, and the calibration can be very sensitive to the value used. Picking a single measurement to calibrate the model may bias the results if it is not representative of the typical concentrations in that area at that time. For this reason you should average a few quarters of data at each well. Alternatively, you can calibrate the model to the highest observed value to be conservative. These steps must be taken for each contaminant of concern at each calibration well.

4. **Determine the calibration time.** This is the time since the release, whether known or estimated. It should not be the time since the source concentration (C_0) was measured in a well because QD presumes a constant source over time. The model will be sensitive to this time if it isn't in steady state.

5. **Choose the "known" parameter values.** Of the three key parameters, only hydraulic conductivity is likely to be constrained based on well testing or knowledge of the soil type or lithology of the aquifer (Appendix 2). The starting values of the other parameters, longitudinal dispersivity and decay rate, can be estimated using standard quantities (e.g., one-tenth the calibration distance for α_x and Ch. 250 Table 5A values for λ). These values will need to be varied in the calibration.

6. **Assess acceptable ranges for the parameters.** No values are known with certainty, and they typically vary spatially and/or with changing subsurface conditions. Therefore, even a site measurement of hydraulic conductivity will not be a unique model input. Decide what reasonable ranges of the parameter values are. This will normally be one or two orders of magnitude (Appendix 2 and Appendix 3).

7. **Choose a parameter to vary.** Only one of the unknown parameters (K, α_x, or λ) will be varied at a time. The other parameters are initially assigned estimated or preferred values. Change this parameter's value within the acceptable range until you obtain the best fit to the calibration data. If the fit is not satisfactory, explore changes to the other parameters to improve the match. You may need to reassess the acceptable ranges or other parameters if the solution still doesn't agree with the field data.

8. **Vary each of the other calibration parameters.** With three significant parameters there will be multiple possible solutions. You will need to systematically vary each parameter within the acceptable range to obtain a suite of solutions. Obviously this method could result in numerous model runs and different results. In practice, though, you can focus on the conservative parameter values and some combinations will be rejected because they don't reproduce the calibration data. Many solutions will look alike because the steady state Domenico curves have the same shape.

9. **Compile the successful parameter combinations.** Record the combinations of parameter values that give models matching the calibration data. These will serve as the basis for the predictive models.

Example. Suppose repeated slug tests at multiple wells at the site yielded an average hydraulic conductivity of K = 1.4 ft/day. The distance from the source to the nearest calibration point is 100 ft, so we select one-tenth of this distance for the estimated longitudinal dispersivity, α_x = 10 ft. The contaminant of concern is benzene, and DEP's Ch. 250 Table 5A degradation coefficient is $\lambda = 9.6 \times 10^{-4}$ day^{-1}. These are the starting values of each of these parameters. We assume an uncertainty in both K and α_x of a factor of ten, and the uncertainty in λ could be greater than that. Therefore, the calibration ranges are K = 0.14–14 ft/day and α_x = 1–100 ft, and λ is an entirely free parameter (that is, it can have any value greater than or equal to zero).

We run a sequence of models, systematically changing K and α_x within their ranges and varying λ as necessary in each run until the solution fits the calibration data. The model inputs would be as follows:

Model	K (ft/day)	α_x (ft)
1	1.4	10
2	1.4	1
3	1.4	100
4	0.14	10
5	0.14	1
6	0.14	100
7	14	10
8	14	1
9	14	100

Also see Examples A4.1 and A4.2.

5.3. Model Validation

The calibration will result in multiple possible models that explore the range of likely parameter values and that match the field data at one point in time. Whenever possible, these models should be validated by obtaining solutions at other times and comparing the resulting concentrations to the field data at those times. (This is also known as "history matching" or verifying the model.) If a solution cannot reproduce the data at other times, then it can be rejected. This process allows the user to refine the number of acceptable models. If the data indicate that the plume is in steady state, then the user might not be able to validate the model in this way. If calibration well concentrations are decreasing, then that implies source decay, and QD is not an appropriate model; the user should consider Bioscreen or Bioscreen-AT.

6. Running a Predictive Model

6.1. Methodology

Having defined a range of parameter combinations that can reproduce the field measurements, the user can next run predictive models. These models will estimate the contaminant concentrations at other locations and times to estimate plume lengths and widths, potential impacts at downgradient potable wells and streams, etc.

Because the calibration procedure likely yielded multiple plausible models (Section 5.2), each of these will be run as a predictive model. For the example at the end of Section 5.2, up to nine calibrated models would be run to simulate the plume. The user will select the most conservative result for each contaminant (e.g., the longest benzene plume).

Keep in mind that for QD the concentration at a given distance from the source only increases with time until the model reaches steady state. DEP recommends evaluating the results at 30 yr, but the user should verify that the model is in steady state by then. Steady state may be much earlier (e.g., if K is relatively high), and the calibrated solution may already be at steady state. In this case the results at 30 yr would be unchanged from the calibration time. SWLOAD calculates a solution at infinite time (10^{99} days).

It's important to recognize that if the source is decaying, then the concentration at a given distance will initially increase and then decrease with time. There is no steady state. The model time is critical to a non–steady state solution, and the worst case (maximum concentrations or longest plume) may be at the present, not in the future. (See Example A4.2.)

6.2. Results

6.2.1. Point of Compliance

Concentrations are calculated at the centerline distance to the point of compliance. The model with the highest concentration is selected for evaluating potential exceedences.

6.2.2. Plume Morphology

QD is a valuable model for mapping the planform shape of the plume to determine where it exceeds Statewide health standard (SHS) medium-specific concentrations (MSCs) and/or practical quantitation limits (PQLs). This must be known for preparing post-remediation care plans and environmental covenants. The predictive models are run iteratively by varying the point concentration solution location (x_s) to determine the centerline distance to each MSC or PQL. The models with the longest distances are selected as the most conservative. The plume morphology will depend on the downgradient transport distance relative to the source width. Typically the plume width will be approximately equal to the source width because transverse dispersivity is relatively low.

6.2.3. Downgradient Impacts

If the concentration at a specific point (x_s, y_s) needs to be estimated, for instance at a drinking water or public supply well, then the user runs models for that location. The model with the highest concentration is selected.

6.2.4. Stream Loading

To evaluate loading of the plume to a surface water body, the user transfers the calibration model parameters to SWLOAD. SWLOAD is run for each parameter combination to determine the average concentration and groundwater influx rate to the stream. (See the Act 2 *Technical Guidance Manual*, Section IV.A.3.) The model with the highest average concentration is selected.

6.3. Report Contents

The Quick Domenico model analysis should be fully documented in the submitted report. The fate-and-transport content of the report should generally include the following elements, depending on the complexity of the modeling. (Refer also to the *Technical Guidance Manual*, Section IV.A.2.h.)

- A discussion of why application of QD is appropriate in the context of the conceptual site model (Section 2).
- A table of all initial and final parameter values, including parameter ranges (Section 3).
- A complete explanation of the input values used.
- Specification of the calibration wells and field data values.
- A description of the uncertainty or sensitivity analysis and calibration (Section 5).
- Predictive model conditions and results (Section 6).
- Figures showing the source location, source and calibration wells, plume centerline, and the planform shape of each contaminant of concern at the site.
- Appendices with QD worksheet printouts for calibration and predictive model runs for each contaminant of concern.

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Xu, M., and Y. Eckstein, Use of weighted least squares method in evaluation of the relationship between dispersivity and field scale, *Ground Water*, *33*, 905–908, 1995.

Note: Web links were valid as of February 24, 2014.

Web Links

California Regional Water Quality Control Board—Los Angeles Region, *Manual for Domenico Non–Steady State Spreadsheet Analytical Model.*

Commonwealth of Pennsylvania, Title 25 Pa. Code, Ch. 245, Administration of the Storage Tank and Spill Prevention Program.

Commonwealth of Pennsylvania, Title 25 Pa. Code, Ch. 250, Administration of the Land Recycling Program (Act 2).

PA DEP, Land Recycling Program Technical Guidance Manual.

PA DEP, Quick Domenico.

S. S. Papadopulos and Associates, Inc., BIOSCREEN-AT.

US EPA, BIOCHLOR.

US EPA, BIOSCREEN.

US EPA, Center for Subsurface Modeling Support.

US EPA, FootPrint.

US EPA, On-Site calculators.

USGS Pennsylvania Water Science Center

Note: Web links were valid as of February 24, 2014.

Appendix 1. QD Model Background

A1.1. Model Derivation

Domenico [1987] published a solution to the three-dimensional differential equation for solute transport in a saturated porous medium with uniform steady-state flow, one-dimensional advection, three-dimensional dispersion, adsorption, and first-order decay [*van Genuchten*, 1985]:

$$\frac{\partial}{\partial t}(n_e C + \rho S) = \frac{\partial}{\partial x}\left(n_e D_x \frac{\partial C}{\partial x} - qC\right) + n_e D_y \frac{\partial^2 C}{\partial y^2} + n_e D_z \frac{\partial^2 C}{\partial z^2} - \lambda_w n_e C - \lambda_s \rho S \qquad \text{(A1-1)}$$

where:

Table A1.1.

Symbol	Definition	Units
C	solute concentration	M L^{-3}
S	adsorbed concentration	M M^{-1}
n_e	effective porosity	L^3 L^{-3}
ρ	bulk density	M L^{-3}
D_i	coefficients of dispersion	L^2 T^{-1}
q	groundwater flux (Darcy velocity)	L T^{-1}
λ_w	water decay coefficient	T^{-1}
λ_s	soil decay coefficient	T^{-1}
x	longitudinal horizontal distance	L
y	transverse horizontal distance	L
z	downward vertical distance	L
t	time	T

M: mass, L: length, T: time

See Section 3 for a discussion of these parameters.

The following assumptions apply:

- The dissolved and adsorbed contaminant decay coefficients are equal
  $\lambda = \lambda_w = \lambda_s$.

- Properties (n_e and q) are constant in space and time, so there is steady-state flow.

- Adsorption is described by a linear, reversible isotherm
  $S = K_d C$
  where K_d is an empirical distribution coefficient (M^{-1} L^3), and for organics
  $K_d = K_{oc} f_{oc}$
  where K_{oc} is the organic carbon partition coefficient and f_{oc} is the fraction of organic carbon.

See Section A.1.2 below for a further discussion of model assumptions.

The transport equation is then expressed as:

$$\frac{\partial C}{\partial t} = \frac{\alpha_x v}{R}\frac{\partial^2 C}{\partial x^2} + \frac{\alpha_y v}{R}\frac{\partial^2 C}{\partial y^2} + \frac{\alpha_z v}{R}\frac{\partial^2 C}{\partial z^2} - \frac{v}{R}\frac{\partial C}{\partial x} - \lambda C = 0 \qquad \text{(A1-2)}$$

where:

Table A1.2.

Symbol	Definition	Expression	Units
R	retardation	$1 + \frac{\rho K_d}{n_e}$	—
α_i	dispersivity	D_i/v	L
v	interstitial groundwater velocity	q/n_e	$L\,T^{-1}$

The following initial and boundary conditions are applied:

- $C(x, y, z, 0) = 0$ (A1-3)
- $C(0, y, z, t) = C_0$ for $-\frac{1}{2}Y \le y \le +\frac{1}{2}Y$ and $0 \le z \le Z$ (A1-4)
- $\lim_{x\to\infty} \frac{\partial C(x,y,z,t)}{\partial x} = 0$ (A1-5)
- $\lim_{y\to\pm\infty} \frac{\partial C(x,y,z,t)}{\partial y} = 0$ (A1-6)
- $\lim_{z\to\infty} \frac{\partial C(x,y,z,t)}{\partial z} = 0$ (A1-7)

The *Domenico* [1987] solution of Equation (A1-2) subject to these boundary conditions, and with the inclusion of adsorption, is as follows:

$$C(x,y,z,t) = \frac{C_0}{8}\exp\left[\frac{x}{2\alpha_x}\left(1-\sqrt{1+\frac{4\lambda R\alpha_x}{v}}\right)\right]\times \operatorname{erfc}\left(\frac{x - vt\sqrt{1+\frac{4\lambda R\alpha_x}{v}}}{2\sqrt{\frac{\alpha_x v t}{R}}}\right) \qquad \text{(A1-8)}$$

$$\times\left[\operatorname{erf}\left(\frac{y+Y/2}{2\sqrt{\alpha_y x}}\right) - \operatorname{erf}\left(\frac{y-Y/2}{2\sqrt{\alpha_y x}}\right)\right]\times\left[\operatorname{erf}\left(\frac{z+Z}{2\sqrt{\alpha_z x}}\right) - \operatorname{erf}\left(\frac{z-Z}{2\sqrt{\alpha_z x}}\right)\right]$$

Note that this is a truncated, and not an exact, solution to the problem. Here it is assumed that contamination resides at the top of the aquifer and the only vertical dispersion is downwards.

Quick Domenico and EPA's Bioscreen apply the above solution, Equation (A1-8). Papadopulos and Associates' Bioscreen-AT application performs an exact analytic solution to Equation (A1-2) using a program called ATRANS.

EPA's Biochlor spreadsheet employs a slightly different approach. First, the longitudinal solution is not truncated, so there is a second (smaller) term with a product of an exponent and complementary error function. This will be slightly more accurate, but will not make a significant difference in practice.

Above it was assumed that the dissolved and adsorbed contaminant decay coefficients are equal. A second difference with the Biochlor solution is that the sorbed phase coefficient is zero:

$\lambda_s = 0$

$\lambda = \lambda_w$.

The resultant transport equation is then:

$$\frac{\partial C}{\partial t} = \frac{\alpha_x v}{R}\frac{\partial^2 C}{\partial x^2} + \frac{\alpha_y v}{R}\frac{\partial^2 C}{\partial y^2} + \frac{\alpha_z v}{R}\frac{\partial^2 C}{\partial z^2} - \frac{v}{R}\frac{\partial C}{\partial x} - \frac{\lambda}{R}C = 0 \qquad \text{(A1-9)}$$

This is identical to Equation (A1-2) except for the last term, where λ is divided by R. Therefore, if one wishes to run Biochlor *without* assuming zero sorbed-phase decay, values of $R\lambda$ may be entered in place of λ.

A1.2. Model Assumptions

Domenico's solution to the advective–dispersive equation incorporates the following assumptions.

- Aquifer properties are homogeneous and isotropic. For instance, porosity and hydraulic conductivity are spatially uniform, and there is no directional dependence.
- The flow field is homogeneous and unidirectional. The hydraulic gradient and groundwater velocity are constant in magnitude and direction throughout the model space. There are no pumping or recharge conditions altering the natural flow. The flow field is not radial, convergent, or divergent. There are no vertical flow gradients.
- Groundwater flow is in steady state. The hydraulic gradient and groundwater velocity are constant in time.
- The source shape is defined as a vertical rectangle perpendicular to groundwater flow.
- The source dimensions and concentration are constant with time.
- The aquifer is initially free of the contaminant, other than at the source.
- Both the aqueous and sorbed contaminant phases may undergo first-order decay, and the decay rate is the same for both.
- There is no transverse or vertical contaminant decay.
- Contaminants undergo linear, reversible, isothermal adsorption.
- Flow velocities are sufficiently high that mechanical dispersion dominates diffusion.

A1.3. Mathematical Approximations

The approximations inherent to the Domenico solution have been examined by *West* et al. [2007] and *Srinivasan* et al. [2007]. They pointed out three significant mathematical inaccuracies.

- The three-dimensional solution is taken to be the product of three one-dimensional solutions. This approach does not conserve mass.

- The longitudinal solution $C(x,t)$ omits a secondary term in QD and Bioscreen. The error is large when the dispersivity (α_x) is large such that x/α_x is relatively small.

- Domenico made the time substitution $t = x/v$, where v is the groundwater velocity. This is only correct when $\alpha_x = 0$. For nonzero longitudinal dispersivity, there are sizable errors especially forward of the advective front. This time reinterpretation also exaggerates the plume width.

West et al. [2007] and *Srinivasan* et al. [2007] concluded that contaminant concentrations may be significantly underestimated on the plume centerline. Errors can be minimized when:

- longitudinal dispersivities are low (α_x)
- advection velocities are high ($v = Ki$)
- simulation times are long (t).

Users must practice caution when making site predictions using fate-and-transport models as discussed by *Konikow* [2010].

Appendix 2. Hydraulic Conductivity

A2.1. Site-Specific Measurements

The preferred source of hydraulic conductivity values for input to Quick Domenico are measurements from on-site well tests. The most common methods used are slug tests and pump tests. The user must keep in mind that site-specific values are not exact measurements of conductivity, which can vary spatially and with depth. Therefore, a conservative approach should be used when applying the results to fate-and-transport models.

If well testing results are the basis for the QD hydraulic conductivity, then all data and calculations must be submitted to support values used in the model. This should include printouts from software (e.g., AQTESOLV) and graphs showing drawdown data and the best fits of the solution method. A narrative should explain the approach to aquifer testing, the applicability of the method, and how a representative hydraulic conductivity range was obtained from the results.

A2.1.1. Slug Tests

Slug tests are performed by inserting and removing a "slug" (such as an enclosed pipe) into and out of a well (rising head test). The change in the water level with time is measured. A solution, such as the Bouwer and Rice method for unconfined aquifers, is fit to the data to derive a hydraulic conductivity [e.g., *Kruseman and de Ridder*, 1990, Ch. 16; *Bouwer*, 1989].

Slug tests give a very limited picture of the aquifer permeability. They represent the permeability in a small volume immediately around the well. This material may have been disturbed by drilling the well. Also, the recovery may be influenced by flow through the filter pack. For these reasons, results of testing just one or two wells are not sufficient for determining a hydraulic conductivity value for use in the QD model. Each well should be tested at least three times, and at least three wells should be slug tested. Wells ought to be selected in the source area and downgradient from it.

The slug test results at a site should *not* be used to determine an absolute, average value of K for input to QD. Instead, the test results should be evaluated to define a range of reasonable conductivities for the aquifer. This approach accounts for local heterogeneity and anisotropy, and it should be conservative. The range might be defined as the minimum and maximum values, the average plus or minus the standard deviation, or the 95% lower and upper confidence limits of the mean. These low and high conductivity values are then input to QD as part of the sensitivity analysis and calibration.

A2.1.2. Pump Tests

Pumping tests are more representative of the aquifer permeability than slug tests. They reflect a larger volume of the subsurface (encompassing the wells that respond to the pumping) and are performed for a much longer period (12–24 hr or more). They also allow the use of multiple independent calculations of transmissivity from the same test: drawdown vs. time at the pumping and observation wells, drawdown vs. distance from the pumping well, and recovery after cessation of pumping. Pumping tests are more involved than slug tests, though [*Kruseman and de Ridder*, 1990, Ch. 2].

Various techniques are available for interpreting pump test data. The Cooper and Jacob method is commonly used. It is important to be aware of the assumptions and limitations of these methods. For instance, they include that the aquifer is confined, the well is fully penetrating, wellbore storage is negligible, and dimensionless time is small ($u < 0.1$). Acceptable solutions may be obtained if some of these assumptions are violated, but only under certain conditions that must be understood and justified.

A2.2. Representative Values for Local Rock Units

Aquifer testing may have been performed in other studies of sites in the area. The DEP regional files are a source of information for local hydraulic conductivity measurements. The US Geological Survey has published reports including hydraulic conductivity measurements and values used in groundwater models. Additional data may be found in the hydrogeology literature.

Low et al. [2002] presented hydraulic conductivity data for the geologic units found in southeastern Pennsylvania. Their hydraulic conductivity and transmissivity values were calculated from single-well aquifer tests or specific capacity tests of at least 1-hour duration. A modified Theis method was used to solve for the transmissivity. The authors assumed a constant value of the storage coefficient for each unit (~0.0002 for confined aquifers and ~0.007–0.2 for unconfined aquifers). The saturated thickness was defined as the borehole length less the depth to water to derive the hydraulic conductivity.

Low *et al.* used statistical methods to analyze the well data, and they calculated the quartile values for each population. The 25th percentile (P_{25}) and 75th percentile (P_{75}) values may be considered representative low- and high-range hydraulic conductivities. However, the published P_{90} and maximum values often greatly exceeded P_{75}, so it is not an upper bound.

A2.3. Reference Values

Representative hydraulic conductivities have been published in many hydrogeology textbooks. The values tabulated below are from *Domenico and Schwartz* [1998] (Table 3.2). "Likely minimum" and "likely maximum" values as well as selected other hydraulic conductivities are drawn from *Halford and Kuniansky* [2002]. Literature permeabilities are no substitute for site-specific data or regional studies. They may give guidance for ascertaining if results of well tests are reasonable and constrain the range of likely hydraulic conductivities when performing sensitivity tests and calibrating models.

Table A2.2. Typical minimum and maximum hydraulic conductivities

Material	*K* (ft/day)			
	Min	Likely Min	Likely Max	Max
Sediments				
Gravel	8×10^{1}	3×10^{2}	3×10^{3}	8×10^{3}
Sand–gravel mix	1×10^{0}	3×10^{1}	3×10^{2}	3×10^{2}
Coarse sand	2×10^{-1}	7×10^{1}	3×10^{2}	2×10^{3}
Medium sand	2×10^{-1}	2×10^{1}	7×10^{1}	2×10^{2}
Fine sand	5×10^{-2}	3×10^{0}	2×10^{1}	6×10^{1}
Silt, loess	3×10^{-4}	1×10^{-3}	1×10^{-1}	6×10^{0}
Till	3×10^{-7}	3×10^{-3}	3×10^{-1}	6×10^{-1}
Clay	3×10^{-6}	1×10^{-5}	1×10^{-4}	1×10^{-3}
Sedimentary Rocks				
Karst, reef limestone	2×10^{-1}	1×10^{1}	1×10^{3}	1×10^{4}
Limestone, dolomite	3×10^{-4}	4×10^{-3}	1×10^{-1}	2×10^{0}
Sandstone, medium grained	1×10^{-3}	1×10^{0}	1×10^{1}	8×10^{1}
Sandstone, fine grained	9×10^{-5}	1×10^{-3}	1×10^{0}	6×10^{0}
Siltstone	3×10^{-6}	1×10^{-5}	5×10^{-3}	4×10^{-2}
Shale	3×10^{-8}	1×10^{-7}	1×10^{-4}	1×10^{0}
Salt	3×10^{-7}			3×10^{-5}
Anhydrite	1×10^{-7}	1×10^{-7}	6×10^{-3}	6×10^{-3}
Crystalline Rocks				
Basalt	5×10^{-6}	3×10^{-2}	1×10^{-1}	1×10^{-1}
Permeable basalt	1×10^{-1}	1×10^{0}	1×10^{2}	6×10^{3}
Unfractured rock	8×10^{-9}	1×10^{-8}	6×10^{-5}	6×10^{-5}
Fractured rock	2×10^{-3}	5×10^{-2}	1×10^{1}	1×10^{2}
Weathered gabbro	1×10^{-1}	1×10^{-1}	1×10^{0}	1×10^{0}
Weathered granite	9×10^{-1}	1×10^{0}	1×10^{1}	2×10^{1}

Appendix 3. Mechanical Dispersion

Dispersion is the process of mechanical mixing of a solute in groundwater. The origin of dispersion is the heterogeneity of aquifer permeability. This causes local velocities to be faster or slower than the average, and for the local direction of flow to vary from the overall potentiometric gradient. Dispersion causes spreading of the contamination forward of the advective front as well as laterally and vertically.

Dispersivity cannot be measured at the site; therefore, it must be a variable in the modeling. Nonetheless, there are some general guidelines and constraints on the magnitude of dispersivity. These are based on studies that have estimated the longitudinal dispersivity of conservative tracers in laboratory experiments and field investigations. Conservative tracers do not react, biodegrade, or adsorb, so their transport should be controlled by only advection and dispersion. A model is still used to elucidate the value of dispersivity from the lab or field data.

Figure A3-1 shows compiled longitudinal dispersivity estimates [*Schultze-Makuch*, 2005]. As dispersivity is understood to be a function of transport scale, the data are plotted against the estimated length scale for each site. Results for unconsolidated (blue circles) and bedrock (green squares) aquifers are shown, although there is no apparent distinction between them in terms of the magnitude or trend of dispersivity. Note that both axes are logarithmic. Very little data are available for distances of ~1000 ft or greater.

Clearly there is a lot of scatter in the data, reflecting the complex, localized processes that cause dispersion. Several authors have proposed equations for longitudinal dispersion as a function of scale. These all pass through the clustered data, but none of them account for the range of possible dispersivities at a given transport distance. Two common relationships are the 10% rule (i.e., dispersivity is one-tenth the scale, shown by the solid black line) and *Xu and Eckstein's* [1995] formula (dashed curve). The latter relationship is $\alpha_x = 2.7[\log(0.3x)]^{2.4}$ (in units of feet). Other equations are given by *Neuman* [1995] and *Schultze-Makuch* [2005].

The field data demonstrate that dispersivity virtually never exceeds 100% of the scale length, and 10% of scale is a representative relationship. However, there is commonly a two order-of-magnitude range in dispersivity observed at a given scale, and this needs to be considered when calibrating fate-and-transport models. The 10% rule is a reasonable starting point, but sensitivity testing must account for variations of 5–10 times around this value.

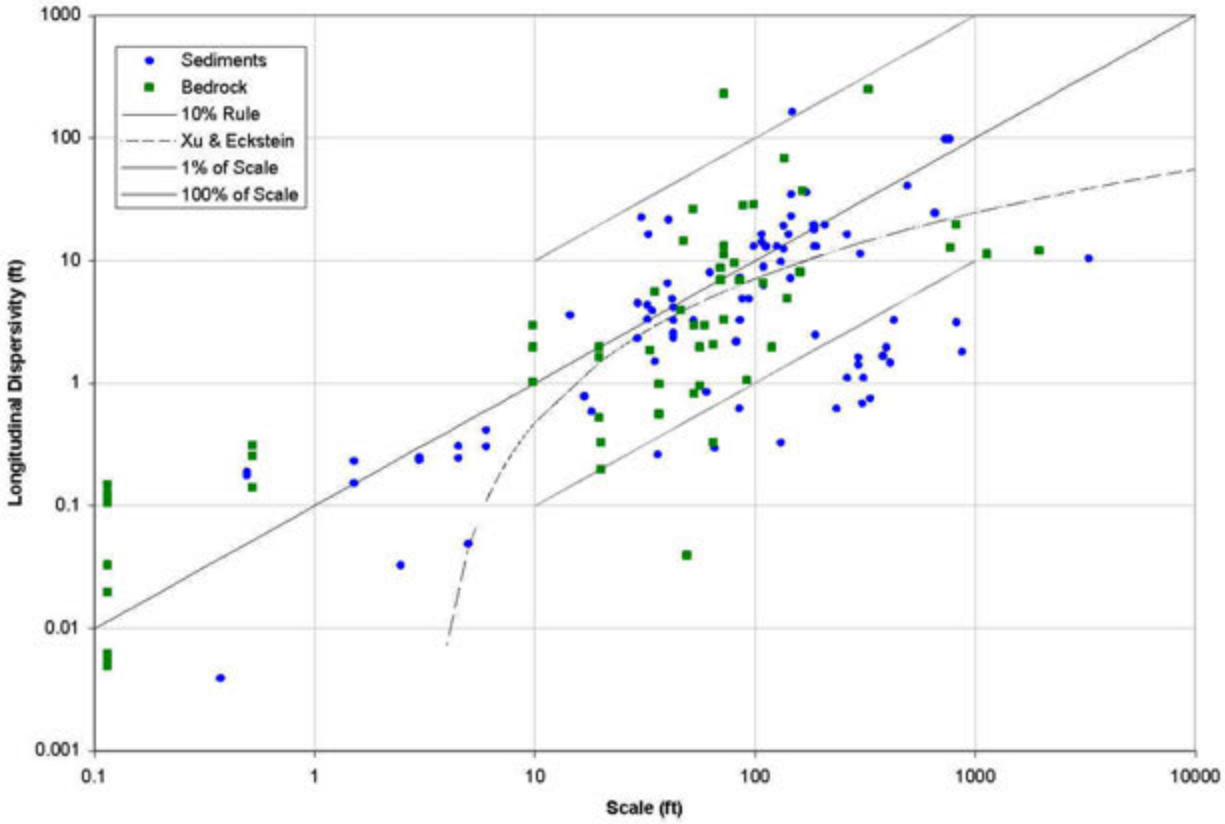


Figure A3-1. Plot of dispersivity versus scale data compiled by *Schultze-Makuch* [2005]. Two common relationships, the "10% Rule" (solid) and *Xu and Eckstein's* [1995] equation (dashed) are plotted for comparison.

Appendix 4. Example Problems

Example A4.1. Quick Domenico applied to a UST corrective action site.

Example A4.2. Bioscreen-AT applied to a petroleum site with source decay.

Soil Survey

- Soil Survey - Home
- Soil Surveys by State
- Partnerships
- Publications
- Soil Classification
- Soil Geography
- Tools
- Soil Survey Regional Offices
  - Portland, OR (SSR 1)
  - Davis, CA (SSR 2)
  - Raleigh, NC (SSR 3)
  - Bozeman, MT (SSR 4)
  - Salina, KS (SSR 5)
  - Morgantown, WV (SSR 6)
  - Auburn, AL (SSR 7)
  - Phoenix, AZ (SSR 8)
  - Temple, TX (SSR 9)
  - St. Paul, MN (SSR 10)
    - Contacts
    - Ecological Site Information
    - Soil Information
  - Indianapolis, IN (SSR 11)
  - Amherst, MA (SSR 12)
- Soil Climate Research Stations

Saturated Hydraulic Conductivity

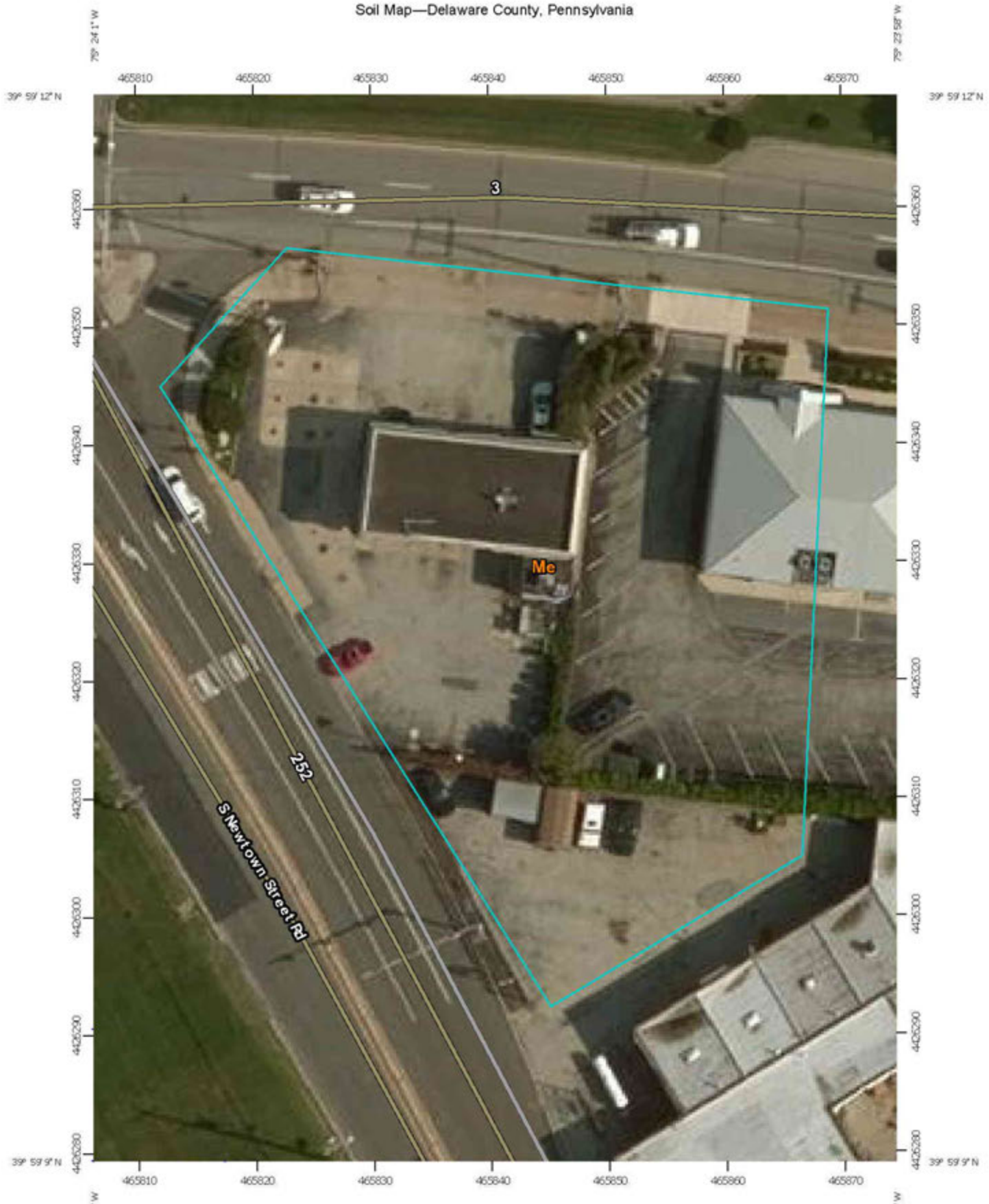
Saturated Hydraulic Conductivity in Relation to Soil Texture

Saturated hydraulic conductivity rates shown are in relation to texture and are only a general guide.

Differences in bulk density may alter the rates shown below.

Soil Textural Classes & Related Saturated Hydraulic Conductivity Classes

Texture	Textural Class	General	Ksat Class	Ksat Rate (µm/sec.)
Coarse sand	Coarse	Sandy	V. rapid	> 141.14
Sands Loamy sands	Coarse	Sandy	Rapid	42.34-141.14
Sandy loam Fi.san.loam	Mod. coarse	Loamy	Mod. Rapid	14.11-42.34
v. fi. sa. loam loam silt loam silt	Medium	Loamy	Moderate	4.23-14.11
clay loam sa. cl. loam si. cl. loam	Mod. fine	Loamy	Mod. slow	1.41-4.23
sandy clay silty clay clay	Fine and very fine	Clayey	Slow	0.42-1.41
Cd horizon Natric horizon, fragipan, ortstein			V. slow or impermeable	0.00-0.42



Map Scale: 1:440 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 5 10 20 30

Feet: 0 20 40 80 120

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Delaware County, Pennsylvania
Survey Area Data: Version 10, Nov 16, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 25, 2014—Sep 22, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Delaware County, Pennsylvania (PA045)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Me	Made land, schist and gneiss materials	0.6	100.0%
Totals for Area of Interest		**0.6**	**100.0%**

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

Delaware County, Pennsylvania

Me—Made land, schist and gneiss materials

Map Unit Setting

National map unit symbol: 121fy
Elevation: 200 to 2,000 feet
Mean annual precipitation: 35 to 55 inches
Mean annual air temperature: 45 to 61 degrees F
Frost-free period: 110 to 235 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, schist and gneiss, and similar soils: 95 percent
Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Schist And Gneiss

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, nose slope, interfluve
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Graded areas of schist and/or gneiss

Typical profile

A - 0 to 3 inches: silt loam
C - 3 to 40 inches: gravelly silt loam
2C - 40 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 40 to 72 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C

Minor Components

Glenelg

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear

Hatboro

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear

Glenville

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear

Gladstone

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex

Edgemont

Percent of map unit: 1 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex

Data Source Information

Soil Survey Area: Delaware County, Pennsylvania
Survey Area Data: Version 10, Nov 16, 2015

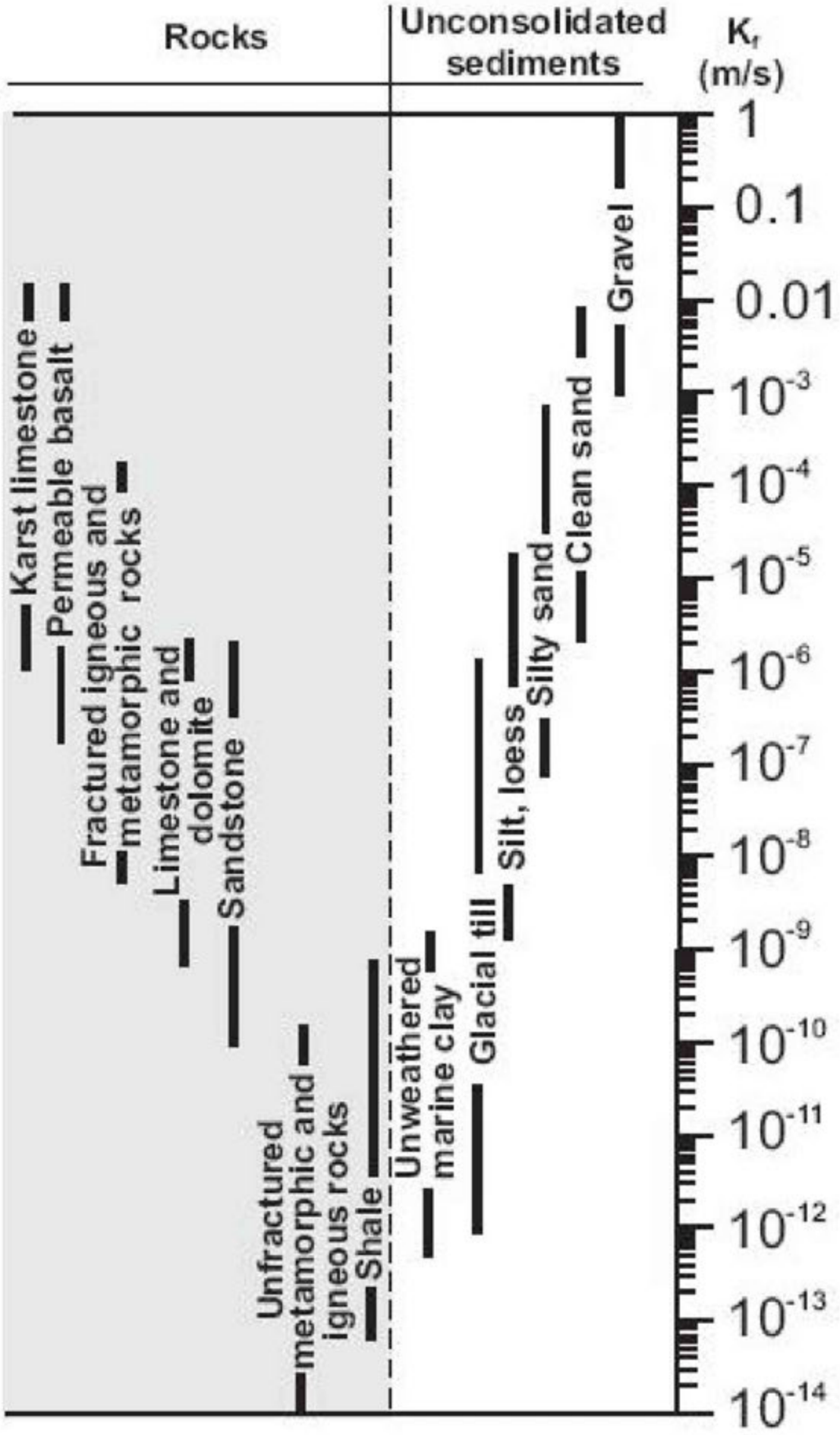


Fig. 1. Distribution of filtration coefficient values for hard rocks and unconsolidated sediments.

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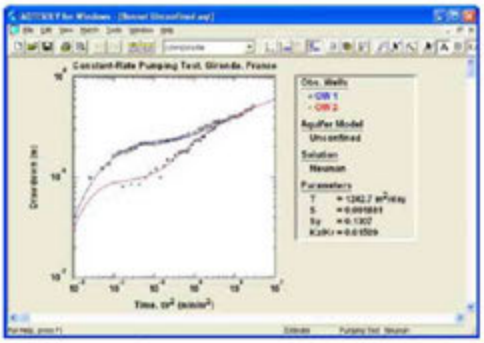

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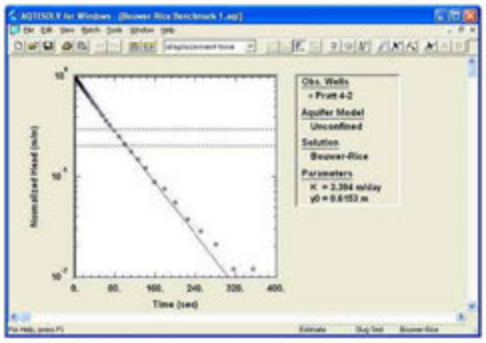

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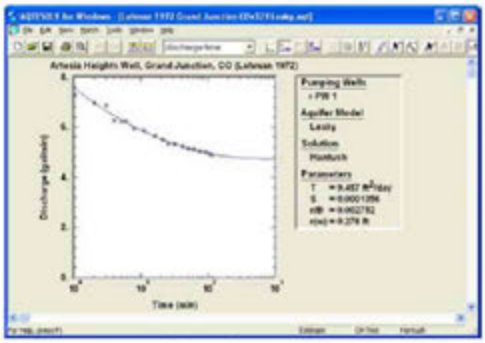

(/constant_head_test_analysis.htm)

✅ Pumping Tests ✅ Slug Tests ✅ Constant-Head Tests

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Representative Values of Hydraulic Properties

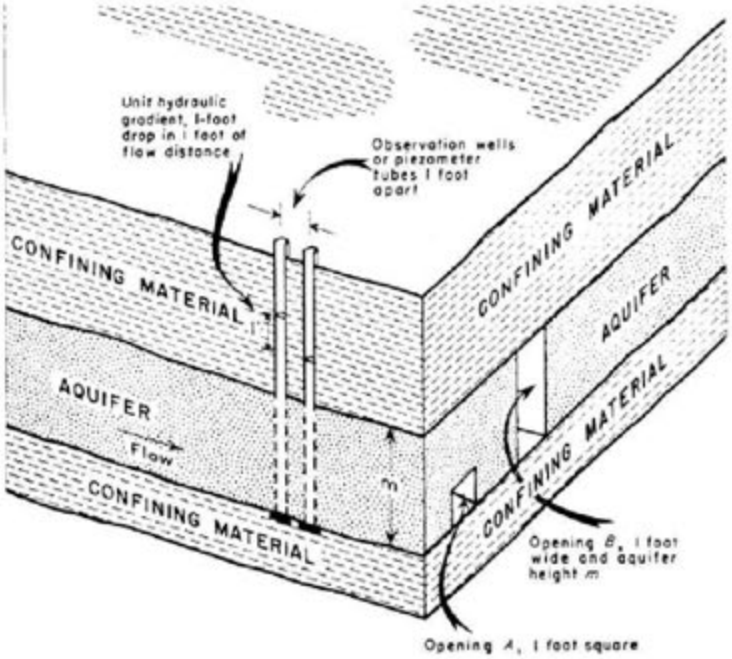
by Glenn M. Duffield, President, HydroSOLVE, Inc.

Hydraulic Conductivity | Transmissivity | Anisotropy | Storativity | Specific Yield | Porosity

Aquifer tests (aquifer-tests.htm) (**pumping tests**, **slug tests** and **constant-head tests**) are performed to estimate the **hydraulic properties** of aquifers and aquitards including horizontal and vertical hydraulic conductivity, storativity, specific yield and porosity.

The following sections present **representative hydraulic property values** reported in the literature. Use these values when no site-specific field testing results are available for your investigation or as a means of reality-checking the results of your own field tests.

Hydraulic Conductivity (K)



Hydraulic conductivity is the rate of flow under a unit hydraulic gradient through a unit cross-sectional area of aquifer (opening A). Transmissivity is the rate of flow under a unit hydraulic gradient through a unit width of aquifer of thickness m (opening B). Diagram from Ferris et al. (1962) (aquifer-testing-references.htm#Ferris_et_al_1962).

Hydraulic conductivity is a measure of a material's capacity to transmit water. It is defined as a constant of proportionality relating the specific discharge of a porous medium under a unit hydraulic gradient in Darcy's law:

$$\nu = -Ki$$

where ν is specific discharge [L/T], K is hydraulic conductivity (../aquifer-tests/glossary-of-aquifer-testing-terms.htm#Hydraulic_Conductivity) [L/T] and i is hydraulic gradient (../aquifer-tests/glossary-of-aquifer-testing-terms.htm#Hydraulic_Gradient) [dimensionless]. *Coefficient of permeability* is another term for hydraulic conductivity.

Note that hydraulic conductivity, which is a function of water viscosity and density, is in a strict sense a function of water temperature; however, given the small range of temperature variation encountered in most groundwater systems, the temperature dependence of hydraulic conductivity is often neglected.

Transmissivity is the rate of flow under a unit hydraulic gradient through a unit width of aquifer of given saturated thickness. The transmissivity of an aquifer is related to its hydraulic conductivity as follows:

$$T = Kb$$

where T is transmissivity (../aquifer-tests/glossary-of-aquifer-testing-terms.htm#Transmissivity) [L^2/T] and b is aquifer thickness (../aquifer-tests/glossary-of-aquifer-testing-terms.htm#Aquifer_Thickness) [L].

The following tables show representative values of hydraulic conductivity for various unconsolidated sedimentary materials, sedimentary rocks and crystalline rocks (from Domenico and Schwartz 1990 (aquifer-testing-references.htm#Domenico_Schwartz_1990)):

Unconsolidated Sedimentary Materials	
	Hydraulic Conductivity

Material	Hydraulic Conductivity (m/sec)
Gravel	3×10^{-4} to 3×10^{-2}
Coarse sand	9×10^{-7} to 6×10^{-3}
Medium sand	9×10^{-7} to 5×10^{-4}
Fine sand	2×10^{-7} to 2×10^{-4}
Silt, loess	1×10^{-9} to 2×10^{-5}
Till	1×10^{-12} to 2×10^{-6}
Clay	1×10^{-11} to 4.7×10^{-9}
Unweathered marine clay	8×10^{-13} to [illegible]

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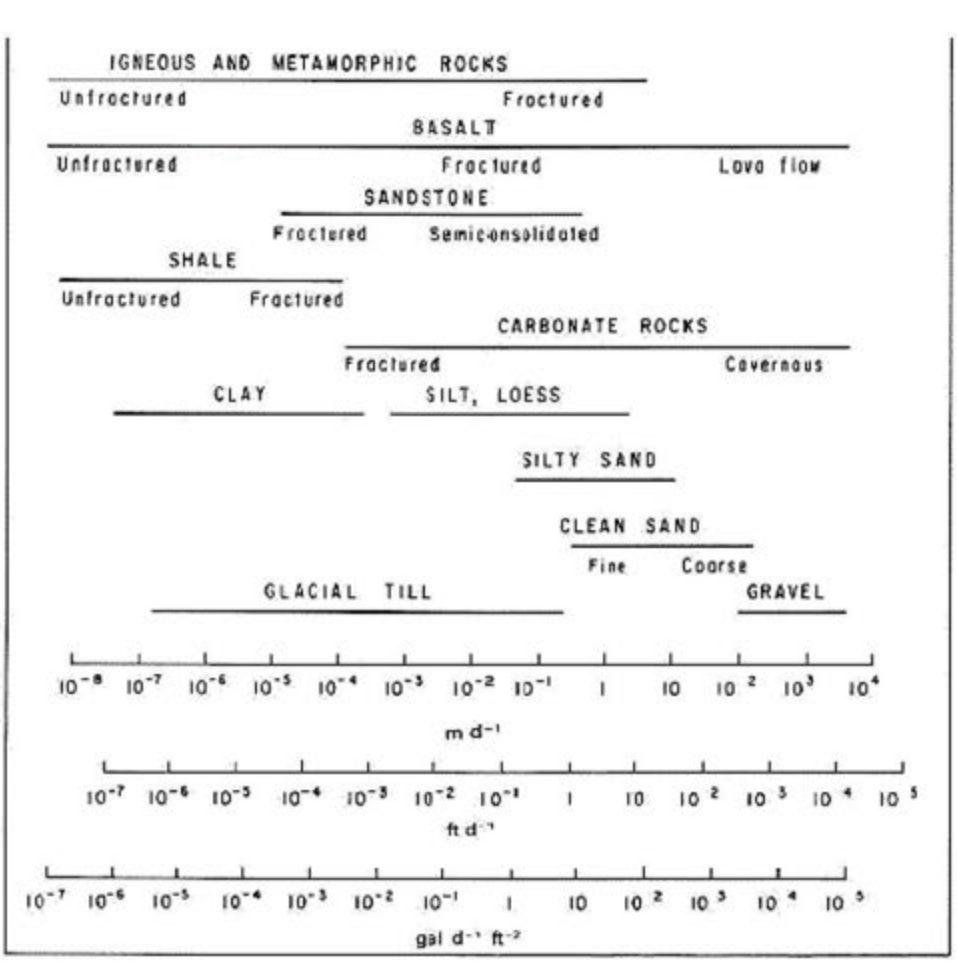
Sedimentary Rocks	
Rock Type	**Hydraulic Conductivity (m/sec)**
Karst and reef limestone	1×10^{-6} to 2×10^{-2}
Limestone, dolomite	1×10^{-9} to 6×10^{-6}
Sandstone	3×10^{-10} to 6×10^{-6}
Siltstone	1×10^{-11} to 1.4×10^{-8}
Salt	1×10^{-12} to 1×10^{-10}
Anhydrite	4×10^{-13} to 2×10^{-8}
Shale	1×10^{-13} to 2×10^{-9}

Crystalline Rocks	
Material	**Hydraulic Conductivity (m/sec)**
Permeable basalt	4×10^{-7} to 2×10^{-2}
Fractured igneous and metamorphic rock	8×10^{-9} to 3×10^{-4}
Weathered granite	3.3×10^{-6} to 5.2×10^{-5}
Weathered gabbro	5.5×10^{-7} to 3.8×10^{-6}
Basalt	2×10^{-11} to 4.2×10^{-7}
Unfractured igneous and metamorphic rock	3×10^{-14} to 2×10^{-10}

To Convert	Multiply By	To Obtain
m/sec	100	cm/sec
m/sec	2.12×10^{6}	gal/day/ft^2
m/sec	3.2808	ft/sec



Hydraulic conductivity of selected consolidated and unconsolidated geologic materials (from Heath 1983 (aquifer-testing-references.htm#Heath_1983)).

Hydraulic Conductivity Anisotropy Ratio (Kz/Kr)

An **anisotropy ratio** relates hydraulic conductivities in different directions. For example, vertical-to-horizontal hydraulic conductivity anisotropy ratio is given by K_z/K_r where K_z is vertical hydraulic conductivity [L/T] and K_r is radial (horizontal) hydraulic conductivity [L/T]. Anisotropy in a horizontal plane is given by K_x/K_y where K_x and K_y are horizontal hydraulic conductivities in the x and y directions, respectively [L/T].

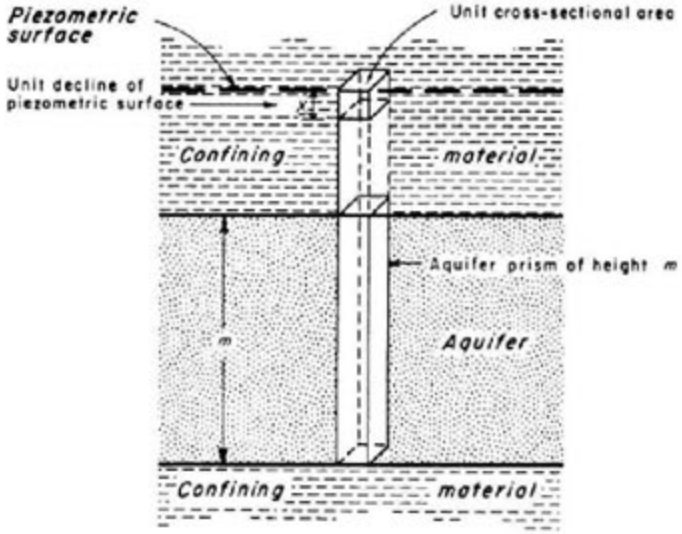
Todd (1980) (aquifer-testing-references.htm#Todd_1980) reports values of K_z/K_r ranging between 0.1 and 0.5 for alluvium and possibly as low as 0.01 when clay layers are present.

The following table shows representative values of horizontal and vertical hydraulic conductivities for selected rock types (from Domenico and Schwartz 1990 (aquifer-testing-references.htm#Domenico_Schwartz_1990)):

Material	Horizontal Hydraulic Conductivity (m/sec)	Vertical Hydraulic Conductivity (m/sec)
Anhydrite	10^{-14} to 10^{-12}	10^{-15} to 10^{-13}
Chalk	10^{-10} to 10^{-8}	5×10^{-11} to 5×10^{-9}
Limestone, dolomite	10^{-9} to 10^{-7}	5×10^{-10} to 5×10^{-8}
Sandstone	5×10^{-13} to 10^{-10}	2.5×10^{-13} to 5×10^{-11}
Shale	10^{-14} to 10^{-12}	10^{-15} to 10^{-13}
Salt	10^{-14}	10^{-14}

Storativity (S)

Storativity (S)



Storativity of a confined (artesian) aquifer (from Ferris et al. 1962 (aquifer-testing-references.htm#Ferris_et_al_1962)).

The ***storativity*** of a confined aquifer (or aquitard) is defined as the volume of water released from storage per unit surface area of a confined aquifer (or aquitard) per unit decline in hydraulic head. Storativity is also known by the terms *coefficient of storage* and *storage coefficient*.

In a confined aquifer (or aquitard), storativity is defined as

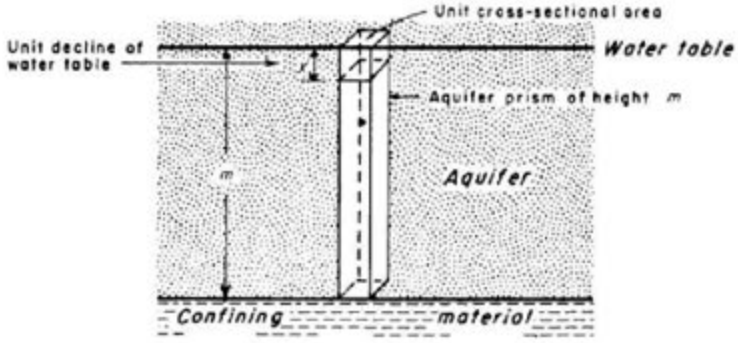
$$S = S_s b$$

where S is storativity (../aquifer-tests/glossary-of-aquifer-testing-terms.htm#Storativity) [dimensionless], S_s is specific storage (../aquifer-tests/glossary-of-aquifer-testing-terms.htm#Specific_Storage) [L^{-1}] and b is aquifer (or aquitard) thickness [L]. Specific storage is the volume of water that a unit volume of aquifer (or aquitard) releases from storage under a unit decline in head by the expansion of water and compression of the soil or rock skeleton.

Specific storage is related to the compressibilities of the aquifer (or aquitard) and water as follows:

$$S_s = \rho g (\alpha + n_e \beta)$$

where ρ is mass density of water [M/L^3], g is gravitational acceleration (= 9.8 m/sec^2) [L/T^2], α is aquifer (or aquitard) compressibility [T^2L/M], n_e is effective porosity [dimensionless], and β is compressibility of water (= 4.4×10^{-10} m sec^2/kg or Pa^{-1}) [T^2L/M].



Storativity of an unconfined (water-table) aquifer (from Ferris et al. 1962 (aquifer-testing-references.htm#Ferris_et_al_1962)).

In an unconfined aquifer (or aquitard), storativity is given by

$$S = S_y + S_s b$$

where S_y is specific yield. Because $S_s b$ is typically small in comparison to S_y, storativity in an unconfined aquifer is often simply equated with specific yield.

The storativity of a confined aquifer, which varies with specific storage and aquifer thickness, typically ranges from 5×10^{-5} to 5×10^{-3} (Todd 1980 (aquifer-testing-references.htm#Todd_1980)); in unconfined aquifers, storativity ranges from 0.1 to 0.3 (Lohman 1972 (aquifer-testing-references.htm#Lohman_1972)).

The following table provides representative values of specific storage for various geologic materials (Domenico and Mifflin [1965] (aquifer-testing-references.htm#Domenico_Mifflin_1965) as reported in Batu [1998] (aquifer-testing-references.htm#Batu_1998)):

Material	S_s (ft^{-1})
Plastic clay	7.8×10^{-4} to 6.2×10^{-3}
Stiff clay	3.9×10^{-4} to 7.8×10^{-4}
Medium hard clay	2.8×10^{-4} to 3.9×10^{-4}
Loose sand	1.5×10^{-4} to 3.1×10^{-4}
Dense sand	3.9×10^{-5} to 6.2×10^{-5}
Dense sandy gravel	1.5×10^{-5} to 3.1×10^{-5}
Rock, fissured	1×10^{-6} to 2.1×10^{-5}
Rock, sound	$< 1\times10^{-6}$

To Convert	Divide By	To Obtain
ft^{-1}	0.3048	m^{-1}

Freeze and Cherry (1979) (aquifer-testing-references.htm#Freeze_Cherry_1979) provided the following **compressibility** values for various aquifer materials:

Material	Compressibility, α (m^2/N or Pa^{-1})
Clay	10^{-8} to 10^{-6}
Sand	10^{-9} to 10^{-7}
Gravel	10^{-10} to 10^{-8}
Jointed rock	10^{-10} to 10^{-8}
Sound rock	10^{-11} to 10^{-9}

$Pa^{-1} = m^2/N = m\ sec^2/kg$

Example Calculations

1. *Use compressibility data to estimate the storativity of a 35-ft thick confined sand aquifer (assume ρ = 1000 kg/m^3 and n_e = 0.3).*

   $S = S_s b = \rho g(\alpha + n_e \beta)b$ = (1000 kg/m^3)(9.8 m/sec^2) [10^{-8} m^2/N + (0.3) (4.4×10^{-10} m^2/N)](35 ft)(0.3048 m/ft) = 1.1×10^{-3}

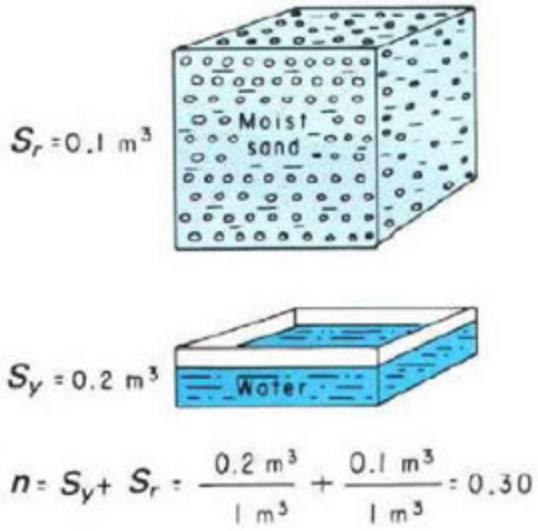
   How much does the expansion of water contribute to the total storativity in this example?

   $S_w = \rho g n_e \beta b$ = (1000 kg/m^3)(9.8 m/sec^2)(0.3) (4.4×10^{-10} m^2/N) (35 ft)(0.3048 m/ft) = 1.4×10^{-5}

2. *Use specific storage data to estimate storativity for the same aquifer given in the preceding example.*

$$S = S_s b = (5\times10^{-5}\ \text{ft}^{-1})(35\ \text{ft}) = 1.8\times10^{-3}$$

Specific Yield (Sy)



Specific retention (S_r), specific yield (S_y) and total porosity (n) (from Heath 1983 (aquifer-testing-references.htm#Heath_1983)).

Specific yield is defined as the volume of water released from storage by an unconfined aquifer per unit surface area of aquifer per unit decline of the water table.

Bear (1979) (aquifer-testing-references.htm#Bear_1979) relates specific yield to total porosity as follows:

$$n = S_y + S_r$$

where n is total porosity [dimensionless], S_y is specific yield (../aquifer-tests/glossary-of-aquifer-testing-terms.htm#Specific_Yield) [dimensionless] and S_r is specific retention [dimensionless], the amount of water retained by capillary forces during gravity drainage of an unconfined aquifer. Thus, specific yield, which is sometimes called *effective porosity*, is less than the total porosity of an unconfined aquifer (Bear 1979 (aquifer-testing-references.htm#Bear_1979)).

Heath (1983) (aquifer-testing-references.htm#Heath_1983) reports the following values (in percent by volume) for porosity, specific yield and specific retention:

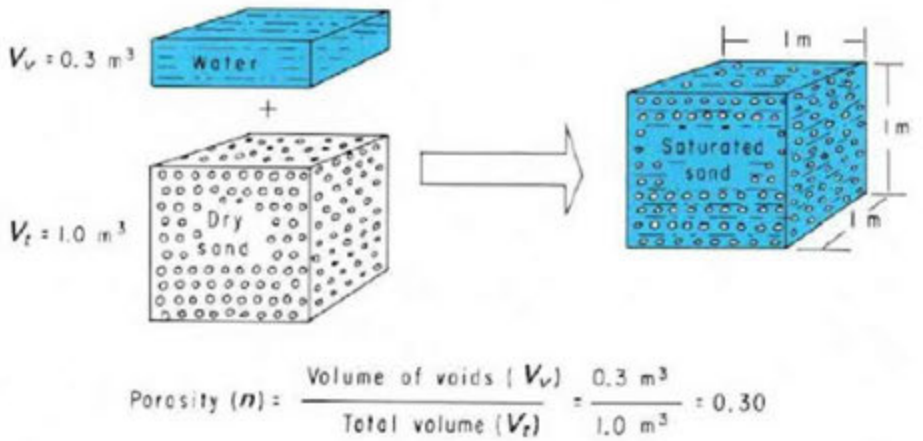
Material	Porosity (%)	Specific Yield (%)	Specific Retention (%)
Soil	55	40	15
Clay	50	2	48
Sand	25	22	3
Gravel	20	19	1
Limestone	20	18	2
Sandstone (unconsolidated)	11	6	5
Granite	0.1	0.09	0.01
Basalt (young)	11	8	3

The following table shows representative values of specific yield for various geologic materials (from Morris and Johnson 1967 (aquifer-testing-references.htm#Morris_Johnson_1967)):

Material	Specific Yield (%)

Gravel, coarse	21
Gravel, medium	24
Gravel, fine	28
Sand, coarse	30
Sand, medium	32
Sand, fine	33
Silt	20
Clay	6
Sandstone, fine grained	21
Sandstone, medium grained	27
Limestone	14
Dune sand	38
Loess	18
Peat	44
Schist	26
Siltstone	12
Till, predominantly silt	6
Till, predominantly sand	16
Till, predominantly gravel	16
Tuff	21

Porosity (n)



Void volume, total volume and porosity (from Heath 1983 (aquifer-testing-references.htm#Heath_1983)).

Porosity is defined as the void space of a rock or unconsolidated material:

$$n = V_v / V_t$$

where n is porosity (../aquifer-tests/glossary-of-aquifer-testing-terms.htm#Porosity) [dimensionless], V_v is void volume [L^3] and V_t is total volume [L^3].

The following tables show representative porosity values for various unconsolidated sedimentary materials, sedimentary rocks and crystalline rocks (from Morris and Johnson 1967 (aquifer-testing-references.htm#Morris_Johnson_1967)):

Unconsolidated Sedimentary Materials	
Material	**Porosity (%)**
Gravel, coarse	24 - 37
Gravel, medium	24 - 44
Gravel, fine	25 - 39
Sand, coarse	31 - 46
Sand, medium	29 - 49

Sand, medium	29 - 49
Sand, fine	26 - 53
Silt	34 - 61
Clay	34 - 57

Sedimentary Rocks	
Rock Type	**Porosity (%)**
Sandstone	14 - 49
Siltstone	21 - 41
Claystone	41 - 45
Shale	1 - 10
Limestone	7 - 56
Dolomite	19 - 33

Crystalline Rocks	
Rock Type	**Porosity (%)**
Basalt	3 - 35
Weathered granite	34 - 57
Weathered gabbro	42 - 45

See also: Argonne National Laboratory (http://web.ead.anl.gov/resrad/datacoll/porosity.htm), Wolff (1982) (aquifer-testing-references.htm#Wolff_1982)

HydroSOLVE, Inc. (/hydrosolve/default.htm)
2303 Horseferry Court
Reston, Virginia 20191
USA
tel +1 703 264 9024
fax +1 209 254 8831
hydrosolve@aqtesolv.com

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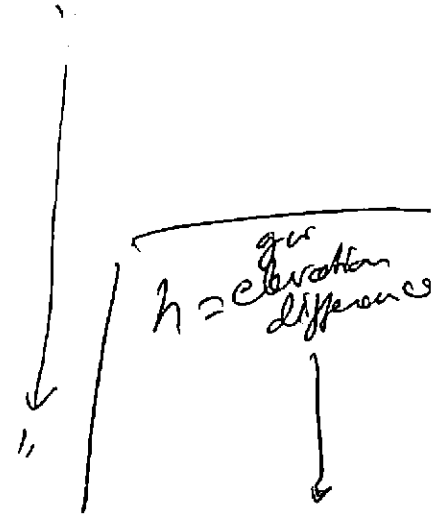
L = horizontal distance between 2 wells

MW6 & MW9 → 91 feet (transverse)
MW1 & MW8 → 23 feet (flow direction)
MW1 & MW10 → 40 feet
MW1 & MW7 → 42 feet
MW5 & MW2 → 42 feet
MW2 & MW7 → 84 feet
MW5 & MW7 → 114 feet
MW3 & MW7 → 96 feet



MW6 & MW9 → h = 393.72 − 393.52 = 0.20 feet
MW1 & MW8 → h = 393.65 − 393.56 = 0.09 feet
MW1 & MW10 → h = 393.65 − 393.55 = 0.10 feet
MW1 & MW7 → h = 393.65 − 393.57 = 0.08 feet
MW5 & MW2 → h = 393.8 − 393.77 = 0.03 feet
MW2 & MW7 → h = 393.8 − 393.57 = 0.23 feet
MW5 & MW7 → h = 393.77 − 393.57 = 0.20 feet
MW3 & MW7 → h = 393.88 − 393.57 = 0.31 feet

Hydraulic gradient

($i = h/L$)

MW6 & MW9 → $i = 0.2/91 = 0.0022$
MW1 & MW8 → $i = 0.09/23 = 0.0039$
MW1 & MW10 → $i = 0.10/40 = 0.0025$
MW1 & MW7 → $i = 0.08/42 = 0.0019$
MW5 & MW2 → $i = 0.03/42 = 0.00071$
MW2 & MW7 → $i = 0.23/84 = 0.0027$
MW5 & MW7 → $i = 0.20/114 = 0.0018$
MW3 & MW7 → $i = 0.31/96 = 0.0032$

Avg = $\frac{0.0189}{8}$
= 0.00236

APPENDIX I

October 23, 2013
File # 7362

KEATING
ENVIRONMENTAL
MANAGEMENT, INC.

835 Springdale Drive
Suite 200
Exton, PA 19341

610.594.2600 p
610.594.6100 F

keating environmental.com

Re: BP Service Station (former Amoco)
3608 West Chester Pike
Newtown Square, PA
PADEP Facility ID# 23-09154

KEM

KEATING
ENVIRONMENTAL
MANAGEMENT

Environmental, Energy & Sustainability Solutions

Dear Pat,

Keating Environmental Management Inc. (KEM) is pleased to provide you with the results of the groundwater evaluation conducted at the BP service station located at 3608 West Chester Pike, Newtown Square, Pennsylvania (Site).

Background

In November 2007, KEM completed a Phase I Environmental Site Assessment (Phase I ESA) of the property that identified the presence of four monitoring wells. In the Phase I ESA, we stated that groundwater samples had been obtained from the wells (by others) and results showed that MTBE was present at concentrations above the applicable residential Statewide Health Standards. Fulton Financial Corporation retained KEM to evaluate groundwater quality at the Site, as groundwater quality would provide a good indication that an undocumented release has occurred at the facility which could result in a costly cleanup.

Groundwater Evaluation

On September 24, 2013, KEM was onsite to obtain samples from the four groundwater monitoring wells. KEM accessed the wells and determined that they were 4 inches in diameter, approximately 30 feet deep and the depth to water ranged from 18 to 20 feet below the top of the well casing.

The top of casing elevation for each well was surveyed by KEM to an arbitrary benchmark. Using the casing elevation and the depth to water measurement obtained from each well during the groundwater sampling, KEM calculated the groundwater elevation at each location to determine the

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groundwater flow direction. The groundwater elevation data is presented in Table 1. By analysis of the groundwater elevation at each well, KEM has determined that groundwater flows to the southeast under an average hydraulic gradient of 0.003 ft/ft. The groundwater flow direction is depicted on Figure 1.

Each well was purged of three volumes of water to facilitate the collection of a representative sample. A submersible pump with dedicated tubing was used to purge each well. Purged water from the wells was discharged to two 55-gallon drums that are staged on the Site for future disposal. All groundwater samples were analyzed for the current Pennsylvania Department of Environmental Protection (PADEP) unleaded gasoline, leaded gasoline, and diesel fuel parameters.

KEM

Laboratory analytical results indicate detectable concentrations of benzene, MTBE, cumene and lead in the groundwater sample obtained from MW-1. Estimated concentrations of ethylbenzene, total xylenes, and naphthalene were also detected in the groundwater sample collected from monitoring well MW-1. Benzene was detected at 70.8 microgram per liter (µg/L) and MTBE was detected at 15,000 µg/L, which is above their respective residential Statewide Health Standards of 5 µg/L and 20 µg/L. The remaining compounds detected in the sample collected from MW-1 were below their respective Statewide Health Standards. Benzene was the only compound detected in the sample collected from MW-3, at a concentration of 3.0 µg/L which is below the residential Statewide Health Standard of 5 µg/L. In the sample collected from MW-4, MTBE was the only compound detected, at a concentration of 8.6 µg/L, which is below the residential Statewide Health Standard of 20 µg/L. No detectable compounds were found in the sample collected from MW-2. The groundwater quality data is summarized in the enclosed Table 2, and also enclosed is the laboratory data report.

Since benzene and MTBE were detected above the residential Statewide Health Standards, the two 55-gallon drums containing purge water from the well sampling will require off-site disposal.

Conclusions

Based on the analytical results, it appears that an on-site petroleum release has impacted groundwater at the Site, as benzene and MTBE were detected above the residential Statewide Health Standards in the groundwater sampled collected from monitoring well MW- I which is located immediately down gradient of the tank fields and pump islands. Due to the proximity of monitoring well MW-I to the downgradient property boundary, it is likely that contaminated groundwater is migrating off-site. Property use downgradient of the Site consists of retail, commercial and light industrial uses.

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KEM recommends that data groundwater data be provided to the property owner, as they are obligated to notify the PADEP in accordance with Administration of the Storage Tank and Spill Prevention Program. In addition, the owner should notify the Underground Storage Tank Indemnification Fund (USTIF) that there is a potential claim. The failure to notify the USTIF would likely result in the claim being denied with no coverage to fund the investigation and/or remediation activities required by the PADEP.

We are pleased to have this opportunity to assist you with this matter. Please do not hesitate to contact me if there are any questions.

Very truly yours,

KEM

KEATING ENVIRONMENTAL MANAGEMENT, INC.

Christopher Orzechowski, P.G.
Project Director

Enclosures: Figure 1 Monitoring Well Location Map
Table 1 Groundwater Elevation Data
Table 2 Groundwater Quality Data
Laboratory data report

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Table 1
Groundwater Elevation Data
Former Amoco
3608 West Chester Pike
Newtown Square, PA

Monitoring Well Designation	Date	Top of Casing Elevation (ft.)	Depth to Water (ft.)	Groundwater Elevation (ft.)
MW-1	9/25/2013	98.11	20.49	77.62
MW-2	9/25/2013	97.68	19.84	77.84
MW-3	9/25/2013	97.02	19.20	77.82
MW-4	9/25/2013	95.99	18.27	77.72

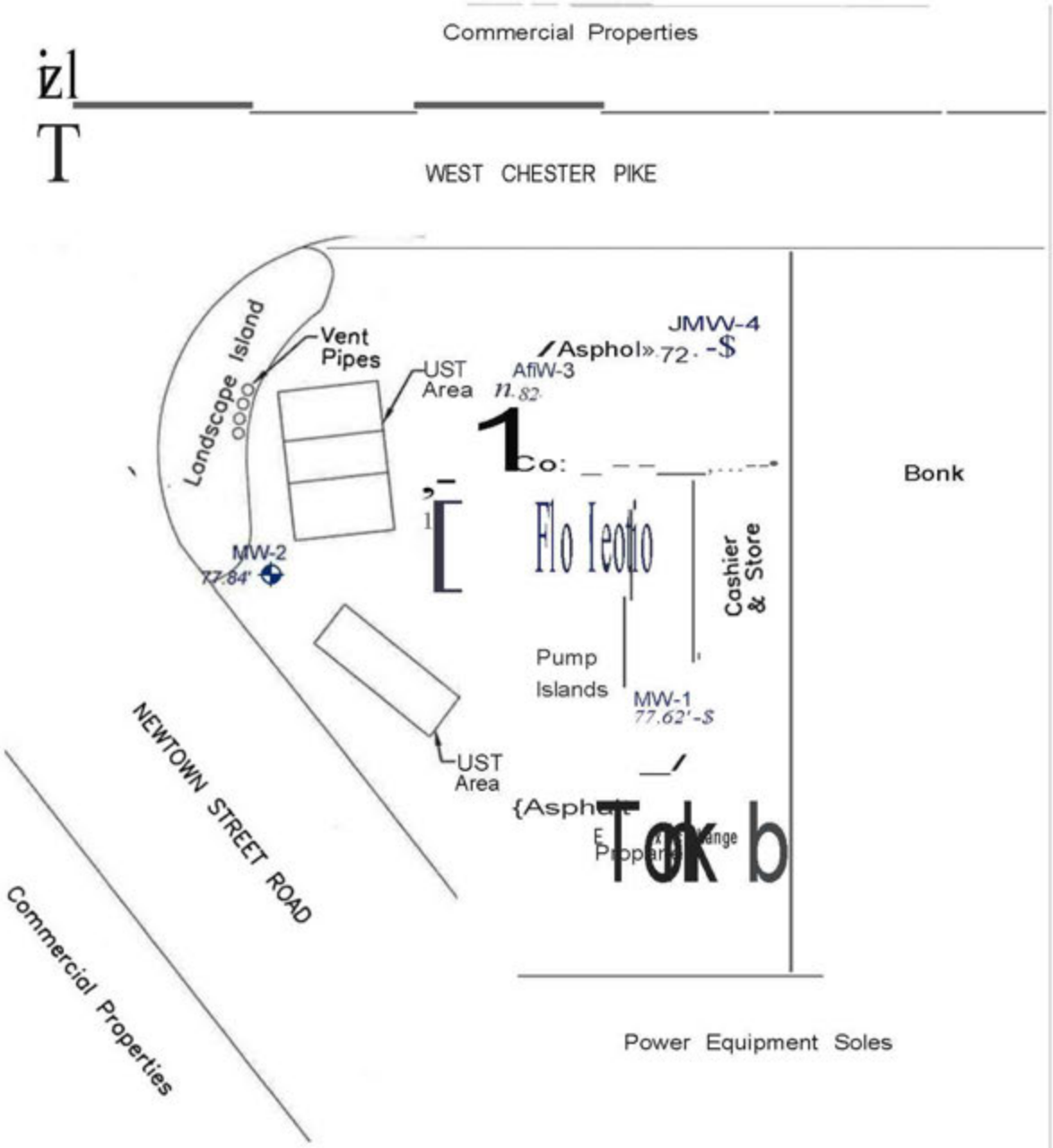

Figure No.	1
File No.	7356
Scale:	1"= 30'
Date:	10-25-2013
Prepared By:	CO
Checked By:	KC

MONITORING WELL LOCATION MAP

Former Amoco
3608 West Chester Pike
Newtown Square, PA

KEM
Keating Environmental Management, Inc.
835 Springdale Drive - Suite 200
Exton, PA 19341
610.594.2600 P - 610.594.6100 F

Table 2
Groundwater Quality Data
Former Amoco
3608 West Chester Pike
Newtown Square, PA

Monitoring Well Designation	**MW-1**	**MW-2**	**MW-3**	**MW-4**	**Residential Statewide**
Sampling Date	9/25/2013	9/25/2013	9/25/2013	9/25/2013	**Health Standard**
all concentrations in µg/L					
Benzene	**70.8**	<0.28	3	<0.28	**5**
Toluene	<11	<0.44	<0.44	<0.44	**1,000**
Ethylbenzene	*18.7j*	<0.21	<0.21	<0.21	**700**
Total Xylene	*6.4j*	<0.19	<0.19	<0.19	**10,000**
Naphthalene	*71.4j*	<0.25	<0.25	<0.25	**100**
Cumene	*13.8*	<0.22	<0.22	<0.22	**840**
MTBE	**15,000**	<0.29	<0.29	8.6	**20**
Lead	*3.1*	<3.0	<3.0	<3.0	**5**

Bold and shaded indicates that concentration exceeds the Residential Statewide Health Standards

Italized indicates that compound was detected but below the Residential Statewide Health Standards

< - compound not detected above the method detection limit

j - is an estimated concentration

New Jersey ACCUTEST LABORATORIES

Reissue #1
10/16/13

Technical Report for

KEM Partners, Inc.

Newtown Square Amoco, Newton Square, PA

7362

Accutest Job Number: JB48380

Sampling Date: 09/25/13

Report to:

KEM Partners, Inc.
835 Springdale Drive Suite 200
Exton, PA 19341
COrzechowski@KemPartners.com

ATTN: Chris Orzechowski

Total number of pages in report: **168**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Nancy F. Cole

Nancy Cole
Laboratory Director

Client Service contact: Kristin Beebe 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), PA, RI, SC, TN, VA, WV

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ACCUTEST.

October 15, 2013

Mr. Chris Orzechowski
KEM Partners, Inc.
835 Springdale Drive Suite 200
Exton, PA 19341

RE: Accutest job JB48380 Reissue

Dear Mr. Orzechowski,

The final report for Accutest job number JB48830 has been edited to reflect corrections to the final results. These edits have been incorporated into the revised report which is attached.

The MDL of 1,2-Dichloroethane has been lowered in order to meet PADEP Criteria. The attached revised report incorporates this revision.

Please contact me at 732-355-4559 if I can be of further assistance in this matter, or if you have any further questions regarding this data report.

Sincerely,

Kristin M. Beebe
Project Manager
Accutest Laboratories

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Accutest Laboratories

Sample Summary

KEM Partners, Inc.

Job No: JB48380

Newtown Square Amoco, Newton Square, PA
Project No: 7362

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JB48380-1	09/25/13	12:35	PD	09/25/13	AQ	Ground Water	MW-1
JB48380-1F	09/25/13	12:35	PD	09/25/13	AQ	Groundwater Filtered	MW-1
JB48380-2	09/25/13	12:50	PD	09/25/13	AQ	Ground Water	MW-4
JB48380-2F	09/25/13	12:50	PD	09/25/13	AQ	Groundwater Filtered	MW-4
JB48380-3	09/25/13	13:05	PD	09/25/13	AQ	Ground Water	MW-2
JB48380-3F	09/25/13	13:05	PD	09/25/13	AQ	Groundwater Filtered	MW-2
JB48380-4	09/25/13	13:15	PD	09/25/13	AQ	Ground Water	MW-3
JB48380-4F	09/25/13	13:15	PD	09/25/13	AQ	Groundwater Filtered	MW-3

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	KEM Partners, Inc.	**Job No**	JB48380
Site:	Newtown Square Amoco, Newton Square, PA	**Report Date**	10/15/2013 9:52:31 A

On 09/25/2013, 4 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 3.8 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB48380 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: AQ **Batch ID:** VU8158

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB49081-3MS, JB49081-3MSD were used as the QC samples indicated.

Matrix: AQ **Batch ID:** VU8162

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB48435-3MS, JB48435-3MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846-8011

Matrix: AQ **Batch ID:** OP69436

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB48407-1MS, JB48407-1MSD were used as the QC samples indicated.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP75055

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB48429-5MS, JB48429-5MSD, JB48429-5SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Lead are outside control limits. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

Summary of Hits

Job Number: JB48380
Account: KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA
Collected: 09/25/13

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JB48380-1	**MW-1**					
Benzene		70.8	25	7.0	ug/l	SW846 8260B
Ethylbenzene		18.7 J	25	5.2	ug/l	SW846 8260B
Xylene (total)		6.4 J	25	4.8	ug/l	SW846 8260B
Naphthalene		71.4 J	130	6.3	ug/l	SW846 8260B
Isopropylbenzene		13.8 J	50	5.6	ug/l	SW846 8260B
Methyl Tert Butyl Ether		15000	250	71	ug/l	SW846 8260B
JB48380-1F	**MW-1**					
Lead		3.1	3.0		ug/l	SW846 6010C
JB48380-2	**MW-4**					
No hits reported in this sample.						
JB48380-2F	**MW-4**					
No hits reported in this sample.						
JB48380-3	**MW-2**					
Benzene		3.0	1.0	0.28	ug/l	SW846 8260B
Methyl Tert Butyl Ether		3.0	1.0	0.29	ug/l	SW846 8260B
JB48380-3F	**MW-2**					
No hits reported in this sample.						
JB48380-4	**MW-3**					
Methyl Tert Butyl Ether		8.6	1.0	0.29	ug/l	SW846 8260B
JB48380-4F	**MW-3**					
No hits reported in this sample.						

New Jersey ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-1		
Lab Sample ID:	JB48380-1	**Date Sampled:**	09/25/13
Matrix:	AQ - Ground Water	**Date Received:**	09/25/13
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Newtown Square Amoco, Newton Square, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U176560.D	2.5	10/04/13	NT	n/a	n/a	VU8158
Run #2	U176645.D	25	10/07/13	NT	n/a	n/a	VU8162
Run #3	U176646.D	250	10/07/13	NT	n/a	n/a	VU8162

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml
Run #3	5.0 ml

PA Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	70.8 [a]	25	7.0	ug/l	
108-88-3	Toluene	ND [a]	25	11	ug/l	
100-41-4	Ethylbenzene	18.7 [a]	25	5.2	ug/l	J
1330-20-7	Xylene (total)	6.4 [a]	25	4.8	ug/l	J
91-20-3	Naphthalene	71.4 [a]	130	6.3	ug/l	J
107-06-2	1,2-Dichloroethane	ND	2.5	0.55	ug/l	
98-82-8	Isopropylbenzene	13.8 [a]	50	5.6	ug/l	J
1634-04-4	Methyl Tert Butyl Ether	15000 [b]	250	71	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND [a]	50	5.7	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND [a]	50	11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
1868-53-7	Dibromofluoromethane	93%	98%	99%	79-117%
17060-07-0	1,2-Dichloroethane-D4	103%	104%	103%	72-123%
2037-26-5	Toluene-D8	97%	98%	97%	82-118%
460-00-4	4-Bromofluorobenzene	97%	96%	95%	75-118%

(a) Result is from Run# 2
(b) Result is from Run# 3

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID: MW-1
Lab Sample ID: JB48380-1
Matrix: AQ - Ground Water
Method: SW846-8011 SW846 8011
Project: Newtown Square Amoco, Newton Square, PA

Date Sampled: 09/25/13
Date Received: 09/25/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	WW120680.D	1	10/03/13	VDT	10/01/13	OP69436	GWW4293
Run #2							

	Initial Volume	Final Volume
Run #1	35 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.011	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	95%		38-167%
3017-95-6	2-Bromo-1-chloropropane	145%		38-167%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-1		
Lab Sample ID:	JB48380-1F	**Date Sampled:**	09/25/13
Matrix:	AQ - Groundwater Filtered	**Date Received:**	09/25/13
		Percent Solids:	n/a
Project:	Newtown Square Amoco, Newton Square, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	3.1	3.0	ug/l	1	10/05/13	10/14/13	JY	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA32391
(2) Prep QC Batch: MP75055

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-4 JB48380-		
Lab Sample ID:	2	**Date Sampled:**	09/25/13
Matrix:	AQ - Ground Water	**Date Received:**	09/25/13
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Newtown Square Amoco, Newton Square, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U176557.D	1	10/04/13	NT	n/a	n/a	VU8158
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

PA Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.28	ug/l	
108-88-3	Toluene	ND	1.0	0.44	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.21	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.19	ug/l	
91-20-3	Naphthalene	ND	5.0	0.25	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.22	ug/l	
98-82-8	Isopropylbenzene	ND	2.0	0.22	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.29	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.23	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.43	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		79-117%
17060-07-0	1,2-Dichloroethane-D4	100%		72-123%
2037-26-5	Toluene-D8	98%		82-118%
460-00-4	4-Bromofluorobenzene	94%		75-118%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-4 JB48380-		
Lab Sample ID:	2	**Date Sampled:**	09/25/13
Matrix:	AQ - Ground Water	**Date Received:**	09/25/13
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	Newtown Square Amoco, Newton Square, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	WW120681.D	1	10/03/13	VDT	10/01/13	OP69436	GWW4293
Run #2							

	Initial Volume	Final Volume
Run #1	35 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.011	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	94%		38-167%
3017-95-6	2-Bromo-1-chloropropane	95%		38-167%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-4		
Lab Sample ID:	JB48380-2F	**Date Sampled:**	09/25/13
Matrix:	AQ - Groundwater Filtered	**Date Received:**	09/25/13
		Percent Solids:	n/a
Project:	Newtown Square Amoco, Newton Square, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 3.0	3.0	ug/l	1	10/05/13	10/14/13	JY	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA32391
(2) Prep QC Batch: MP75055

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID: MW-2 JB48380-
Lab Sample ID: 3
Matrix: AQ - Ground Water
Method: SW846 8260B
Project: Newtown Square Amoco, Newton Square, PA

Date Sampled: 09/25/13
Date Received: 09/25/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U176558.D	1	10/04/13	NT	n/a	n/a	VU8158
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

PA Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	3.0	1.0	0.28	ug/l	
108-88-3	Toluene	ND	1.0	0.44	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.21	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.19	ug/l	
91-20-3	Naphthalene	ND	5.0	0.25	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.22	ug/l	
98-82-8	Isopropylbenzene	ND	2.0	0.22	ug/l	
1634-04-4	Methyl Tert Butyl Ether	3.0	1.0	0.29	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.23	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.43	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		79-117%
17060-07-0	1,2-Dichloroethane-D4	103%		72-123%
2037-26-5	Toluene-D8	100%		82-118%
460-00-4	4-Bromofluorobenzene	98%		75-118%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-2 JB48380-		
Lab Sample ID:	3	**Date Sampled:**	09/25/13
Matrix:	AQ - Ground Water	**Date Received:**	09/25/13
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	Newtown Square Amoco, Newton Square, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	WW120682.D	1	10/03/13	VDT	10/01/13	OP69436	GWW4293
Run #2							

	Initial Volume	Final Volume
Run #1	35 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.011	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	88%		38-167%
3017-95-6	2-Bromo-1-chloropropane	140%		38-167%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-2		
Lab Sample ID:	JB48380-3F	**Date Sampled:**	09/25/13
Matrix:	AQ - Groundwater Filtered	**Date Received:**	09/25/13
		Percent Solids:	n/a
Project:	Newtown Square Amoco, Newton Square, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 3.0	3.0	ug/l	1	10/05/13	10/14/13	JY	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA32391
(2) Prep QC Batch: MP75055

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID: MW-3 JB48380-
Lab Sample ID: 4
Matrix: AQ - Ground Water
Method: SW846 8260B
Project: Newtown Square Amoco, Newton Square, PA

Date Sampled: 09/25/13
Date Received: 09/25/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U176559.D	1	10/04/13	NT	n/a	n/a	VU8158
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

PA Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.28	ug/l	
108-88-3	Toluene	ND	1.0	0.44	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.21	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.19	ug/l	
91-20-3	Naphthalene	ND	5.0	0.25	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.22	ug/l	
98-82-8	Isopropylbenzene	ND	2.0	0.22	ug/l	
1634-04-4	Methyl Tert Butyl Ether	8.6	1.0	0.29	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.23	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.43	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		79-117%
17060-07-0	1,2-Dichloroethane-D4	101%		72-123%
2037-26-5	Toluene-D8	97%		82-118%
460-00-4	4-Bromofluorobenzene	94%		75-118%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-3 JB48380-		
Lab Sample ID:	4	**Date Sampled:**	09/25/13
Matrix:	AQ - Ground Water	**Date Received:**	09/25/13
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	Newtown Square Amoco, Newton Square, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	WW120683.D	1	10/03/13	VDT	10/01/13	OP69436	GWW4293
Run #2							

	Initial Volume	Final Volume
Run #1	35 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.011	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	92%		38-167%
3017-95-6	2-Bromo-1-chloropropane	130%		38-167%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-3		
Lab Sample ID:	JB48380-4F	**Date Sampled:**	09/25/13
Matrix:	AQ - Groundwater Filtered	**Date Received:**	09/25/13
		Percent Solids:	n/a
Project:	Newtown Square Amoco, Newton Square, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 3.0	3.0	ug/l	1	10/05/13	10/14/13	JY	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA32391
(2) Prep QC Batch: MP75055

RL = Reporting Limit

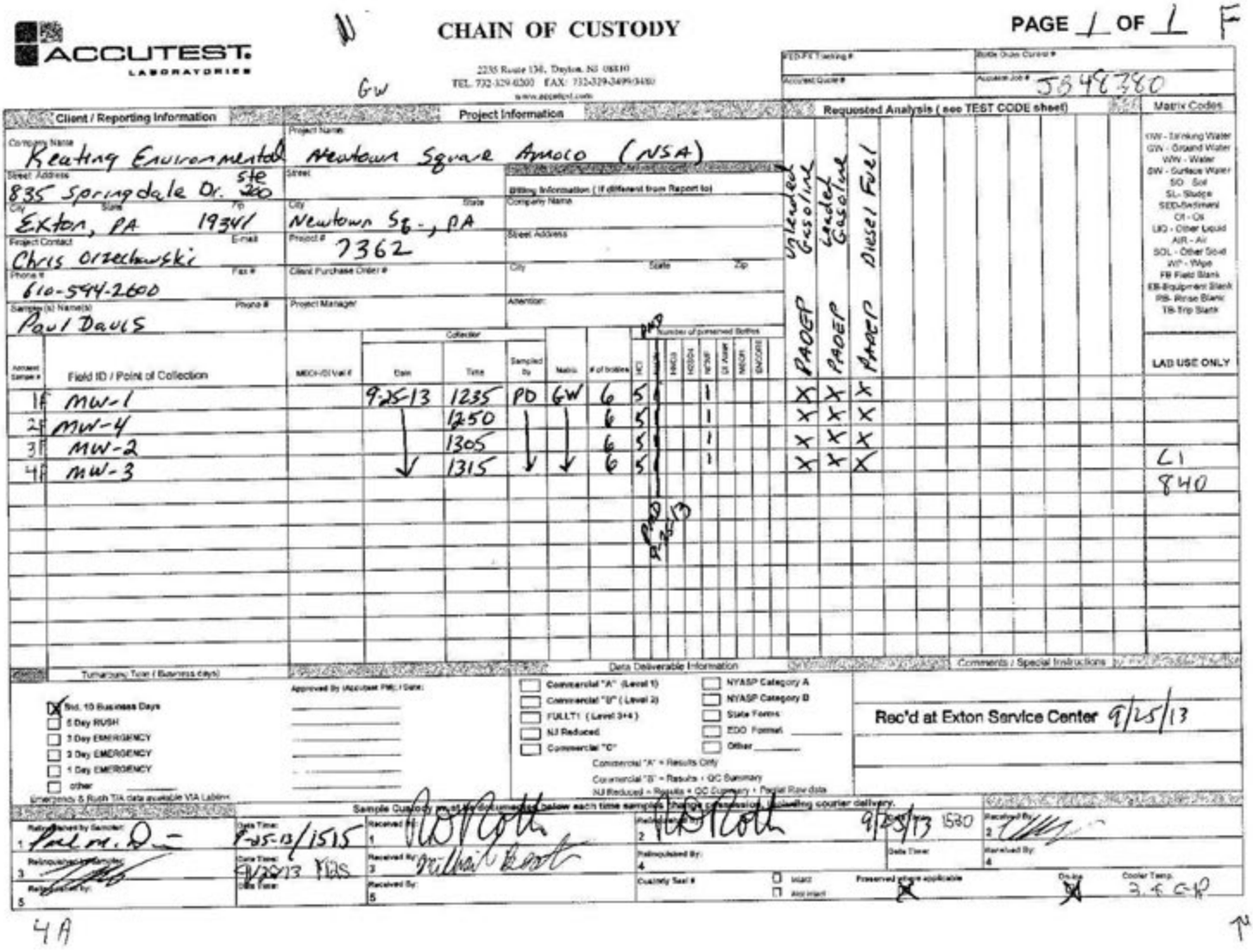
New Jersey ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



ACCUTEST LABORATORIES

CHAIN OF CUSTODY

PAGE 1 OF 1

2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

GW

Accutest Job # 5548380

Client / Reporting Information

Company Name: Keating Environmental
Street Address: 835 Springdale Dr. ste 200
City: Exton State: PA Zip: 19341
Project Contact: Chris Orzechowski E-mail:
Phone #: 610-544-2600 Fax #:
Sampler(s) Name(s): Paul Davis Phone #:

Project Information

Project Name: Newtown Square Amoco (NSA)
Street:
City: Newtown Sq. State: PA
Project #: 7362
Client Purchase Order #:
Project Manager:

Billing Information (If different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH Vial #	Collected: Date	Collected: Time	Sampled By	Matrix	# of bottles	Preservation: HCl	Preservation: MeOH	Preservation: H2SO4	Preservation: HNO3	Preservation: NaOH	Preservation: Zn Acet	Preservation: NaOH/ZnAc	Preservation: ENCORE	Unleaded Gasoline	Leaded Gasoline	Diesel Fuel	LAB USE ONLY
1F	MW-1		9-25-13	1235	PD	GW	6	5				1				PADEP	PADEP	PADEP	
2F	MW-4			1250			6	5				1				PADEP	PADEP	PADEP	
3F	MW-2			1305			6	5				1				PADEP	PADEP	PADEP	
4F	MW-3			1315			6	5				1				PADEP	PADEP	PADEP	

PM
PAD 9-25-13

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] other

Emergency & Rush T/A data available VIA Labnet

Approved By (Accutest PM) / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Rec'd at Exton Service Center 9/25/13

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler	Date Time	Received By	Relinquished By	Date Time	Received By
1	Paul M. D—	9-25-13/1515	1			
2					9/25/13 1580	2
3		9/25/13 1515	3			3
4						4
5			5			

Custody Seal #: Intact / Not Intact — Preserved where applicable: X — On Ice: X — Cooler Temp: 3.6 C-P

4A

P

5.1 5

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB48380 **Client:** **Project:**

Date / Time Received: 9/25/2013 **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (3.8/3.8); 0

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK:	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservatio	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Comments

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Accutest Laboratories
V: 732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www.accutest.com

JB48380: Chain of Custody
Page 2 of 2

Internal Sample Tracking Chronicle

KEM Partners, Inc.

Job No: JB48380

Newtown Square Amoco, Newton Square, PA
Project No: 7362

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB48380-1 MW-1	Collected: 25-SEP-13 12:35 By: PD		Received: 25-SEP-13 By: MB			
JB48380-1	SW846-8011	3- OCT-13 17:47	VDT	01-OCT-13	DS	V8011EDB
JB48380-1	SW846 8260B	4- OCT-13 20:32	NT			V8260PALGTMB
JB48380-1	SW846 8260B	07-OCT-13 13:52	NT			V8260PALGTMB
JB48380-1	SW846 8260B	07-OCT-13 14:22	NT			V8260PALGTMB
JB48380-2 MW-4	Collected: 25-SEP-13 12:50 By: PD		Received: 25-SEP-13 By: MB			
JB48380-2	SW846-8011	3- OCT-13 18:05	VDT	01-OCT-13	DS	V8011EDB
JB48380-2	SW846 8260B	4- OCT-13 19:04	NT			V8260PALGTMB
JB48380-3 MW-2	Collected: 25-SEP-13 13:05 By: PD		Received: 25-SEP-13 By: MB			
JB48380-3	SW846-8011	3- OCT-13 18:23	VDT	01-OCT-13	DS	V8011EDB
JB48380-3	SW846 8260B	4- OCT-13 19:33	NT			V8260PALGTMB
JB48380-4 MW-3	Collected: 25-SEP-13 13:15 By: PD		Received: 25-SEP-13 By: MB			
JB48380-4	SW846-8011	3- OCT-13 18:41	VDT	01-OCT-13	DS	V8011EDB
JB48380-4	SW846 8260B	4- OCT-13 20:02	NT			V8260PALGTMB
JB48380-1F MW-1	Collected: 25-SEP-13 12:35 By: PD		Received: 25-SEP-13 By: MB			
JB48380-1F	SW846 6010C	14-OCT-13 21:55	JY	05-OCT-13	AH	PB
JB48380-2F MW-4	Collected: 25-SEP-13 12:50 By: PD		Received: 25-SEP-13 By: MB			
JB48380-2F	SW846 6010C	14-OCT-13 22:01	JY	05-OCT-13	AH	PB
JB48380-3F MW-2	Collected: 25-SEP-13 13:05 By: PD		Received: 25-SEP-13 By: MB			
JB48380-3F	SW846 6010C	14-OCT-13 22:20	JY	05-OCT-13	AH	PB

Internal Sample Tracking Chronicle

KEM Partners, Inc.

Job No: JB48380

Newtown Square Amoco, Newton Square, PA
Project No: 7362

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB48380-4F Collected: 25-SEP-13 13:15 By: PD Received: 25-SEP-13 By: MB MW-3						
JB48380-4F	SW846 6010C	14-OCT-13 22:26	JY	05-OCT-13	AH	PB

Accutest Internal Chain of Custody

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA
Received: 09/25/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB48380-1.2	Secured Storage	Richa Patel	10/01/13 08:49	Retrieve from Storage
JB48380-1.2	Richa Patel	Secured Storage	10/01/13 11:51	Return to Storage
JB48380-1.2.1	Richa Patel	Organics Prep	10/01/13 08:49	Extract from JB48380-1.2
JB48380-1.2.1	Organics Prep	Khusbu Shah	10/01/13 15:06	Extract from JB48380-1.2
JB48380-1.2.1	Khusbu Shah	Extract Storage	10/01/13 15:06	Return to Storage
JB48380-1.2.1	Extract Storage	Vincent Drago	10/03/13 10:58	Retrieve from Storage
JB48380-1.2.1	Vincent Drago	GCWW	10/03/13 10:58	Load on Instrument
JB48380-1.2.1	GCWW	Vincent Drago	10/07/13 10:34	Unload from Instrument
JB48380-1.2.1	Vincent Drago	Extract Freezer	10/07/13 10:34	Return to Storage
JB48380-1.4	Secured Storage	Nathaniel Tuvera	10/04/13 16:58	Retrieve from Storage
JB48380-1.4	Nathaniel Tuvera	Secured Storage	10/04/13 16:58	Return to Storage
JB48380-1.5	Secured Storage	Nathaniel Tuvera	10/03/13 16:38	Retrieve from Storage
JB48380-1.5	Nathaniel Tuvera	GCMSU	10/03/13 16:38	Load on Instrument
JB48380-1.5	GCMSU	Nathaniel Tuvera	10/04/13 10:23	Unload from Instrument
JB48380-1.5	Nathaniel Tuvera	Secured Storage	10/04/13 10:23	Return to Storage
JB48380-1.5	Secured Storage	Nathaniel Tuvera	10/07/13 17:04	Retrieve from Storage
JB48380-1.5	Nathaniel Tuvera	Secured Storage	10/07/13 17:04	Return to Storage
JB48380-1F.1	Secured Storage	Rinku Patel	09/26/13 11:23	Retrieve from Storage
JB48380-1F.1	Rinku Patel	Secured Storage	09/26/13 15:19	Return to Storage
JB48380-1F.1	Secured Storage	Bernadette Vassilatos	10/04/13 07:13	Retrieve from Storage
JB48380-1F.1	Bernadette Vassilatos	Secured Staging Area	10/04/13 07:14	Return to Storage
JB48380-1F.1	Secured Staging Area	Amirah Hillman	10/04/13 08:56	Retrieve from Storage
JB48380-1F.1	Amirah Hillman	Secured Storage	10/04/13 12:34	Return to Storage
JB48380-1F.1.1	Amirah Hillman	Metals Digestion	10/04/13 12:03	Digestate from JB48380-1F.1
JB48380-1F.1.1	Metals Digestion	Amirah Hillman	10/04/13 12:05	Digestate from JB48380-1F.1
JB48380-1F.1.1	Amirah Hillman	Metals Digestate Storage	10/04/13 12:05	Return to Storage
JB48380-2.2	Secured Storage	Richa Patel	10/01/13 08:49	Retrieve from Storage
JB48380-2.2	Richa Patel	Secured Storage	10/01/13 11:51	Return to Storage
JB48380-2.2.1	Richa Patel	Organics Prep	10/01/13 08:49	Extract from JB48380-2.2
JB48380-2.2.1	Organics Prep	Khusbu Shah	10/01/13 15:06	Extract from JB48380-2.2
JB48380-2.2.1	Khusbu Shah	Extract Storage	10/01/13 15:06	Return to Storage
JB48380-2.2.1	Extract Storage	Vincent Drago	10/03/13 10:58	Retrieve from Storage
JB48380-2.2.1	Vincent Drago	GCWW	10/03/13 10:58	Load on Instrument
JB48380-2.2.1	GCWW	Vincent Drago	10/07/13 10:34	Unload from Instrument
JB48380-2.2.1	Vincent Drago	Extract Freezer	10/07/13 10:34	Return to Storage
JB48380-2.4	Secured Storage	Nathaniel Tuvera	10/04/13 16:59	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA
Received: 09/25/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB48380-2.4	Nathaniel Tuvera	GCMSU	10/04/13 16:59	Load on Instrument
JB48380-2.4	GCMSU	Nathaniel Tuvera	10/07/13 10:56	Unload from Instrument
JB48380-2.4	Nathaniel Tuvera	Secured Storage	10/07/13 10:56	Return to Storage
JB48380-2.5	Secured Storage	Nathaniel Tuvera	10/03/13 16:38	Retrieve from Storage
JB48380-2.5	Nathaniel Tuvera	GCMSU	10/03/13 16:38	Load on Instrument
JB48380-2.5	GCMSU	Nathaniel Tuvera	10/04/13 10:23	Unload from Instrument
JB48380-2.5	Nathaniel Tuvera	Secured Storage	10/04/13 10:23	Return to Storage
JB48380-2F.1	Secured Storage	Rinku Patel	09/26/13 11:23	Retrieve from Storage
JB48380-2F.1	Rinku Patel	Secured Storage	09/26/13 15:19	Return to Storage
JB48380-2F.1	Secured Storage	Bernadette Vassilatos	10/04/13 07:13	Retrieve from Storage
JB48380-2F.1	Bernadette Vassilatos	Secured Staging Area	10/04/13 07:14	Return to Storage
JB48380-2F.1	Secured Staging Area	Amirah Hillman	10/04/13 08:56	Retrieve from Storage
JB48380-2F.1	Amirah Hillman	Secured Storage	10/04/13 12:34	Return to Storage
JB48380-2F.1.1	Amirah Hillman	Metals Digestion	10/04/13 12:03	Digestate from JB48380-2F.1
JB48380-2F.1.1	Metals Digestion	Amirah Hillman	10/04/13 12:05	Digestate from JB48380-2F.1
JB48380-2F.1.1	Amirah Hillman	Metals Digestate Storage	10/04/13 12:05	Return to Storage
JB48380-3.2	Secured Storage	Richa Patel	10/01/13 08:49	Retrieve from Storage
JB48380-3.2	Richa Patel	Secured Storage	10/01/13 11:51	Return to Storage
JB48380-3.2.1	Richa Patel	Organics Prep	10/01/13 08:49	Extract from JB48380-3.2
JB48380-3.2.1	Organics Prep	Khusbu Shah	10/01/13 15:06	Extract from JB48380-3.2
JB48380-3.2.1	Khusbu Shah	Extract Storage	10/01/13 15:06	Return to Storage
JB48380-3.2.1	Extract Storage	Vincent Drago	10/03/13 10:58	Retrieve from Storage
JB48380-3.2.1	Vincent Drago	GCWW	10/03/13 10:58	Load on Instrument
JB48380-3.2.1	GCWW	Vincent Drago	10/07/13 10:34	Unload from Instrument
JB48380-3.2.1	Vincent Drago	Extract Freezer	10/07/13 10:34	Return to Storage
JB48380-3.4	Secured Storage	Nathaniel Tuvera	10/04/13 16:59	Retrieve from Storage
JB48380-3.4	Nathaniel Tuvera	GCMSU	10/04/13 16:59	Load on Instrument
JB48380-3.4	GCMSU	Nathaniel Tuvera	10/07/13 10:56	Unload from Instrument
JB48380-3.4	Nathaniel Tuvera	Secured Storage	10/07/13 10:56	Return to Storage
JB48380-3.5	Secured Storage	Nathaniel Tuvera	10/03/13 16:38	Retrieve from Storage
JB48380-3.5	Nathaniel Tuvera	GCMSU	10/03/13 16:38	Load on Instrument
JB48380-3.5	GCMSU	Nathaniel Tuvera	10/04/13 10:23	Unload from Instrument
JB48380-3.5	Nathaniel Tuvera	Secured Storage	10/04/13 10:23	Return to Storage
JB48380-3F.1	Secured Storage	Rinku Patel	09/26/13 11:23	Retrieve from Storage
JB48380-3F.1	Rinku Patel	Secured Storage	09/26/13 15:19	Return to Storage
JB48380-3F.1	Secured Storage	Bernadette Vassilatos	10/04/13 07:13	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA
Received: 09/25/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB48380-3F.1	Bernadette Vassilatos	Secured Staging Area	10/04/13 07:14	Return to Storage
JB48380-3F.1	Secured Staging Area	Amirah Hillman	10/04/13 08:56	Retrieve from Storage
JB48380-3F.1	Amirah Hillman	Secured Storage	10/04/13 12:34	Return to Storage
JB48380-3F.1.1	Amirah Hillman	Metals Digestion	10/04/13 12:03	Digestate from JB48380-3F.1
JB48380-3F.1.1	Metals Digestion	Amirah Hillman	10/04/13 12:05	Digestate from JB48380-3F.1
JB48380-3F.1.1	Amirah Hillman	Metals Digestate Storage	10/04/13 12:05	Return to Storage
JB48380-4.2	Secured Storage	Nathaniel Tuvera	10/03/13 16:38	Retrieve from Storage
JB48380-4.2	Nathaniel Tuvera	GCMSU	10/03/13 16:38	Load on Instrument
JB48380-4.2	GCMSU	Nathaniel Tuvera	10/04/13 10:23	Unload from Instrument
JB48380-4.2	Nathaniel Tuvera	Secured Storage	10/04/13 10:23	Return to Storage
JB48380-4.4	Secured Storage	Nathaniel Tuvera	10/04/13 16:59	Retrieve from Storage
JB48380-4.4	Nathaniel Tuvera	GCMSU	10/04/13 16:59	Load on Instrument
JB48380-4.4	GCMSU	Nathaniel Tuvera	10/07/13 10:56	Unload from Instrument
JB48380-4.4	Nathaniel Tuvera	Secured Storage	10/07/13 10:56	Return to Storage
JB48380-4.5	Secured Storage	Richa Patel	10/01/13 08:49	Retrieve from Storage
JB48380-4.5	Richa Patel	Secured Storage	10/01/13 11:51	Return to Storage
JB48380-4.5.1	Richa Patel	Organics Prep	10/01/13 08:49	Extract from JB48380-4.5
JB48380-4.5.1	Organics Prep	Khusbu Shah	10/01/13 15:06	Extract from JB48380-4.5
JB48380-4.5.1	Khusbu Shah	Extract Storage	10/01/13 15:06	Return to Storage
JB48380-4.5.1	Extract Storage	Vincent Drago	10/03/13 10:58	Retrieve from Storage
JB48380-4.5.1	Vincent Drago	GCWW	10/03/13 10:58	Load on Instrument
JB48380-4.5.1	GCWW	Vincent Drago	10/07/13 10:34	Unload from Instrument
JB48380-4.5.1	Vincent Drago	Extract Freezer	10/07/13 10:34	Return to Storage
JB48380-4F.1	Secured Storage	Rinku Patel	09/26/13 11:23	Retrieve from Storage
JB48380-4F.1	Rinku Patel	Secured Storage	09/26/13 15:19	Return to Storage
JB48380-4F.1	Secured Storage	Bernadette Vassilatos	10/04/13 07:13	Retrieve from Storage
JB48380-4F.1	Bernadette Vassilatos	Secured Staging Area	10/04/13 07:14	Return to Storage
JB48380-4F.1	Secured Staging Area	Amirah Hillman	10/04/13 08:56	Retrieve from Storage
JB48380-4F.1	Amirah Hillman	Secured Storage	10/04/13 12:34	Return to Storage
JB48380-4F.1.1	Amirah Hillman	Metals Digestion	10/04/13 12:03	Digestate from JB48380-4F.1
JB48380-4F.1.1	Metals Digestion	Amirah Hillman	10/04/13 12:05	Digestate from JB48380-4F.1
JB48380-4F.1.1	Amirah Hillman	Metals Digestate Storage	10/04/13 12:05	Return to Storage

New Jersey ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VU8158-MB1	U176540.D	1	10/04/13	NT	n/a	n/a	VU8158

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB48380-1, JB48380-2, JB48380-3, JB48380-4

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.28	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.21	ug/l	
98-82-8	Isopropylbenzene	ND	2.0	0.22	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.29	ug/l	
91-20-3	Naphthalene	ND	5.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.44	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.23	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.43	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.19	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	79-117%
17060-07-0	1,2-Dichloroethane-D4	99%	72-123%
2037-26-5	Toluene-D8	99%	82-118%
460-00-4	4-Bromofluorobenzene	96%	75-118%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VU8162-MB1	U176640.D	1	10/07/13	NT	n/a	n/a	VU8162

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB48380-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.28	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.21	ug/l	
98-82-8	Isopropylbenzene	ND	2.0	0.22	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.29	ug/l	
91-20-3	Naphthalene	ND	5.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.44	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.23	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.43	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.19	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	79-117%
17060-07-0	1,2-Dichloroethane-D4	98%	72-123%
2037-26-5	Toluene-D8	99%	82-118%
460-00-4	4-Bromofluorobenzene	94%	75-118%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Blank Spike Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VU8158-BS	U176541.D	1	10/04/13	NT	n/a	n/a	VU8158

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB48380-1, JB48380-2, JB48380-3, JB48380-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	46.4	93	80-119
107-06-2	1,2-Dichloroethane	50	52.6	105	75-133
100-41-4	Ethylbenzene	50	47.2	94	82-119
98-82-8	Isopropylbenzene	50	47.2	94	77-127
1634-04-4	Methyl Tert Butyl Ether	100	87.2	87	75-122
91-20-3	Naphthalene	50	45.1	90	62-133
108-88-3	Toluene	50	46.1	92	82-120
95-63-6	1,2,4-Trimethylbenzene	50	48.1	96	81-123
108-67-8	1,3,5-Trimethylbenzene	50	47.7	95	79-124
1330-20-7	Xylene (total)	150	144	96	82-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	94%	79-117%
17060-07-0	1,2-Dichloroethane-D4	101%	72-123%
2037-26-5	Toluene-D8	98%	82-118%
460-00-4	4-Bromofluorobenzene	92%	75-118%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VU8162-BS	U176641.D	1	10/07/13	NT	n/a	n/a	VU8162

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB48380-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	47.0	94	80-119
100-41-4	Ethylbenzene	50	48.3	97	82-119
98-82-8	Isopropylbenzene	50	47.3	95	77-127
1634-04-4	Methyl Tert Butyl Ether	100	96.7	97	75-122
91-20-3	Naphthalene	50	48.2	96	62-133
108-88-3	Toluene	50	45.7	91	82-120
95-63-6	1,2,4-Trimethylbenzene	50	47.2	94	81-123
108-67-8	1,3,5-Trimethylbenzene	50	47.3	95	79-124
1330-20-7	Xylene (total)	150	144	96	82-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-117%
17060-07-0	1,2-Dichloroethane-D4	105%	72-123%
2037-26-5	Toluene-D8	98%	82-118%
460-00-4	4-Bromofluorobenzene	91%	75-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB49081-3MS	U176554.D	1	10/04/13	NT	n/a	n/a	VU8158
JB49081-3MSD	U176555.D	1	10/04/13	NT	n/a	n/a	VU8158
JB49081-3	U176549.D	1	10/04/13	NT	n/a	n/a	VU8158

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB48380-1, JB48380-2, JB48380-3, JB48380-4

CAS No.	Compound	JB49081-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		50	49.7	99	49.0	98	1	49-138/12
107-06-2	1,2-Dichloroethane	ND		50	59.5	119	58.7	117	1	69-138/12
100-41-4	Ethylbenzene	ND		50	51.8	104	50.0	100	4	48-139/13
98-82-8	Isopropylbenzene	ND		50	49.9	100	48.6	97	3	61-138/14
1634-04-4	Methyl Tert Butyl Ether	ND		50	50.6	101	53.1	106	5	63-134/12
91-20-3	Naphthalene	ND		50	49.9	100	51.0	102	2	50-149/15
108-88-3	Toluene	ND		50	50.4	101	48.3	97	4	54-138/13
95-63-6	1,2,4-Trimethylbenzene	ND		50	50.1	100	49.1	98	2	51-140/13
108-67-8	1,3,5-Trimethylbenzene	ND		50	49.8	100	49.0	98	2	58-138/14
1330-20-7	Xylene (total)	ND		150	157	105	153	102	3	53-136/12

CAS No.	Surrogate Recoveries	MS	MSD	JB49081-3	Limits
1868-53-7	Dibromofluoromethane	95%	97%	94%	79-117%
17060-07-0	1,2-Dichloroethane-D4	102%	102%	102%	72-123%
2037-26-5	Toluene-D8	98%	98%	96%	82-118%
460-00-4	4-Bromofluorobenzene	90%	90%	97%	75-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB48435-3MS	U176653.D	1	10/07/13	NT	n/a	n/a	VU8162
JB48435-3MSD	U176654.D	1	10/07/13	NT	n/a	n/a	VU8162
JB48435-3	U176648.D	1	10/07/13	NT	n/a	n/a	VU8162

The QC reported here applies to the following samples: **Method:** SW846 8260B

JB48380-1

CAS No.	Compound	JB48435-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		50	43.7	87	44.4	89	2	49-138/12
100-41-4	Ethylbenzene	ND		50	45.4	91	44.6	89	2	48-139/13
98-82-8	Isopropylbenzene	ND		50	44.0	88	44.0	88	0	61-138/14
1634-04-4	Methyl Tert Butyl Ether	ND		50	46.2	92	47.6	95	3	63-134/12
91-20-3	Naphthalene	ND		50	44.6	89	45.4	91	2	50-149/15
108-88-3	Toluene	ND		50	43.6	87	44.9	90	3	54-138/13
95-63-6	1,2,4-Trimethylbenzene	ND		50	44.1	88	43.9	88	0	51-140/13
108-67-8	1,3,5-Trimethylbenzene	ND		50	44.4	89	44.1	88	1	58-138/14
1330-20-7	Xylene (total)	ND		150	136	91	136	91	0	53-136/12

CAS No.	Surrogate Recoveries	MS	MSD	JB48435-3	Limits
1868-53-7	Dibromofluoromethane	98%	99%	94%	79-117%
17060-07-0	1,2-Dichloroethane-D4	105%	110%	102%	72-123%
2037-26-5	Toluene-D8	97%	100%	98%	82-118%
460-00-4	4-Bromofluorobenzene	93%	93%	94%	75-118%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample:	VU8071-BFB	**Injection Date:**	08/07/13
Lab File ID:	U174548.D	**Injection Time:**	14:39
Instrument ID:	GCMSU		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	6594	19.7		Pass
75	30.0 - 60.0% of mass 95	16664	49.7		Pass
95	Base peak, 100% relative abundance	33539	100.0		Pass
96	5.0 - 9.0% of mass 95	2259	6.74		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 150.0% of mass 95	34624	103.2		Pass
175	5.0 - 9.0% of mass 174	2963	8.83	(8.56) [a]	Pass
176	95.0 - 101.0% of mass 174	33755	100.6	(97.5) [a]	Pass
177	5.0 - 9.0% of mass 176	2242	6.68	(6.64) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VU8071-IC8071	U174549.D	08/07/13	15:15	00:36	Initial cal 1
VU8071-IC8071	U174550.D	08/07/13	15:45	01:06	Initial cal 2
VU8071-IC8071	U174551.D	08/07/13	16:14	01:35	Initial cal 0.5
VU8071-IC8071	U174552.D	08/07/13	16:43	02:04	Initial cal 5
VU8071-IC8071	U174553.D	08/07/13	17:12	02:33	Initial cal 10
VU8071-IC8071	U174554.D	08/07/13	17:41	03:02	Initial cal 20
VU8071-ICC8071	U174555.D	08/07/13	18:11	03:32	Initial cal 50
VU8071-IC8071	U174556.D	08/07/13	18:40	04:01	Initial cal 75
VU8071-IC8071	U174557.D	08/07/13	19:09	04:30	Initial cal 100
VU8071-IC8071	U174558.D	08/07/13	19:38	04:59	Initial cal 200
VU8071-ICV8071	U174560.D	08/07/13	20:37	05:58	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample:	VU8158-BFB	**Injection Date:**	10/04/13
Lab File ID:	U176537.D	**Injection Time:**	08:55
Instrument ID:	GCMSU		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	6717	21.7		Pass
75	30.0 - 60.0% of mass 95	16294	52.7		Pass
95	Base peak, 100% relative abundance	30925	100.0		Pass
96	5.0 - 9.0% of mass 95	2136	6.91		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	32948	106.5		Pass
175	5.0 - 9.0% of mass 174	2800	9.05	(8.50) [a]	Pass
176	95.0 - 101.0% of mass 174	33096	107.0	(100.4) [a]	Pass
177	5.0 - 9.0% of mass 176	2243	7.25	(6.78) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VU8158-CC8071	U176538.D	10/04/13	09:26	00:31	Continuing cal 20
VU8158-MB1	U176540.D	10/04/13	10:44	01:49	Method Blank
VU8158-BS	U176541.D	10/04/13	11:13	02:18	Blank Spike
ZZZZZZ	U176543.D	10/04/13	12:12	03:17	(unrelated sample)
ZZZZZZ	U176544.D	10/04/13	12:41	03:46	(unrelated sample)
ZZZZZZ	U176545.D	10/04/13	13:11	04:16	(unrelated sample)
ZZZZZZ	U176546.D	10/04/13	13:40	04:45	(unrelated sample)
ZZZZZZ	U176547.D	10/04/13	14:09	05:14	(unrelated sample)
ZZZZZZ	U176548.D	10/04/13	14:39	05:44	(unrelated sample)
JB49081-3	U176549.D	10/04/13	15:08	06:13	(used for QC only; not part of job JB48380)
ZZZZZZ	U176550.D	10/04/13	15:38	06:43	(unrelated sample)
ZZZZZZ	U176551.D	10/04/13	16:07	07:12	(unrelated sample)
ZZZZZZ	U176552.D	10/04/13	16:37	07:42	(unrelated sample)
ZZZZZZ	U176553.D	10/04/13	17:06	08:11	(unrelated sample)
JB49081-3MS	U176554.D	10/04/13	17:35	08:40	Matrix Spike
JB49081-3MSD	U176555.D	10/04/13	18:05	09:10	Matrix Spike Duplicate
JB48380-2	U176557.D	10/04/13	19:04	10:09	MW-4
JB48380-3	U176558.D	10/04/13	19:33	10:38	MW-2
JB48380-4	U176559.D	10/04/13	20:02	11:07	MW-3
JB48380-1	U176560.D	10/04/13	20:32	11:37	MW-1

Instrument Performance Check (BFB)

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample:	VU8162-BFB	**Injection Date:**	10/07/13
Lab File ID:	U176638.D	**Injection Time:**	10:01
Instrument ID:	GCMSU		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	6819	22.6		Pass
75	30.0 - 80.0% of mass 95	15542	51.4		Pass
95	Base peak, 100% relative abundance	30235	100.0		Pass
96	5.0 - 9.0% of mass 95	2064	6.83		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	31746	105.0		Pass
175	5.0 - 9.0% of mass 174	2827	9.35	(8.91) [a]	Pass
176	95.0 - 101.0% of mass 174	30694	101.5	(96.7) [a]	Pass
177	5.0 - 9.0% of mass 176	2154	7.12	(7.02) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VU8162-CC8071	U176639.D	10/07/13	10:36	00:35	Continuing cal 20
VU8162-MB1	U176640.D	10/07/13	11:15	01:14	Method Blank
VU8162-BS	U176641.D	10/07/13	11:52	01:51	Blank Spike
ZZZZZZ	U176643.D	10/07/13	12:52	02:51	(unrelated sample)
ZZZZZZ	U176644.D	10/07/13	13:22	03:21	(unrelated sample)
JB48380-1	U176645.D	10/07/13	13:52	03:51	MW-1
JB48380-1	U176646.D	10/07/13	14:22	04:21	MW-1
ZZZZZZ	U176647.D	10/07/13	14:51	04:50	(unrelated sample)
JB48435-3	U176648.D	10/07/13	15:21	05:20	(used for QC only; not part of job JB48380)
ZZZZZZ	U176649.D	10/07/13	15:50	05:49	(unrelated sample)
ZZZZZZ	U176650.D	10/07/13	16:19	06:18	(unrelated sample)
ZZZZZZ	U176651.D	10/07/13	16:49	06:48	(unrelated sample)
ZZZZZZ	U176652.D	10/07/13	17:19	07:18	(unrelated sample)
JB48435-3MS	U176653.D	10/07/13	17:49	07:48	Matrix Spike
JB48435-3MSD	U176654.D	10/07/13	18:18	08:17	Matrix Spike Duplicate
ZZZZZZ	U176656.D	10/07/13	19:17	09:16	(unrelated sample)
ZZZZZZ	U176657.D	10/07/13	19:46	09:45	(unrelated sample)
ZZZZZZ	U176658.D	10/07/13	20:15	10:14	(unrelated sample)
ZZZZZZ	U176659.D	10/07/13	20:44	10:43	(unrelated sample)
ZZZZZZ	U176660.D	10/07/13	21:14	11:13	(unrelated sample)
ZZZZZZ	U176661.D	10/07/13	21:43	11:42	(unrelated sample)

Volatile Internal Standard Area Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Check Std:	VU8158-CC8071	**Injection Date:**	10/04/13
Lab File ID:	U176538.D	**Injection Time:**	09:26
Instrument ID:	GCMSU	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	79106	7.85	116736	10.06	150782	10.98	140121	14.32	97669	16.89
Upper Limit [a]	158212	8.35	233472	10.56	301564	11.48	280242	14.82	195338	17.39
Lower Limit [b]	39553	7.35	58368	9.56	75391	10.48	70061	13.82	48835	16.39

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VU8158-MB1	82438	7.84	117127	10.06	148908	10.98	143921	14.31	95515	16.89
VU8158-BS	82000	7.84	122806	10.06	158548	10.98	149696	14.32	104049	16.89
ZZZZZZ	82304	7.85	118844	10.06	151540	10.98	143315	14.32	97697	16.89
ZZZZZZ	82056	7.85	114905	10.06	146465	10.98	142029	14.32	96979	16.89
ZZZZZZ	80670	7.85	117129	10.06	152612	10.98	146403	14.32	97101	16.89
ZZZZZZ	79731	7.85	115660	10.06	149017	10.98	145555	14.32	98678	16.89
ZZZZZZ	83930	7.85	117457	10.06	152967	10.98	148130	14.32	96219	16.89
ZZZZZZ	80118	7.85	112656	10.06	146634	10.98	138847	14.32	94261	16.89
JB49081-3	81763	7.85	117586	10.06	151347	10.98	142394	14.32	93334	16.89
ZZZZZZ	78248	7.84	113697	10.06	148220	10.98	142107	14.32	96198	16.89
ZZZZZZ	80313	7.85	115022	10.06	149535	10.98	142850	14.32	96139	16.89
ZZZZZZ	79276	7.85	116364	10.06	151511	10.98	144397	14.32	95663	16.89
ZZZZZZ	79534	7.85	113317	10.06	146549	10.99	146776	14.32	93979	16.89
JB49081-3MS	82860	7.85	118635	10.06	152479	10.99	144447	14.31	103648	16.89
JB49081-3MSD	84041	7.84	120701	10.05	156969	10.98	148643	14.32	105566	16.89
JB48380-2	77600	7.84	120383	10.06	154747	10.98	147243	14.32	99229	16.88
JB48380-3	76040	7.85	118901	10.06	153461	10.98	145620	14.32	95909	16.89
JB48380-4	74015	7.85	121219	10.06	154735	10.98	146974	14.32	98552	16.89
JB48380-1	73522	7.84	124359	10.06	157367	10.99	147292	14.32	95427	16.89

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Check Std:	VU8162-CC8071	**Injection Date:**	10/07/13
Lab File ID:	U176639.D	**Injection Time:**	10:36
Instrument ID:	GCMSU	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	88744	7.84	114726	10.06	147356	10.98	140295	14.32	95038	16.89
Upper Limit [a]	177488	8.34	229452	10.56	294712	11.48	280590	14.82	190076	17.39
Lower Limit [b]	44372	7.34	57363	9.56	73678	10.48	70148	13.82	47519	16.39

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VU8162-MB1	86419	7.85	112382	10.05	143581	10.98	137809	14.32	94108	16.89
VU8162-BS	82125	7.84	115404	10.06	148248	10.98	140455	14.31	97798	16.89
ZZZZZZ	76935	7.86	109018	10.06	140275	10.98	133231	14.32	89795	16.89
ZZZZZZ	79341	7.85	111026	10.06	143604	10.99	137432	14.32	92682	16.89
JB48380-1	78783	7.85	109867	10.06	144053	10.99	137314	14.32	91913	16.89
JB48380-1	81258	7.85	109392	10.06	141861	10.98	136454	14.32	89062	16.89
ZZZZZZ	76443	7.85	108128	10.06	141465	10.98	135940	14.32	90689	16.89
JB48435-3	73612	7.86	106138	10.06	136962	10.98	130906	14.32	88252	16.89
ZZZZZZ	73751	7.86	104946	10.06	138946	10.98	132773	14.32	88926	16.89
ZZZZZZ	82321	7.85	106223	10.06	134717	10.98	133095	14.32	88881	16.89
ZZZZZZ	77676	7.84	105716	10.06	135090	10.98	129669	14.32	92204	16.89
ZZZZZZ	80257	7.85	107842	10.06	139816	10.98	134978	14.32	95082	16.89
JB48435-3MS	79664	7.85	113924	10.06	148583	10.98	139484	14.31	98066	16.89
JB48435-3MSD	81727	7.85	112729	10.06	145246	10.98	142226	14.32	99941	16.89
ZZZZZZ	85589	7.85	110007	10.06	138098	10.98	135446	14.31	90057	16.89
ZZZZZZ	74657	7.85	105327	10.05	134830	10.98	133228	14.31	91445	16.89
ZZZZZZ	77137	7.84	108586	10.06	142596	10.98	137529	14.32	92748	16.89
ZZZZZZ	75992	7.84	109163	10.06	143018	10.98	134893	14.32	93113	16.89
ZZZZZZ	78597	7.85	107288	10.06	137647	10.98	137096	14.31	91684	16.89
ZZZZZZ	89418	7.84	113570	10.06	147080	10.98	143739	14.32	111715	16.89

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Surrogate Recovery Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Method: SW846 8260B **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JB48380-1	U176560.D	93.0	103.0	97.0	97.0
JB48380-1	U176645.D	98.0	104.0	98.0	96.0
JB48380-1	U176646.D	99.0	103.0	97.0	95.0
JB48380-2	U176557.D	96.0	100.0	98.0	94.0
JB48380-3	U176558.D	97.0	103.0	100.0	98.0
JB48380-4	U176559.D	93.0	101.0	97.0	94.0
JB48435-3MS	U176653.D	98.0	105.0	97.0	93.0
JB48435-3MSD	U176654.D	99.0	110.0	100.0	93.0
JB49081-3MS	U176554.D	95.0	102.0	98.0	90.0
JB49081-3MSD	U176555.D	97.0	102.0	98.0	90.0
VU8158-BS	U176541.D	94.0	101.0	98.0	92.0
VU8158-MB1	U176540.D	93.0	99.0	99.0	96.0
VU8162-BS	U176641.D	99.0	105.0	98.0	91.0
VU8162-MB1	U176640.D	97.0	98.0	99.0	94.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	79-117%
S2 = 1,2-Dichloroethane-D4	72-123%
S3 = Toluene-D8	82-118%
S4 = 4-Bromofluorobenzene	75-118%

Initial Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: VU8071-ICC8071
Lab FileID: U174555.D

Response Factor Report MSU

Method : C:\MSDCHEM\1\METHODS\MU8071.M (RTE Integrator)
Title : SW-846 8260B, DB624 60m x 250um x 1.40um
Last Update : Thu Aug 08 11:23:10 2013
Response via : Initial Calibration

Calibration Files
5 =U174552.D 2 =U174550.D 20 =U174554.D 50 =U174555.D
100 =U174557.D 1 =U174549.D 200 =U174558.D 10 =U174553.D
0.5 =U174551.D 75 =U174556.D = =

Compound	5	2	20	50	100	1	200	10	0.5	75	Avg	%RSD
1) I Tert Butyl Alcohol-d9 ----------ISTD----------												
2) tertiary butyl alcohol	1.065	1.075	1.140	1.071	1.047		1.127	1.063		1.080	1.083	3.00
3) Ethanol	0.042	0.045	0.057	0.044	0.050	0.083	0.050	0.052		0.046	0.052	23.75
----- Linear regression ----- Coefficient = 0.9981												
Response Ratio = -0.00711 + 0.04970 *A												
4) 1,4-dioxane	0.078		0.094	0.076	0.095		0.099	0.094		0.084	0.089	10.49
5) I pentafluorobenzene ----------ISTD----------												
6) freon 115											0.000	-1.00
7) freon 23											0.000	-1.00
8) freon 143A											0.000	-1.00
9) freon 152A											0.000	-1.00
10) chlorotrifluoroethene											0.000	-1.00
11) chlorodifluoromethane	0.415	0.381	0.411	0.429	0.399	0.399	0.453	0.367	0.427	0.414	0.410	6.00
12) dichlorodifluoromethane	0.644	0.560	0.611	0.611	0.555		0.633	0.523		0.625	0.595	7.32
13) freon 142B											0.000	-1.00
14) freon 114											0.000	-1.00
15) chloromethane	0.670	0.685	0.672	0.669	0.652	0.801	0.725	0.647	0.761	0.683	0.696	7.21
16) vinyl chloride	0.640	0.591	0.646	0.647	0.637	0.654	0.707	0.595	0.551	0.676	0.635	7.08
17) acetaldehyde											0.000	-1.00
18) bromomethane	0.426	0.456	0.411	0.396	0.419	0.515	0.493	0.418		0.428	0.440	9.09
19) chloroethane	0.339	0.294	0.301	0.304	0.303	0.340	0.342	0.303		0.305	0.315	6.27
20) trichlorofluoromethane	0.719	0.606	0.696	0.667	0.648		0.734	0.613		0.692	0.672	6.99
21) pentane											0.000	-1.00

Initial Calibration Summary

Job Number: JB48380 **Sample:** VU8071-ICC8071
Account: KEMPAE KEM Partners, Inc. **Lab FileID:** U174555.D
Project: Newtown Square Amoco, Newton Square, PA

22)	freon 123A										0.000	-1.00
23)	ethyl ether											
	0.264	0.279	0.243	0.243	0.237	0.282	0.261	0.243		0.241	0.255	6.70
24)	2-CHLOROPROPANE											
	0.874		0.776	0.768	0.773		0.868	0.702		0.790	0.793	7.61
25)	freon 141B										0.000	-1.00
26)	freon 123										0.000	-1.00
27)	acrolein											
	0.127	0.137	0.125	0.124		0.141		0.127		0.126	0.130	5.03
28)	1,1-dichloroethene											
	0.362	0.403	0.358	0.343	0.342	0.318	0.387	0.308		0.352	0.352	8.56
29)	acetone											
			0.060	0.061	0.058		0.063	0.059		0.061	0.060	2.83
30)	allyl chloride											
	0.081		0.075	0.071	0.073		0.080	0.063		0.072	0.074	8.32
31)	acetonitrile											
	0.059	0.053	0.059	0.059	0.057	0.063	0.062	0.060		0.059	0.059	4.57
32)	iodomethane											
	0.668	0.705	0.690	0.686	0.690	0.654	0.763	0.626	0.697	0.705	0.688	5.24
33)	carbon disulfide											
	1.288	1.292	1.301	1.262	1.273	1.147	1.441	1.131	1.444	1.316	1.289	7.93
34)	1-CHLOROPROPANE											
	0.056		0.038	0.035	0.035		0.040	0.033		0.038	0.039	19.19
	----- Linear regression ----- Coefficient = 0.9952											
	Response Ratio = -0.00219 + 0.03979 *A											
35)	methylene chloride											
	0.449	0.458	0.425	0.420	0.416	0.466	0.465	0.400		0.427	0.436	5.42
36)	methyl acetate											
	0.527		0.562	0.563	0.543		0.598	0.558		0.560	0.559	3.90
37)	methyl tert butyl ether											
	1.416	1.385	1.379	1.381	1.364	1.388	1.523	1.331	1.720	1.392	1.428	8.00
38)	trans-1,2-dichloroethene											
	0.402	0.479	0.391	0.374	0.391	0.425	0.440	0.342	0.505	0.393	0.414	11.88
39)	di-isopropyl ether											
	1.488	1.505	1.547	1.553	1.514	1.487	1.709	1.444	1.864	1.557	1.567	8.05
40)	ethyl tert-butyl ether											
	1.419	1.386	1.475	1.486	1.456	1.460	1.627	1.380	1.605	1.492	1.479	5.57
41)	2-butanone											
	0.076		0.075	0.073	0.072		0.077	0.071		0.073	0.074	3.04
42)	1,1-dichloroethane											
	0.746	0.770	0.757	0.744	0.769	0.701	0.864	0.681	0.861	0.769	0.766	7.68
43)	chloroprene											
	0.558	0.546	0.593	0.604	0.604	0.611	0.692	0.531	0.644	0.616	0.600	7.91
44)	acrylonitrile											
	0.243	0.226	0.239	0.245	0.241	0.223	0.267	0.238	0.274	0.243	0.244	6.48
45)	vinyl acetate											
	0.060		0.071	0.077	0.074		0.085	0.071		0.075	0.073	10.11
46)	ethyl acetate											
	0.106	0.075	0.094	0.089	0.086		0.096	0.101		0.089	0.092	10.19
47)	2,2-dichloropropane											
	0.554	0.613	0.568	0.519	0.517	0.596	0.580	0.470		0.535	0.550	8.13
48)	cis-1,2-dichloroethene											
	0.449	0.428	0.435	0.426	0.430	0.391	0.477	0.391		0.437	0.429	6.21
49)	methyl acrylate											
	0.724	0.660	0.693	0.696	0.689		0.767	0.661		0.700	0.699	4.95
50)	propionitrile											

Initial Calibration Summary

Job Number: JB48380 **Sample:** VU8071-ICC8071
Account: KEMPAE KEM Partners, Inc. **Lab FileID:** U174555.D
Project: Newtown Square Amoco, Newton Square, PA

	0.110	0.095	0.102	0.103	0.103	0.094	0.113	0.101	0.129	0.104	0.105	9.46
51)	bromochloromethane											
	0.222	0.212	0.228	0.224	0.224	0.207	0.249	0.206		0.225	0.222	5.89
52)	tetrahydrofuran											
	0.289	0.302	0.249	0.249	0.246		0.267	0.255		0.249	0.263	8.09
53)	chloroform											
	0.730	0.726	0.706	0.697	0.707	0.710	0.786	0.645		0.713	0.713	5.15
54)	tert-butyl Formate											
	0.471	0.497	0.507	0.519	0.506	0.474	0.558	0.481		0.514	0.503	5.34
55)	iso-butyl alcohol											
											0.000	-1.00
56)	dibromofluoromethane (s)											
	0.371	0.386	0.361	0.371	0.365	0.399	0.405	0.349	0.461	0.370	0.384	8.34
57)	1,2-dichloroethane-d4 (s)											
	0.480	0.488	0.459	0.482	0.467	0.562	0.524	0.460		0.484	0.489	6.82
58)	freon 113											
	0.244	0.233	0.265	0.277	0.260		0.301	0.221		0.277	0.260	10.14
59)	methacrylonitrile											
	0.427	0.454	0.395	0.392	0.388	0.507	0.434	0.376		0.400	0.419	9.86
60)	1,1,1-trichloroethane											
	0.600	0.621	0.601	0.597	0.603	0.528	0.685	0.522	0.406	0.617	0.578	13.16
61)	tert amyl alcohol											
											0.000	-1.00
62)	tert-amyl methyl ether											
	0.309	0.295	0.336	0.333	0.336	0.317	0.380	0.310		0.341	0.329	7.59
63)	iso-octane											
	1.492	1.483	1.634	1.751	1.597	1.435	1.974	1.331	1.602	1.737	1.604	11.53
64)	I 1,4-difluorobenzene	----------	----------	ISTD	----------	----------						
65)	Di-isobutylene											
											0.000	-1.00
66)	epichlorohydrin											
	0.054	0.052	0.053	0.053	0.051	0.067	0.057	0.054		0.053	0.055	9.03
67)	n-butyl alcohol											
	0.018	0.015	0.017	0.017	0.017	0.017	0.018	0.017		0.017	0.017	5.53
68)	Cyclohexane											
	0.426	0.462	0.459	0.467	0.464		0.546	0.387		0.488	0.462	9.88
69)	carbon tetrachloride											
	0.392	0.375	0.396	0.398	0.406	0.367	0.466	0.337	0.425	0.417	0.398	8.81
70)	1,1-dichloropropene											
	0.388	0.414	0.398	0.402	0.404	0.326	0.466	0.338	0.450	0.415	0.400	10.79
71)	hexane											
	0.040		0.045	0.047	0.043		0.051	0.038		0.047	0.045	10.75
72)	benzene											
	1.228	1.215	1.175	1.203	1.227	1.013	1.413	1.068	1.421	1.236	1.220	10.46
73)	heptane											
	0.196	0.184	0.202	0.209	0.189	0.172	0.231	0.164		0.206	0.195	10.56
74)	isopropyl acetate											
	0.831	0.827	0.828	0.837	0.811	0.932	0.919	0.802		0.833	0.847	5.45
75)	1,2-dichloroethane											
	0.447	0.440	0.450	0.455	0.458	0.387	0.520	0.428	0.540	0.463	0.459	9.48
76)	ethyl acrylate											
											0.000	-1.00
77)	tert amyl ethyl ether											
											0.000	-1.00
78)	trichloroethene											
	0.280	0.273	0.285	0.283	0.283	0.236	0.321	0.241		0.287	0.277	9.18
79)	methylcyclohexane											
	0.450	0.423	0.473	0.508	0.477	0.417	0.570	0.415	0.476	0.513	0.472	10.45
80)	2-nitropropane											

		0.010	0.011	0.010		0.011	0.012		0.010	0.011	5.65
81)	2-chloroethyl vinyl ether											
	0.256	0.240	0.273	0.276	0.270	0.244	0.309	0.255	0.293	0.277	0.269	8.02
82)	methyl methacrylate											
	0.103	0.105	0.106	0.112	0.109		0.123	0.109		0.113	0.110	5.74
83)	1,2-dichloropropane											
	0.334	0.315	0.329	0.327	0.331	0.293	0.379	0.298	0.322	0.337	0.327	7.23
84)	propyl acetate											
	0.103		0.086	0.084	0.081		0.092	0.097		0.086	0.090	8.95
85)	dibromomethane											
	0.208	0.214	0.201	0.207	0.200	0.157	0.225	0.195	0.219	0.205	0.203	9.08
86)	bromodichloromethane											
	0.413	0.415	0.408	0.416	0.413	0.403	0.464	0.385		0.422	0.416	5.05
87)	cis-1,3-dichloropropene											
	0.513	0.494	0.531	0.535	0.533	0.448	0.601	0.483	0.598	0.549	0.529	9.05
88)	toluene-d8 (s)											
	1.057	1.013	1.050	1.106	1.064	1.152	1.212	0.985		1.101	1.082	6.46
89)	4-methyl-2-pentanone											
	0.183	0.162	0.185	0.187	0.182	0.201	0.198	0.178		0.186	0.185	6.03
90)	toluene											
	0.732	0.764	0.751	0.750	0.766	0.672	0.864	0.669	0.926	0.766	0.766	10.21
91)	3-methyl-1-butanol											
	0.026	0.025	0.026	0.026	0.025		0.027	0.026		0.026	0.026	2.17
92)	trans-1,3-dichloropropene											
	0.522	0.510	0.528	0.530	0.523	0.488	0.592	0.495	0.635	0.531	0.535	8.40
93)	ethyl methacrylate											
	0.481	0.459	0.505	0.515	0.503	0.423	0.564	0.480	0.626	0.515	0.507	11.02
94)	1,1,2-trichloroethane											
	0.266	0.245	0.255	0.254	0.254	0.259	0.281	0.246	0.263	0.259	0.258	4.01
95)	2-hexanone											
	0.192	0.170	0.182	0.184	0.179	0.154	0.201	0.176		0.184	0.180	7.51
96)	I chlorobenzene-d5	----------ISTD----------										
97)	cyclohexanone											
	0.025	0.026	0.029	0.022	0.024		0.024	0.026		0.022	0.025	9.13
98)	tetrachloroethene											
	0.305	0.281	0.297	0.293	0.302	0.242	0.343	0.249	0.328	0.301	0.294	10.64
99)	1,3-dichloropropane											
	0.547	0.512	0.548	0.556	0.564	0.451	0.636	0.511		0.560	0.543	9.20
100)	butyl acetate											
	0.311	0.299	0.315	0.314	0.309	0.345	0.346	0.295		0.308	0.316	5.70
101)	dibromochloromethane											
	0.365	0.377	0.380	0.387	0.393	0.342	0.439	0.350	0.408	0.388	0.383	7.30
102)	1,2-dibromoethane											
	0.352	0.323	0.352	0.349	0.353	0.304	0.392	0.327		0.352	0.345	7.17
103)	3,3-dimethyl-1-Butanol											
	0.063	0.061	0.063	0.062	0.062		0.064	0.060		0.063	0.062	2.12
104)	n-butyl ether											
											0.000	-1.00
105)	chlorobenzene											
	0.935	0.888	0.940	0.936	0.954	0.862	1.067	0.827	1.106	0.947	0.946	8.99
106)	1,1,1,2-tetrachloroethane											
	0.356	0.345	0.358	0.363	0.371	0.297	0.421	0.311	0.360	0.370	0.355	9.50
107)	ethylbenzene											
	1.545	1.510	1.567	1.564	1.619	1.372	1.859	1.346	1.805	1.604	1.579	10.24
108)	m,p-xylene											
	0.579	0.589	0.609	0.617	0.646	0.536	0.744	0.513	0.712	0.636	0.618	11.57
109)	o-xylene											
	0.607	0.569	0.606	0.616	0.638	0.571	0.723	0.528	0.647	0.626	0.613	8.63
110)	styrene											

Initial Calibration Summary

Job Number: JB48380 **Sample:** VU8071-ICC8071
Account: KEMPAE KEM Partners, Inc. **Lab FileID:** U174555.D
Project: Newtown Square Amoco, Newton Square, PA

	1.002	0.998	1.073	1.090	1.134	0.866	1.322	0.915	1.063	1.118	1.058	11.96
111)	bromoform											
	0.339	0.320	0.351	0.356	0.354	0.340	0.400	0.327	0.406	0.353	0.355	7.93
112)	I 1,4-dichlorobenzene-d ----------ISTD----------											
113)	isopropylbenzene											
	2.505	2.414	2.366	2.402	2.422	2.329	2.726	2.150	2.783	2.445	2.454	7.52
114)	4-bromofluorobenzene (s)											
	0.717	0.757	0.675	0.697	0.665		0.757	0.668		0.694	0.704	5.25
115)	bromobenzene											
	0.734	0.705	0.713	0.725	0.721	0.711	0.828	0.648		0.728	0.724	6.41
116)	1,1,2,2-tetrachloroethane											
	0.862	0.822	0.823	0.821	0.802	0.821	0.876	0.801		0.815	0.827	3.09
117)	trans-1,4-dichloro-2-butene											
	0.269	0.274	0.270	0.264	0.260		0.291	0.281		0.268	0.272	3.56
118)	1,2,3-trichloropropane											
	0.231	0.266	0.229	0.231	0.225		0.251	0.228		0.226	0.236	6.23
119)	n-propylbenzene											
	2.880	2.949	2.852	2.849	2.920	2.703	3.387	2.535		2.968	2.894	7.93
120)	2-chlorotoluene											
	0.638	0.639	0.617	0.626	0.625	0.600	0.723	0.552		0.640	0.629	7.12
121)	4-chlorotoluene											
	1.850	1.830	1.808	1.812	1.821	1.661	2.067	1.630		1.854	1.815	6.88
122)	p-Ethyltoluene											
											0.000	-1.00
123)	1,3,5-trimethylbenzene											
	2.127	2.080	2.076	2.095	2.136	1.953	2.470	1.893	2.442	2.163	2.144	8.61
124)	tert-butylbenzene											
	1.932	1.866	1.834	1.809	1.852	1.719	2.095	1.637		1.873	1.846	6.95
125)	pentachloroethane											
	0.482	0.499	0.479	0.476	0.494	0.509	0.544	0.455		0.493	0.492	5.08
126)	1,2,4-trimethylbenzene											
	2.220	2.097	2.178	2.171	2.239	2.125	2.516	1.978	2.419	2.252	2.220	6.97
127)	1,2,3-trimethylbenzene											
	2.456	2.407	2.505	2.456	2.458	2.735	2.702	2.347	2.701	2.461	2.523	5.45
128)	sec-butylbenzene											
	2.826	2.759	2.757	2.782	2.836	2.616	3.221	2.472	3.075	2.883	2.823	7.48
129)	1,3-dichlorobenzene											
	1.370	1.326	1.385	1.377	1.397	1.299	1.556	1.238	1.604	1.398	1.395	7.90
130)	p-isopropyltoluene											
	2.402	2.573	2.362	2.391	2.448	2.166	2.731	2.143	2.879	2.477	2.457	9.27
131)	1,4-dichlorobenzene											
	1.475	1.457	1.455	1.467	1.508	1.480	1.681	1.349	1.835	1.503	1.521	9.03
132)	benzyl chloride											
	2.317	2.431	2.301	2.291	2.326	2.294	2.583	2.067		2.361	2.330	5.84
133)	1,2-dichlorobenzene											
	1.463	1.462	1.417	1.390	1.401	1.323	1.498	1.326		1.404	1.409	4.23
134)	p-Diethylbenzene											
											0.000	-1.00
135)	n-butylbenzene											
	1.224	1.287	1.231	1.248	1.264	1.116	1.404	1.110	1.368	1.270	1.252	7.45
136)	1,2,4,5-Tetramethylbenzene											
											0.000	-1.00
137)	1,2-dibromo-3-chloropropane											
	0.246		0.198	0.190	0.177			0.213		0.187	0.202	12.27
138)	1,3,5-trichlorobenzene											
	1.312	1.298	1.219	1.210	1.173	1.215	1.116	1.140	1.420	1.216	1.232	7.29
139)	1,2,4-trichlorobenzene											
	1.124	1.133	1.077	1.091	1.049	1.048	0.899	1.023	1.305	1.088	1.084	9.39
140)	hexachlorobutadiene											

Initial Calibration Summary

Job Number: JB48380
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Sample: VU8071-ICC8071
Lab FileID: U174555.D

	0.668	0.672	0.637	0.620	0.594	0.560	0.570	0.626	0.618	6.70
141)	naphthalene									
	2.738	2.789	2.683	2.726	2.532	2.728	2.075	2.656	2.690	2.624	8.31
142)	INDANE									
									0.000	-1.00
143)	1,2,3-trichlorobenzene									
	1.069	1.089	1.021	1.043	0.942	1.093	0.975		1.021	1.032	5.20
144)	hexachloroethane									
	0.524	0.516	0.500	0.496	0.508	0.422	0.550	0.442	0.516	0.497	8.10
145)	MMT									
									0.000	-1.00
146)	Bis(chloromethyl)ether									
									0.000	-1.00
147)	Ethylenimine									
									0.000	-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

MU8071.M Thu Aug 08 11:26:59 2013 RPT1

6.7.1

6

Initial Calibration Verification

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: VU8071-ICV8071
Lab FileID: U174560.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\U174560.D Vial: 13
Acq On : 7 Aug 2013 8:37 pm Operator: natet
Sample : icv8071-50 Inst : MSU
Misc : ms50953,vu8071,5.0,,,,1 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MU8071.M (RTE Integrator)
Title : SW-846 8260B, DB624 60m x 250um x 1.40um
Last Update : Thu Aug 08 11:23:10 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	103	0.00	7.85
2	M	tertiary butyl alcohol	1.083	1.138	-5.1	110	0.00	7.97
			True	Calc.	% Drift			
3		Ethanol	5000.000	5172.756	-3.5	119	0.00	6.64
			AvgRF	CCRF	% Dev			
4	m	1,4-dioxane	0.089	0.104	-16.9	141	0.00	11.72
5	I	pentafluorobenzene	1.000	1.000	0.0	107	0.00	10.06
6	M	freon 115		----------NA----------				
7	M	freon 23		----------NA----------				
8	M	freon 143A		----------NA----------				
9	M	freon 152A		----------NA----------				
10	M	chlorotrifluoroethene		----------NA----------				
11	M	chlorodifluoromethane	0.410	0.339	17.3	85	0.00	4.38
12	M	dichlorodifluoromethane	0.595	0.563	5.4	99	0.00	4.35
13	M	freon 142B		----------NA----------				
14	M	freon 114		----------NA----------				
15	M	chloromethane	0.696	0.628	9.8	101	0.00	4.72
16	M	vinyl chloride	0.635	0.627	1.3	104	0.00	5.00
17	M	acetaldehyde		----------NA----------				
18	M	bromomethane	0.440	0.394	10.5	107	0.00	5.67
19	M	chloroethane	0.315	0.296	6.0	104	0.00	5.84
20	M	trichlorofluoromethane	0.672	0.647	3.7	104	0.00	6.34
21	M	pentane		----------NA----------				
22	M	freon 123A		----------NA----------				
23	M	ethyl ether	0.255	0.258	-1.2	114	0.00	6.73
24		2-CHLOROPROPANE	0.793	0.803	-1.3	112	0.00	6.95
25	M	freon 141B		----------NA----------				
26	M	freon 123		----------NA----------				
27	M	acrolein	0.130	0.122	6.2	105	0.00	7.02
28	M	1,1-dichloroethene	0.352	0.360	-2.3	112	0.00	7.18
29	M	acetone	0.060	0.063	-5.0	111	0.00	7.24
30	M	allyl chloride	0.074	0.077	-4.1	116	0.00	7.71
31	M	acetonitrile	0.059	0.062	-5.1	112	0.00	7.71
32	M	iodomethane	0.688	0.705	-2.5	110	0.00	7.48
33	M	carbon disulfide	1.289	1.301	-0.9	110	0.00	7.60
			True	Calc.	% Drift			
34		1-CHLOROPROPANE	50.000	47.091	5.8	109	0.00	7.94

Initial Calibration Verification

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
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Sample: VU8071-ICV8071
Lab FileID: U174560.D

			AvgRF	CCRF	% Dev			
35	M	methylene chloride	0.436	0.425	2.5	108	0.00	7.90
36	M	methyl acetate	0.559	0.476	14.8	90	0.00	7.68
37	M	methyl tert butyl ether	1.428	1.368	4.2	106	0.00	8.21
38	M	trans-1,2-dichloroethene	0.414	0.390	5.8	112	0.00	8.27
39	M	di-isopropyl ether	1.567	1.526	2.6	105	0.00	8.79
40	M	ethyl tert-butyl ether	1.479	1.405	5.0	101	0.00	9.25
41	M	2-butanone	0.074	0.076	-2.7	112	0.00	9.53
42	M	1,1-dichloroethane	0.766	0.792	-3.4	114	0.00	8.84
43	M	chloroprene	0.600	0.561	6.5	99	0.00	8.94
44	M	acrylonitrile	0.244	0.250	-2.5	110	0.00	8.23
45	M	vinyl acetate	0.073	0.098	-34.2#	136	0.00	8.80
46	M	ethyl acetate	0.092	0.092	0.0	110	0.00	9.53
47	M	2,2-dichloropropane	0.550	0.545	0.9	112	0.00	9.57
48	M	cis-1,2-dichloroethene	0.429	0.438	-2.1	110	0.00	9.57
49	M	methyl acrylate	0.699	0.729	-4.3	112	0.00	9.62
50	M	propionitrile	0.105	0.109	-3.8	113	0.00	9.65
51	M	bromochloromethane	0.222	0.229	-3.2	110	0.00	9.89
52	M	tetrahydrofuran	0.263	0.258	1.9	111	0.00	9.91
53	M	chloroform	0.713	0.708	0.7	109	0.00	9.93
54		tert-butyl Formate	0.503	0.531	-5.6	110	0.00	9.96
55	M	iso-butyl alcohol		----------NA----------				
56	S	dibromofluoromethane (s)	0.384	0.343	10.7	99	0.00	10.13
57	S	1,2-dichloroethane-d4 (s)	0.489	0.452	7.6	101	0.00	10.56
58	M	freon 113	0.260	0.250	3.8	96	0.00	7.13
59	M	methacrylonitrile	0.419	0.408	2.6	111	0.00	9.82
60	M	1,1,1-trichloroethane	0.578	0.616	-6.6	110	0.00	10.18
61	M	tert amyl alcohol		----------NA----------				
62	M	tert-amyl methyl ether	0.329	0.333	-1.2	107	0.00	10.63
63		iso-octane	1.604	1.331	17.0	81	0.00	10.60
64	I	1,4-difluorobenzene	1.000	1.000	0.0	109	0.00	10.98
65	M	Di-isobutylene		----------NA----------				
66	M	epichlorohydrin	0.055	0.059	-7.3	120	0.00	12.28
67	M	n-butyl alcohol	0.017	0.018	-5.9	112	0.00	11.11
68	M	Cyclohexane	0.462	0.476	-3.0	111	0.00	10.25
69	M	carbon tetrachloride	0.398	0.408	-2.5	112	0.00	10.39
70	M	1,1-dichloropropene	0.400	0.391	2.3	106	0.00	10.36
71	M	hexane	0.045	0.036	20.0#	83	0.00	8.54
72	M	benzene	1.220	1.224	-0.3	111	0.00	10.63
73	M	heptane		----------NA----------				
74	M	isopropyl acetate	0.847	0.949	-12.0	124	0.00	10.52
75	M	1,2-dichloroethane	0.459	0.454	1.1	109	0.00	10.65
76	M	ethyl acrylate		----------NA----------				
77		tert amyl ethyl ether		----------NA----------				
78	M	trichloroethene	0.277	0.293	-5.8	113	0.00	11.34
79	M	methylcyclohexane	0.472	0.447	5.3	96	0.00	11.55
80	M	2-nitropropane	0.011	0.011	0.0	106	0.00	12.15
81	M	2-chloroethyl vinyl ether	0.269	0.295	-9.7	117	0.00	12.14
82	M	methyl methacrylate	0.110	0.114	-3.6	112	0.00	11.59
83	M	1,2-dichloropropane	0.327	0.348	-6.4	116	0.00	11.61
84	M	propyl acetate	0.090	0.090	0.0	116	0.00	11.63
85	M	dibromomethane	0.203	0.214	-5.4	113	0.00	11.79
86	M	bromodichloromethane	0.416	0.425	-2.2	112	0.00	11.91
87	M	cis-1,3-dichloropropene	0.529	0.507	4.2	104	0.00	12.38
88	S	toluene-d8 (s)	1.082	1.012	6.5	100	0.00	12.68
89	M	4-methyl-2-pentanone	0.185	0.190	-2.7	111	0.00	12.47
90	M	toluene	0.766	0.765	0.1	111	0.00	12.76
91	M	3-methyl-1-butanol	0.026	0.027	-3.8	114	0.00	12.48
92	M	trans-1,3-dichloropropene	0.535	0.539	-0.7	111	0.00	12.97

Initial Calibration Verification

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: VU8071-ICV8071
Lab FileID: U174560.D

93	M	ethyl methacrylate	0.507	0.508	-0.2	108	0.00	12.94
94	M	1,1,2-trichloroethane	0.258	0.264	-2.3	113	0.00	13.21
95	M	2-hexanone	0.180	0.187	-3.9	111	0.00	13.38
96	I	chlorobenzene-d5	1.000	1.000	0.0	108	0.00	14.32
97	M	cyclohexanone	0.025	0.024	4.0	116	0.00	15.57
98	M	tetrachloroethene	0.294	0.296	-0.7	109	0.00	13.38
99	M	1,3-dichloropropane	0.543	0.569	-4.8	110	0.00	13.41
100	M	butyl acetate	0.316	0.327	-3.5	112	0.00	13.44
101	M	dibromochloromethane	0.383	0.396	-3.4	110	0.00	13.69
102	M	1,2-dibromoethane	0.345	0.361	-4.6	112	0.00	13.86
103		3,3-dimethyl-1-Butanol	0.062	0.064	-3.2	111	0.00	13.56
104		n-butyl ether		----------NA----------				
105	M	chlorobenzene	0.946	0.951	-0.5	110	0.00	14.36
106	M	1,1,1,2-tetrachloroethane	0.355	0.357	-0.6	106	0.00	14.42
107	M	ethylbenzene	1.579	1.586	-0.4	109	0.00	14.41
108	M	m,p-xylene	0.618	0.630	-1.9	110	0.00	14.52
109	M	o-xylene	0.613	0.619	-1.0	108	0.00	14.99
110	M	styrene	1.058	1.125	-6.3	111	0.00	15.00
111	M	bromoform	0.355	0.359	-1.1	109	0.00	15.32
112	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	104	0.00	16.89
113	M	isopropylbenzene	2.454	2.510	-2.3	109	0.00	15.36
114	S	4-bromofluorobenzene (s)	0.704	0.663	5.8	99	0.00	15.60
115	M	bromobenzene	0.724	0.750	-3.6	108	0.00	15.82
116	M	1,1,2,2-tetrachloroethane	0.827	0.847	-2.4	107	0.00	15.72
117	M	trans-1,4-dichloro-2-bute	0.272	0.282	-3.7	111	0.00	15.75
118	M	1,2,3-trichloropropane	0.236	0.236	0.0	107	0.00	15.80
119	M	n-propylbenzene	2.894	3.067	-6.0	112	0.00	15.81
120	M	2-chlorotoluene	0.629	0.649	-3.2	108	0.00	15.99
121	M	4-chlorotoluene	1.815	1.849	-1.9	106	0.00	16.10
122		p-Ethyltoluene		----------NA----------				
123	M	1,3,5-trimethylbenzene	2.144	2.186	-2.0	109	0.00	15.97
124	M	tert-butylbenzene	1.846	1.928	-4.4	111	0.00	16.37
125	M	pentachloroethane	0.492	0.504	-2.4	110	0.00	16.48
126	M	1,2,4-trimethylbenzene	2.220	2.300	-3.6	110	0.00	16.42
127		1,2,3-trimethylbenzene	2.523	2.386	5.4	101	0.00	16.92
128	M	sec-butylbenzene	2.823	2.894	-2.5	108	0.00	16.61
129	M	1,3-dichlorobenzene	1.395	1.438	-3.1	109	0.00	16.83
130	M	p-isopropyltoluene	2.457	2.582	-5.1	113	0.00	16.73
131	M	1,4-dichlorobenzene	1.521	1.499	1.4	106	0.00	16.92
132	M	benzyl chloride	2.330	2.390	-2.6	109	0.00	17.19
133	M	1,2-dichlorobenzene	1.409	1.442	-2.3	108	0.00	17.36
134		p-Diethylbenzene		----------NA----------				
135	M	n-butylbenzene	1.252	1.307	-4.4	109	0.00	17.19
136		1,2,4,5-Tetramethylbenzen		----------NA----------				
137	M	1,2-dibromo-3-chloropropa	0.202	0.199	1.5	110	0.00	18.21
138		1,3,5-trichlorobenzene	1.232	1.246	-1.1	107	0.00	18.41
139	M	1,2,4-trichlorobenzene	1.084	1.128	-4.1	108	0.00	19.14
140	M	hexachlorobutadiene	0.618	0.639	-3.4	107	0.00	19.25
141	M	naphthalene	2.624	2.829	-7.8	108	0.00	19.47
142		INDANE		----------NA----------				
143	M	1,2,3-trichlorobenzene	1.032	1.068	-3.5	107	0.00	19.74
144	M	hexachloroethane	0.497	0.525	-5.6	110	0.00	17.64
145	M	MMT		----------NA----------				
146	M	Bis(chloromethyl)ether		----------NA----------				
147	M	Ethylenimine		----------NA----------				

6.7.2

6

Initial Calibration Verification

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: VU8071-ICV8071
Lab FileID: U174560.D

```
(#) = Out of Range                SPCC's out = 0  CCC's out = 0
 U174555.D  MU8071.M          Thu Aug 08 11:26:42 2013    RPT1
```

Continuing Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: VU8158-CC8071
Lab FileID: U176538.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\U176538.D Vial: 2
Acq On : 4 Oct 2013 9:26 am Operator: natet
Sample : cc8071-20 Inst : MSU
Misc : ms55650,vu8158,5.0,,,,1 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MU8071.M (RTE Integrator)
Title : SW-846 8260B, DB624 60m x 250um x 1.40um
Last Update : Wed Sep 25 09:57:09 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	80	0.00	7.85
2 M	tertiary butyl alcohol	1.083	1.149	-6.1	81	-0.01	7.96
		True	Calc.	% Drift			
3	Ethanol	2000.000	1997.018	0.1	68	-0.04	6.61
		AvgRF	CCRF	% Dev			
4 m	1,4-dioxane	0.089	0.080	10.1	68	-0.02	11.71
5 I	pentafluorobenzene	1.000	1.000	0.0	90	0.00	10.06
6 M	freon 115		----------NA----------				
7 M	freon 23		----------NA----------				
8 M	freon 143A		----------NA----------				
9 M	freon 152A		----------NA----------				
10 M	chlorotrifluoroethene		----------NA----------				
11 M	chlorodifluoromethane	0.410	0.506	-23.4#	111	0.02	4.40
12 M	dichlorodifluoromethane	0.595	0.519	12.8	76	0.02	4.38
13 M	freon 142B		----------NA----------				
14 M	freon 114		----------NA----------				
15 M	chloromethane	0.696	0.572	17.8	77	0.02	4.74
16 M	vinyl chloride	0.635	0.541	14.8	75	0.00	5.01
17 M	acetaldehyde		----------NA----------				
18 M	bromomethane	0.440	0.360	18.2	79	0.02	5.69
19 M	chloroethane	0.315	0.247	21.6#	74	0.02	5.87
20 M	trichlorofluoromethane	0.672	0.753	-12.1	97	0.01	6.36
21 M	pentane		----------NA----------				
22 M	freon 123A		----------NA----------				
23 M	ethyl ether	0.255	0.236	7.5	87	0.00	6.74
24	2-CHLOROPROPANE	0.793	0.804	-1.4	93	0.00	6.95
25 M	freon 141B		----------NA----------				
26 M	freon 123		----------NA----------				
27 M	acrolein	0.130	0.100	23.1#	72	0.00	7.02
28 M	1,1-dichloroethene	0.352	0.343	2.6	86	0.01	7.19
29 M	acetone	0.060	0.050	16.7	75	0.01	7.25
30 M	allyl chloride	0.074	0.077	-4.1	93	0.00	7.71
31 M	acetonitrile	0.059	0.055	6.8	84	0.00	7.71
32 M	iodomethane	0.688	0.730	-6.1	95	0.01	7.49
33 M	carbon disulfide	1.289	1.257	2.5	87	0.01	7.61
		True	Calc.	% Drift			
34	1-CHLOROPROPANE	20.000	21.247	-6.2	88	0.00	7.94

Continuing Calibration Summary

Job Number: JB48380 **Sample:** VU8158-CC8071
Account: KEMPAE KEM Partners, Inc. **Lab FileID:** U176538.D
Project: Newtown Square Amoco, Newton Square, PA

			AvgRF	CCRF	% Dev			
35	M	methylene chloride	0.436	0.404	7.3	86	0.00	7.91
36	M	methyl acetate	0.559	0.455	18.6	73	0.00	7.68
37	M	methyl tert butyl ether	1.428	1.420	0.6	93	0.00	8.21
38	M	trans-1,2-dichloroethene	0.414	0.370	10.6	85	0.00	8.27
39	M	di-isopropyl ether	1.567	1.444	7.8	84	0.00	8.79
40	M	ethyl tert-butyl ether	1.479	1.424	3.7	87	0.00	9.25
41	M	2-butanone	0.074	0.070	5.4	84	0.00	9.53
42	M	1,1-dichloroethane	0.766	0.742	3.1	88	0.00	8.84
43	M	chloroprene	0.600	0.604	-0.7	92	0.00	8.94
44	M	acrylonitrile	0.244	0.206	15.6	78	0.00	8.23
45	M	vinyl acetate	0.073	0.084	-15.1	106	0.00	8.81
46	M	ethyl acetate	0.092	0.075	18.5	72	0.00	9.53
47	M	2,2-dichloropropane	0.550	0.678	-23.3#	107	0.00	9.57
48	M	cis-1,2-dichloroethene	0.429	0.425	0.9	88	0.00	9.57
49	M	methyl acrylate	0.699	0.573	18.0	74	0.00	9.62
50	M	propionitrile	0.105	0.087	17.1	77	0.00	9.64
51	M	bromochloromethane	0.222	0.224	-0.9	89	0.00	9.88
52	M	tetrahydrofuran	0.263	0.209	20.5#	76	0.00	9.91
53	M	chloroform	0.713	0.732	-2.7	93	0.00	9.94
54		tert-butyl Formate	0.503	0.495	1.6	88	0.00	9.95
55	M	iso-butyl alcohol		----------NA----------				
56	S	dibromofluoromethane (s)	0.384	0.366	4.7	91	0.00	10.13
57	S	1,2-dichloroethane-d4 (s)	0.489	0.498	-1.8	98	0.00	10.55
58	M	freon 113	0.260	0.308	-18.5	105	0.02	7.15
59	M	methacrylonitrile	0.419	0.356	15.0	81	0.00	9.82
60	M	1,1,1-trichloroethane	0.578	0.662	-14.5	99	0.00	10.19
61	M	tert amyl alcohol		----------NA----------				
62	M	tert-amyl methyl ether	0.329	0.325	1.2	87	0.00	10.63
63		iso-octane	1.604	1.375	14.3	76	0.00	10.59
64	I	1,4-difluorobenzene	1.000	1.000	0.0	85	0.00	10.98
65	M	Di-isobutylene		----------NA----------				
66	M	epichlorohydrin	0.055	0.045	18.2	72	0.00	12.28
67	M	n-butyl alcohol	0.017	0.014	17.6	69	0.00	11.10
68	M	Cyclohexane	0.462	0.458	0.9	85	0.00	10.25
69	M	carbon tetrachloride	0.398	0.468	-17.6	101	0.00	10.38
70	M	1,1-dichloropropene	0.400	0.402	-0.5	86	0.00	10.36
71	M	hexane	0.045	0.052	-15.6	97	0.00	8.54
72	M	benzene	1.220	1.161	4.8	84	0.00	10.62
73	M	heptane	0.195	0.229	-17.4	97	0.00	10.76
74	M	isopropyl acetate	0.847	0.806	4.8	83	0.00	10.52
75	M	1,2-dichloroethane	0.459	0.516	-12.4	98	0.00	10.64
76	M	ethyl acrylate		----------NA----------				
77		tert amyl ethyl ether		----------NA----------				
78	M	trichloroethene	0.277	0.294	-6.1	88	0.00	11.33
79	M	methylcyclohexane	0.472	0.474	-0.4	85	0.00	11.55
80	M	2-nitropropane	0.011	0.011	0.0	94	0.00	12.13
81	M	2-chloroethyl vinyl ether	0.269	0.217	19.3	68	0.00	12.13
82	M	methyl methacrylate	0.110	0.102	7.3	83	0.00	11.58
83	M	1,2-dichloropropane	0.327	0.310	5.2	80	0.00	11.61
84	M	propyl acetate	0.090	0.086	4.4	85	0.00	11.62
85	M	dibromomethane	0.203	0.220	-8.4	94	-0.01	11.77
86	M	bromodichloromethane	0.416	0.445	-7.0	93	0.00	11.90
87	M	cis-1,3-dichloropropene	0.529	0.528	0.2	85	0.00	12.37
88	S	toluene-d8 (s)	1.082	1.060	2.0	86	0.00	12.67
89	M	4-methyl-2-pentanone	0.185	0.168	9.2	77	0.00	12.46
90	M	toluene	0.766	0.717	6.4	81	0.00	12.75
91	M	3-methyl-1-butanol	0.026	0.022	15.4	73	0.00	12.47
92	M	trans-1,3-dichloropropene	0.535	0.533	0.4	86	0.00	12.96

Continuing Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: VU8158-CC8071
Lab FileID: U176538.D

93	M	ethyl methacrylate	0.507	0.473	6.7	80	0.00	12.93
94	M	1,1,2-trichloroethane	0.258	0.251	2.7	84	0.00	13.20
95	M	2-hexanone	0.180	0.169	6.1	79	0.00	13.37
96	I	chlorobenzene-d5	1.000	1.000	0.0	84	0.00	14.32
97	M	cyclohexanone	0.025	0.030	-20.0	87	-0.01	15.56
98	M	tetrachloroethene	0.294	0.316	-7.5	89	0.00	13.38
99	M	1,3-dichloropropane	0.543	0.543	0.0	83	-0.01	13.39
100	M	butyl acetate	0.316	0.295	6.6	78	0.00	13.43
101	M	dibromochloromethane	0.383	0.401	-4.7	88	0.00	13.69
102	M	1,2-dibromoethane	0.345	0.346	-0.3	82	0.00	13.86
103		3,3-dimethyl-1-Butanol	0.062	0.053	14.5	70	0.00	13.55
104		n-butyl ether		----------NA----------				
105	M	chlorobenzene	0.946	0.950	-0.4	84	0.00	14.35
106	M	1,1,1,2-tetrachloroethane	0.355	0.369	-3.9	86	0.00	14.42
107	M	ethylbenzene	1.579	1.559	1.3	83	0.00	14.40
108	M	m,p-xylene	0.618	0.628	-1.6	86	0.00	14.51
109	M	o-xylene	0.613	0.607	1.0	84	0.00	14.98
110	M	styrene	1.058	1.080	-2.1	84	0.00	14.99
111	M	bromoform	0.355	0.360	-1.4	86	0.00	15.31
112	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	87	0.00	16.89
113	M	isopropylbenzene	2.454	2.390	2.6	88	0.00	15.35
114	S	4-bromofluorobenzene (s)	0.704	0.648	8.0	83	-0.01	15.59
115	M	bromobenzene	0.724	0.712	1.7	87	0.00	15.81
116	M	1,1,2,2-tetrachloroethane	0.827	0.788	4.7	83	0.00	15.71
117	M	trans-1,4-dichloro-2-bute	0.272	0.222	18.4	71	-0.01	15.75
118	M	1,2,3-trichloropropane	0.236	0.238	-0.8	90	-0.01	15.79
119	M	n-propylbenzene	2.894	2.801	3.2	85	0.00	15.81
120	M	2-chlorotoluene	0.629	0.625	0.6	88	0.00	15.98
121	M	4-chlorotoluene	1.815	1.780	1.9	85	0.00	16.09
122		p-Ethyltoluene		----------NA----------				
123	M	1,3,5-trimethylbenzene	2.144	2.079	3.0	87	0.00	15.97
124	M	tert-butylbenzene	1.846	1.821	1.4	86	0.00	16.36
125	M	pentachloroethane	0.492	0.494	-0.4	89	0.00	16.47
126	M	1,2,4-trimethylbenzene	2.220	2.136	3.8	85	0.00	16.42
127		1,2,3-trimethylbenzene		----------NA----------				
128	M	sec-butylbenzene	2.823	2.699	4.4	85	0.00	16.60
129	M	1,3-dichlorobenzene	1.395	1.427	-2.3	89	0.00	16.83
130	M	p-isopropyltoluene	2.457	2.363	3.8	87	0.00	16.73
131	M	1,4-dichlorobenzene	1.521	1.478	2.8	88	0.00	16.92
132	M	benzyl chloride	2.330	2.264	2.8	85	0.00	17.18
133	M	1,2-dichlorobenzene	1.409	1.436	-1.9	88	0.00	17.36
134		p-Diethylbenzene		----------NA----------				
135	M	n-butylbenzene	1.252	1.245	0.6	88	0.00	17.18
136		1,2,4,5-Tetramethylbenzen		----------NA----------				
137	M	1,2-dibromo-3-chloropropa	0.202	0.199	1.5	87	0.00	18.21
138		1,3,5-trichlorobenzene	1.232	1.313	-6.6	93	0.00	18.40
139	M	1,2,4-trichlorobenzene	1.084	1.173	-8.2	94	0.00	19.13
140	M	hexachlorobutadiene	0.618	0.660	-6.8	90	-0.01	19.24
141	M	naphthalene	2.624	2.611	0.5	84	0.00	19.46
142		INDANE		----------NA----------				
143	M	1,2,3-trichlorobenzene	1.032	1.080	-4.7	92	0.00	19.73
144	M	hexachloroethane	0.497	0.482	3.0	84	0.00	17.63
145	M	MMT		----------NA----------				
146	M	Bis(chloromethyl)ether		----------NA----------				
147	M	Ethylenimine		----------NA----------				

Continuing Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: VU8158-CC8071
Lab FileID: U176538.D

```
(#) = Out of Range                SPCC's out = 0  CCC's out = 0
 U174554.D  MU8071.M          Fri Oct 04 14:03:05 2013    RPT1
```

Continuing Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: VU8162-CC8071
Lab FileID: U176639.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\U176639.D Vial: 2
Acq On : 7 Oct 2013 10:36 am Operator: natet
Sample : cc8071-20 Inst : MSU
Misc : ms55937,vu8162,5.0,,,,1 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MU8071.M (RTE Integrator)
Title : SW-846 8260B, DB624 60m x 250um x 1.40um
Last Update : Wed Sep 25 09:57:09 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	90	0.00	7.84
2 M	tertiary butyl alcohol	1.083	1.085	-0.2	86	-0.01	7.96
		True	Calc.	% Drift			
3	Ethanol	2000.000	1861.821	6.9	71	-0.03	6.62
		AvgRF	CCRF	% Dev			
4 m	1,4-dioxane	0.089	0.075	15.7	72	-0.02	11.72
5 I	pentafluorobenzene	1.000	1.000	0.0	88	0.00	10.06
6 M	freon 115		----------NA----------				
7 M	freon 23		----------NA----------				
8 M	freon 143A		----------NA----------				
9 M	freon 152A		----------NA----------				
10 M	chlorotrifluoroethene		----------NA----------				
11 M	chlorodifluoromethane	0.410	0.487	-18.8	105	0.02	4.40
12 M	dichlorodifluoromethane	0.595	0.537	9.7	78	0.02	4.37
13 M	freon 142B		----------NA----------				
14 M	freon 114		----------NA----------				
15 M	chloromethane	0.696	0.662	4.9	87	0.03	4.75
16 M	vinyl chloride	0.635	0.617	2.8	84	0.02	5.02
17 M	acetaldehyde		----------NA----------				
18 M	bromomethane	0.440	0.392	10.9	84	0.02	5.70
19 M	chloroethane	0.315	0.289	8.3	85	0.02	5.87
20 M	trichlorofluoromethane	0.672	0.812	-20.8#	103	0.02	6.36
21 M	pentane		----------NA----------				
22 M	freon 123A		----------NA----------				
23 M	ethyl ether	0.255	0.233	8.6	85	0.00	6.74
24	2-CHLOROPROPANE	0.793	0.815	-2.8	93	0.02	6.97
25 M	freon 141B		----------NA----------				
26 M	freon 123		----------NA----------				
27 M	acrolein	0.130	0.123	5.4	87	0.00	7.03
28 M	1,1-dichloroethene	0.352	0.370	-5.1	91	0.02	7.20
29 M	acetone	0.060	0.065	-8.3	96		7.22
30 M	allyl chloride	0.074	0.069	6.8	82	0.00	7.72
31 M	acetonitrile	0.059	0.058	1.7	86	0.00	7.71
32 M	iodomethane	0.688	0.736	-7.0	94	0.02	7.49
33 M	carbon disulfide	1.289	1.256	2.6	85	0.02	7.62
		True	Calc.	% Drift			
34	1-CHLOROPROPANE	20.000	23.729	-18.6	98	0.00	7.94

Continuing Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: VU8162-CC8071
Lab FileID: U176639.D

		AvgRF	CCRF	% Dev			
35 M	methylene chloride	0.436	0.429	1.6	89	0.00	7.91
36 M	methyl acetate	0.559	0.474	15.2	75	0.00	7.69
37 M	methyl tert butyl ether	1.428	1.418	0.7	91	0.00	8.21
38 M	trans-1,2-dichloroethene	0.414	0.385	7.0	87	0.00	8.28
39 M	di-isopropyl ether	1.567	1.502	4.1	86	0.00	8.79
40 M	ethyl tert-butyl ether	1.479	1.423	3.8	85	0.00	9.25
41 M	2-butanone	0.074	0.063	14.9	75	0.00	9.53
42 M	1,1-dichloroethane	0.766	0.774	-1.0	90	0.00	8.84
43 M	chloroprene	0.600	0.623	-3.8	93	0.00	8.94
44 M	acrylonitrile	0.244	0.225	7.8	83	0.00	8.23
45 M	vinyl acetate	0.073	0.077	-5.5	96	0.00	8.80
46 M	ethyl acetate	0.092	0.081	12.0	77	0.00	9.53
47 M	2,2-dichloropropane	0.550	0.658	-19.6	102	0.00	9.57
48 M	cis-1,2-dichloroethene	0.429	0.437	-1.9	89	0.00	9.58
49 M	methyl acrylate	0.699	0.578	17.3	74	-0.01	9.61
50 M	propionitrile	0.105	0.092	12.4	80	-0.01	9.64
51 M	bromochloromethane	0.222	0.232	-4.5	90	0.00	9.88
52 M	tetrahydrofuran	0.263	0.223	15.2	79	-0.01	9.91
53 M	chloroform	0.713	0.738	-3.5	92	0.00	9.93
54	tert-butyl Formate	0.503	0.484	3.8	84	0.00	9.96
55 M	iso-butyl alcohol		----------NA----------				
56 S	dibromofluoromethane (s)	0.384	0.378	1.6	93	0.00	10.13
57 S	1,2-dichloroethane-d4 (s)	0.489	0.491	-0.4	95	0.00	10.56
58 M	freon 113	0.260	0.311	-19.6	104	0.02	7.15
59 M	methacrylonitrile	0.419	0.343	18.1	77	-0.01	9.81
60 M	1,1,1-trichloroethane	0.578	0.668	-15.6	98	0.00	10.18
61 M	tert amyl alcohol		----------NA----------				
62 M	tert-amyl methyl ether	0.329	0.312	5.2	82	0.00	10.63
63	iso-octane	1.604	1.366	14.8	74	0.00	10.60
64 I	1,4-difluorobenzene	1.000	1.000	0.0	83	-0.01	10.98
65 M	Di-isobutylene		----------NA----------				
66 M	epichlorohydrin	0.055	0.046	16.4	74	-0.01	12.28
67 M	n-butyl alcohol	0.017	0.015	11.8	76	0.00	11.10
68 M	Cyclohexane	0.462	0.472	-2.2	86	0.00	10.25
69 M	carbon tetrachloride	0.398	0.446	-12.1	94	0.00	10.39
70 M	1,1-dichloropropene	0.400	0.402	-0.5	84	0.00	10.36
71 M	hexane	0.045	0.053	-17.8	99	0.01	8.55
72 M	benzene	1.220	1.131	7.3	80	0.00	10.62
73 M	heptane	0.195	0.207	-6.2	86	0.00	10.75
74 M	isopropyl acetate	0.847	1.428	-68.6#	144	0.00	10.51
75 M	1,2-dichloroethane	0.459	0.488	-6.3	90	0.00	10.64
76 M	ethyl acrylate		----------NA----------				
77	tert amyl ethyl ether		----------NA----------				
78 M	trichloroethene	0.277	0.279	-0.7	81	-0.01	11.33
79 M	methylcyclohexane	0.472	0.475	-0.6	84	0.00	11.55
80 M	2-nitropropane	0.011	0.011	0.0	90	-0.02	12.12
81 M	2-chloroethyl vinyl ether	0.269	0.221	17.8	67	-0.01	12.13
82 M	methyl methacrylate	0.110	0.099	10.0	78	-0.01	11.58
83 M	1,2-dichloropropane	0.327	0.306	6.4	77	-0.01	11.61
84 M	propyl acetate	0.090	0.076	15.6	74	0.00	11.62
85 M	dibromomethane	0.203	0.207	-2.0	86	-0.01	11.77
86 M	bromodichloromethane	0.416	0.433	-4.1	88	0.00	11.91
87 M	cis-1,3-dichloropropene	0.529	0.509	3.8	80	-0.01	12.37
88 S	toluene-d8 (s)	1.082	1.071	1.0	85	0.00	12.67
89 M	4-methyl-2-pentanone	0.185	0.179	3.2	81	0.00	12.46
90 M	toluene	0.766	0.716	6.5	79	0.00	12.75
91 M	3-methyl-1-butanol	0.026	0.025	3.8	80	0.00	12.48
92 M	trans-1,3-dichloropropene	0.535	0.507	5.2	80	0.00	12.97

Continuing Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: VU8162-CC8071
Lab FileID: U176639.D

93	M	ethyl methacrylate	0.507	0.455	10.3	75	0.00	12.94
94	M	1,1,2-trichloroethane	0.258	0.242	6.2	79	0.00	13.20
95	M	2-hexanone	0.180	0.195	-8.3	89	0.00	13.37
96	I	chlorobenzene-d5	1.000	1.000	0.0	84	0.00	14.32
97	M	cyclohexanone	0.025	0.084	-236.0#	242#	-0.01	15.57
98	M	tetrachloroethene	0.294	0.294	0.0	83	0.00	13.38
99	M	1,3-dichloropropane	0.543	0.513	5.5	78	-0.01	13.40
100	M	butyl acetate	0.316	0.291	7.9	77	0.00	13.43
101	M	dibromochloromethane	0.383	0.379	1.0	83	0.00	13.69
102	M	1,2-dibromoethane	0.345	0.325	5.8	77	-0.01	13.86
103		3,3-dimethyl-1-Butanol	0.062	0.058	6.5	78	0.00	13.56
104		n-butyl ether		----------NA----------				
105	M	chlorobenzene	0.946	0.892	5.7	79	0.00	14.35
106	M	1,1,1,2-tetrachloroethane	0.355	0.373	-5.1	87	0.00	14.42
107	M	ethylbenzene	1.579	1.483	6.1	79	0.00	14.40
108	M	m,p-xylene	0.618	0.574	7.1	79	0.00	14.52
109	M	o-xylene	0.613	0.589	3.9	81	0.00	14.98
110	M	styrene	1.058	1.012	4.3	79	0.00	15.00
111	M	bromoform	0.355	0.358	-0.8	85	0.00	15.31
112	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	84	0.00	16.89
113	M	isopropylbenzene	2.454	2.334	4.9	83	-0.01	15.35
114	S	4-bromofluorobenzene (s)	0.704	0.669	5.0	83	0.00	15.59
115	M	bromobenzene	0.724	0.731	-1.0	87	0.00	15.82
116	M	1,1,2,2-tetrachloroethane	0.827	0.778	5.9	80	0.00	15.71
117	M	trans-1,4-dichloro-2-bute	0.272	0.248	8.8	77	0.00	15.75
118	M	1,2,3-trichloropropane	0.236	0.232	1.7	85	-0.01	15.80
119	M	n-propylbenzene	2.894	2.733	5.6	81	-0.01	15.81
120	M	2-chlorotoluene	0.629	0.606	3.7	83	-0.01	15.98
121	M	4-chlorotoluene	1.815	1.734	4.5	81	-0.01	16.09
122		p-Ethyltoluene		----------NA----------				
123	M	1,3,5-trimethylbenzene	2.144	2.049	4.4	83	-0.01	15.97
124	M	tert-butylbenzene	1.846	2.055	-11.3	94	-0.01	16.36
125	M	pentachloroethane	0.492	0.470	4.5	83	0.00	16.47
126	M	1,2,4-trimethylbenzene	2.220	2.132	4.0	83	0.00	16.41
127		1,2,3-trimethylbenzene		----------NA----------				
128	M	sec-butylbenzene	2.823	2.654	6.0	81	-0.01	16.60
129	M	1,3-dichlorobenzene	1.395	1.372	1.6	84	0.00	16.83
130	M	p-isopropyltoluene	2.457	2.343	4.6	84	0.00	16.73
131	M	1,4-dichlorobenzene	1.521	1.457	4.2	84	-0.01	16.92
132	M	benzyl chloride	2.330	2.201	5.5	81	0.00	17.19
133	M	1,2-dichlorobenzene	1.409	1.395	1.0	83	-0.01	17.35
134		p-Diethylbenzene		----------NA----------				
135	M	n-butylbenzene	1.252	1.183	5.5	81	0.00	17.19
136		1,2,4,5-Tetramethylbenzen		----------NA----------				
137	M	1,2-dibromo-3-chloropropa	0.202	0.194	4.0	83	0.00	18.21
138		1,3,5-trichlorobenzene	1.232	1.242	-0.8	86	-0.01	18.40
139	M	1,2,4-trichlorobenzene	1.084	1.163	-7.3	91	0.00	19.14
140	M	hexachlorobutadiene	0.618	0.615	0.5	81	-0.01	19.25
141	M	naphthalene	2.624	2.597	1.0	82	-0.01	19.46
142		INDANE		----------NA----------				
143	M	1,2,3-trichlorobenzene	1.032	1.049	-1.6	87	-0.01	19.73
144	M	hexachloroethane	0.497	0.476	4.2	80	0.00	17.64
145	M	MMT		----------NA----------				
146	M	Bis(chloromethyl)ether		----------NA----------				
147	M	Ethylenimine		----------NA----------				

Continuing Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: VU8162-CC8071
Lab FileID: U176639.D

```
(#) = Out of Range                SPCC's out = 0  CCC's out = 0
 U174554.D  MU8071.M          Tue Oct 08 12:03:47 2013    RPT1
```

New Jersey ACCUTEST LABORATORIES

GC/MS Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176560.D
Acq On : 4 Oct 2013 8:32 pm
Operator : natet
Sample : jb48380-1
Misc : ms55650,vu8158,5.0,,,,2.5
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Oct 07 16:03:41 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.837	65	73522	500.00	ug/L	0.00
5) pentafluorobenzene	10.060	168	124359	50.00	ug/L	0.00
64) 1,4-difluorobenzene	10.985	114	157367	50.00	ug/L	0.00
96) chlorobenzene-d5	14.317	117	147292	50.00	ug/L	0.00
112) 1,4-dichlorobenzene-d4	16.890	152	95427	50.00	ug/L	0.00
System Monitoring Compounds						
56) dibromofluoromethane (s)	10.133	113	44193	46.29	ug/L	0.00
Spiked Amount 50.000	Range 79 - 117		Recovery = 92.58%			
57) 1,2-dichloroethane-d4 (s)	10.551	65	62550	51.39	ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 102.78%			
88) toluene-d8 (s)	12.675	98	165527	48.60	ug/L	0.00
Spiked Amount 50.000	Range 82 - 118		Recovery = 97.20%			
114) 4-bromofluorobenzene (s)	15.593	95	64876	48.30	ug/L	0.00
Spiked Amount 50.000	Range 75 - 118		Recovery = 96.60%			
Target Compounds						Qvalue
2) tertiary butyl alcohol	7.962	59	682170	4281.96	ug/L	75
37) methyl tert butyl ether	8.208	73	22860373	6436.90	ug/L	96
72) benzene	10.624	78	99936	26.03	ug/L	97
90) toluene	12.753	92	3104	1.29	ug/L	99
107) ethylbenzene	14.401	91	33713	7.25	ug/L	99
108) m,p-xylene	14.516	106	2780	1.53	ug/L #	78
109) o-xylene	14.986	106	1205	0.67	ug/L #	46
113) isopropylbenzene	15.352	105	27083	5.78	ug/L	96
141) naphthalene	19.458	128	135661	27.09	ug/L	97

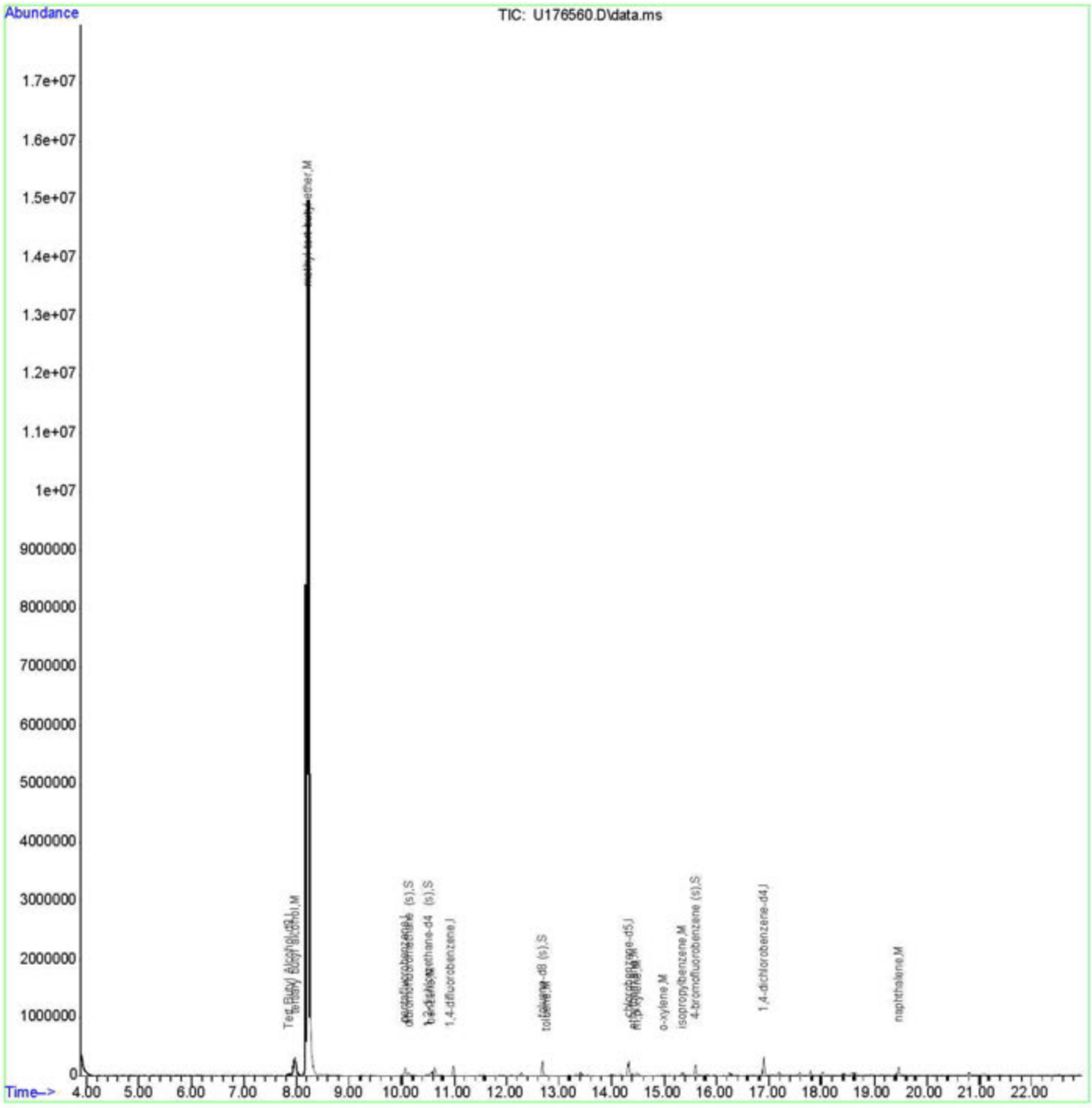
(#) = qualifier out of range (m) = manual integration (+) = signals summed

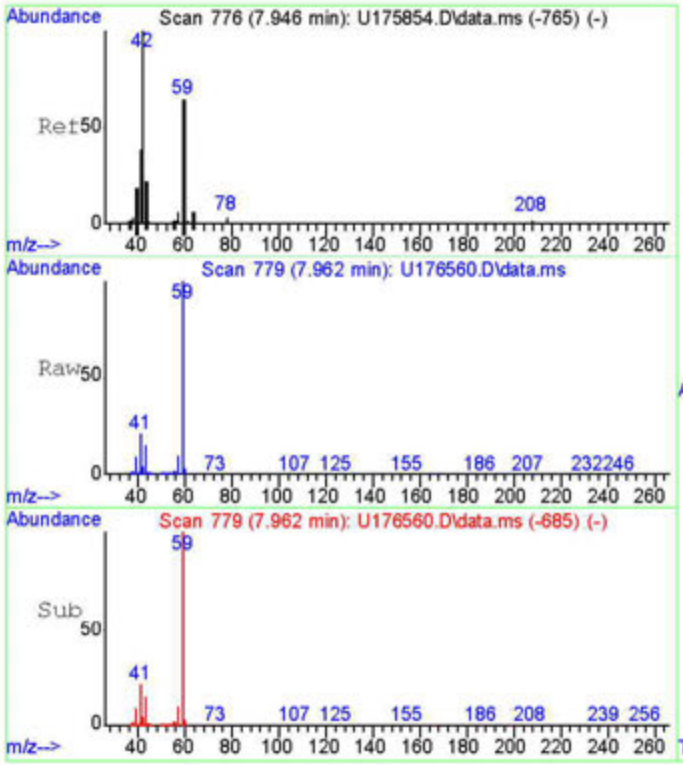
7.1.1
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176560.D
Acq On : 4 Oct 2013 8:32 pm
Operator : natet
Sample : jb48380-1
Misc : ms55650,vu8158,5.0,,,,2.5
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Oct 07 16:03:41 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

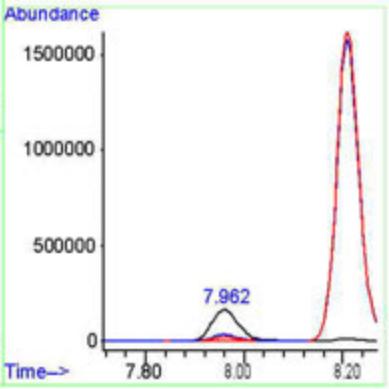


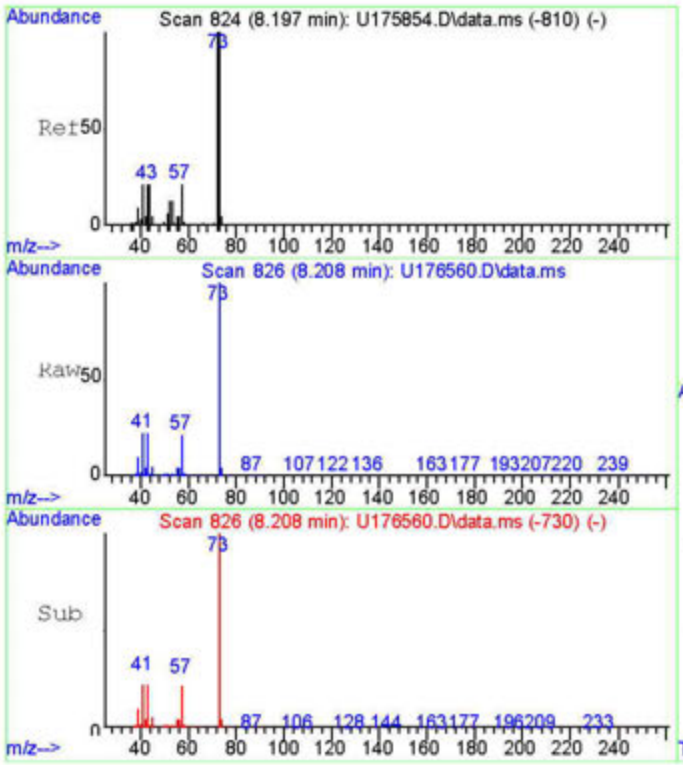


#2
tertiary butyl alcohol
Concen: 4281.96 ug/L
RT: 7.962 min Scan# 779
Delta R.T. -0.009 min
Lab File: U176560.D
Acq: 4 Oct 2013 8:32 pm

Tgt Ion: 59 Resp: 682170

Ion	Ratio	Lower	Upper
59	100		
41	20.4	8.9	68.9
43	13.2	0.0	50.3

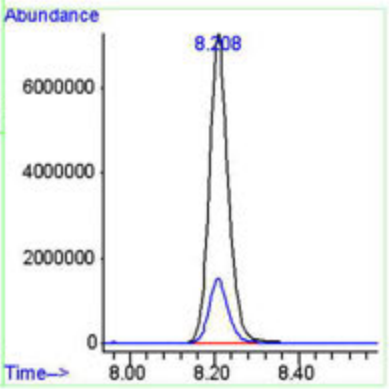


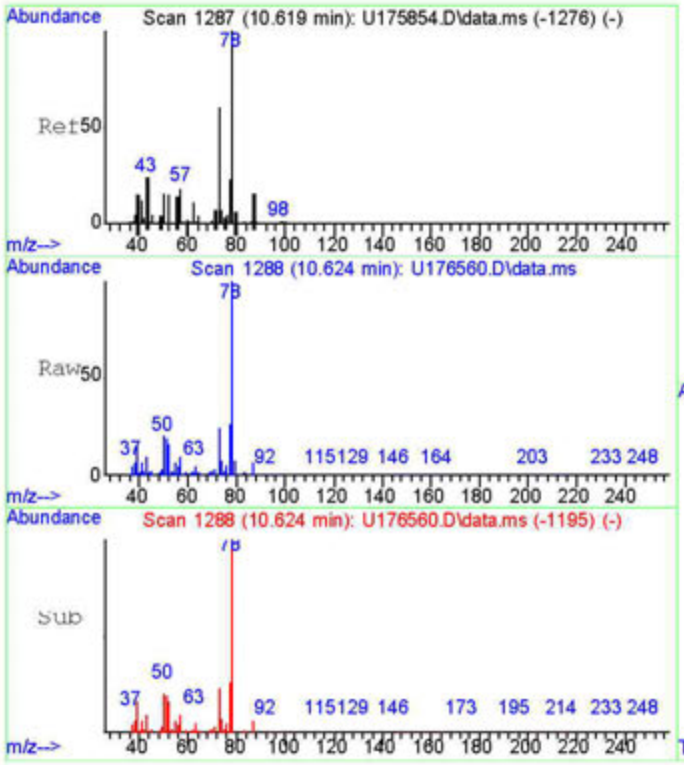


#3 /
methyl tert butyl ether
Concen: 6436.90 ug/L
RT: 8.208 min Scan# 826
Delta R.T. 0.001 min
Lab File: U176560.D
Acq: 4 Oct 2013 8:32 pm

Tgt Ion: 73 Resp: 22860373

Ion	Ratio	Lower	Upper
73	100		
57	21.5	0.0	53.5

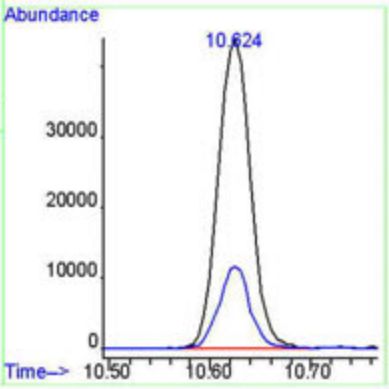


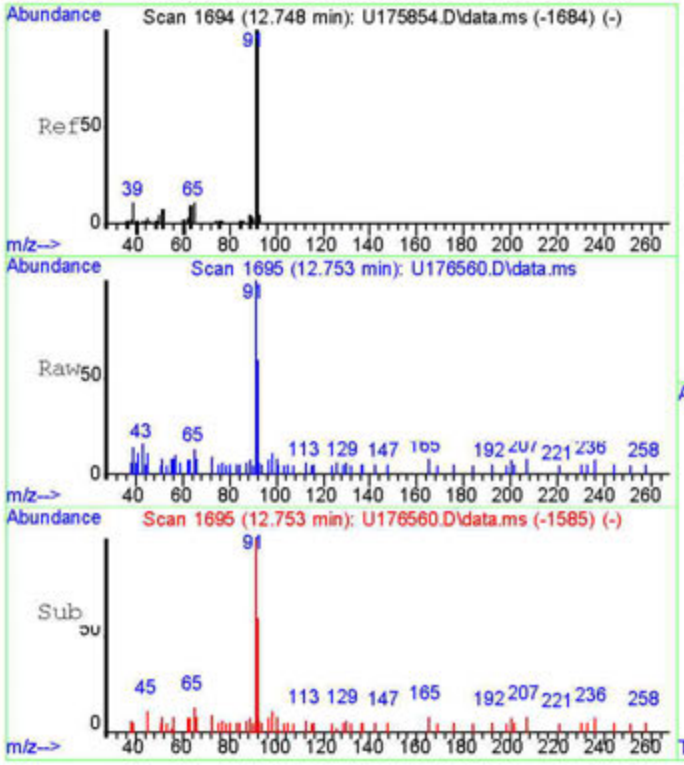


#72
benzene
Concen: 26.03 ug/L
RT: 10.624 min Scan# 1288
Delta R.T. -0.004 min
Lab File: U176560.D
Acq: 4 Oct 2013 8:32 pm

Tgt Ion: 78 Resp: 99936

Ion	Ratio	Lower	Upper
78	100		
77	26.1	0.0	54.6

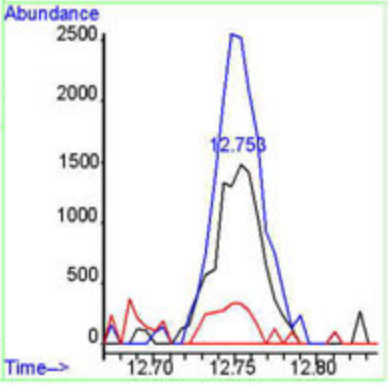


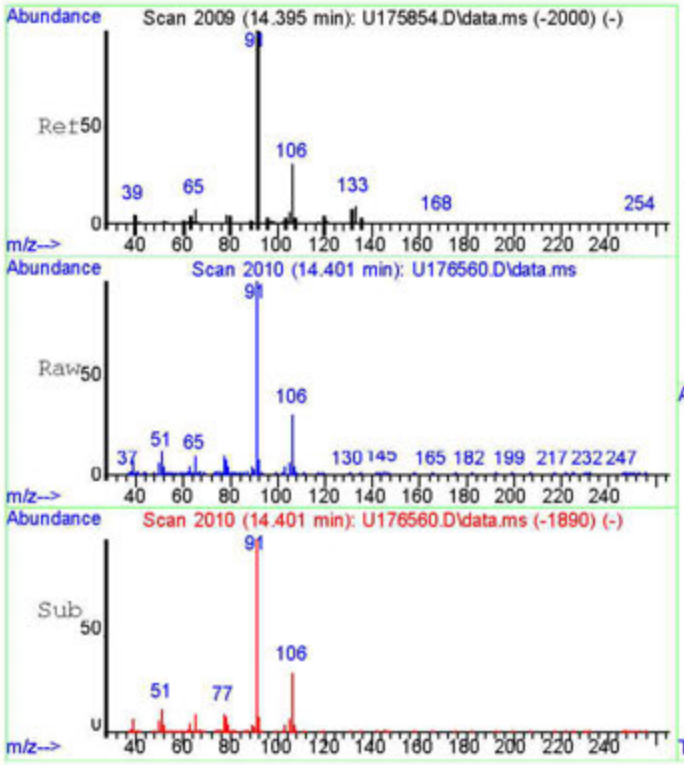


#90
toluene
Concen: 1.29 ug/L
RT: 12.753 min Scan# 1695
Delta R.T. -0.004 min
Lab File: U176560.D
Acq: 4 Oct 2013 8:32 pm

Tgt Ion: 92 Resp: 3104

Ion	Ratio	Lower	Upper
92	100		
91	170.2	140.6	200.6
65	22.7	0.0	49.4

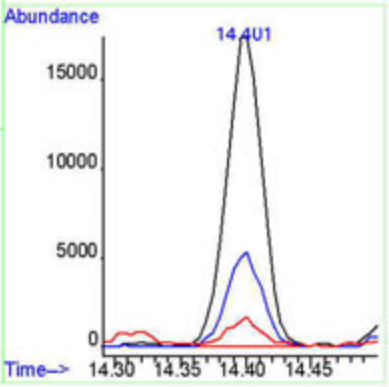


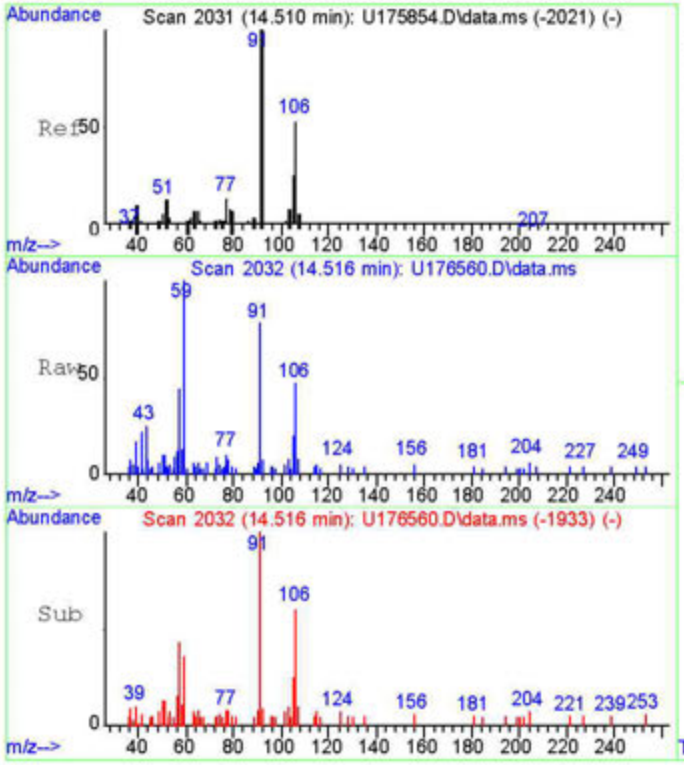


#107
ethylbenzene
Concen: 7.25 ug/L
RT: 14.401 min Scan# 2010
Delta R.T. -0.004 min
Lab File: U176560.D
Acq: 4 Oct 2013 8:32 pm

Tgt Ion: 91 Resp: 33713

Ion	Ratio	Lower	Upper
91	100		
106	30.8	0.7	60.7
77	9.7	0.0	38.6

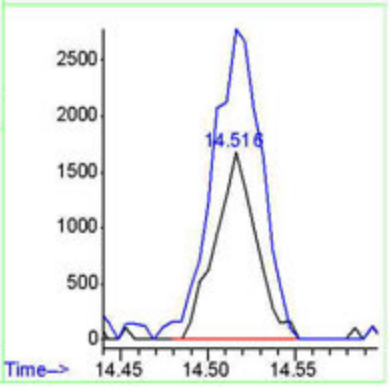


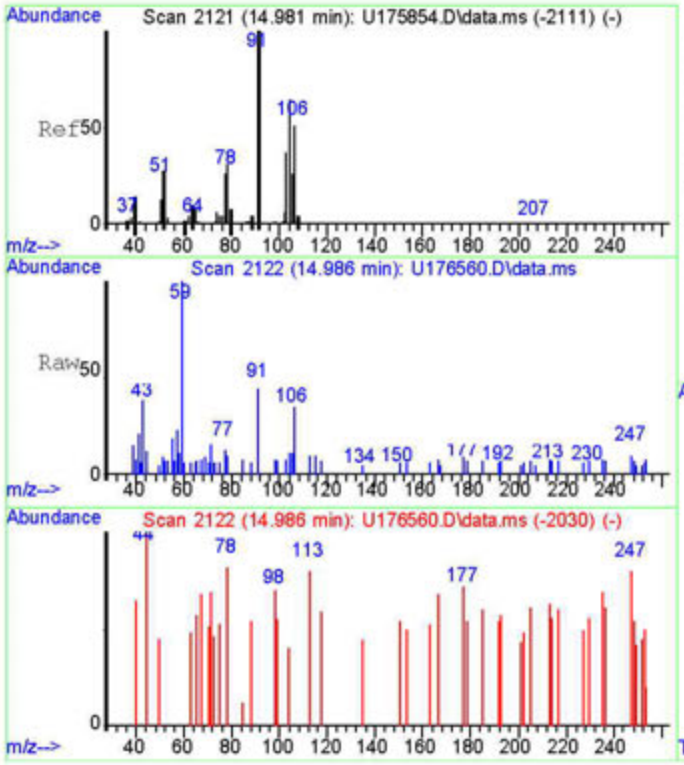


#108
m,p-xylene
Concen: 1.53 ug/L
RT: 14.516 min Scan# 2032
Delta R.T. -0.004 min
Lab File: U176560.D
Acq: 4 Oct 2013 8:32 pm

Tgt Ion:106 Resp: 2780

Ion	Ratio	Lower	Upper
106	100		
91	165.4	167.7	227.7#

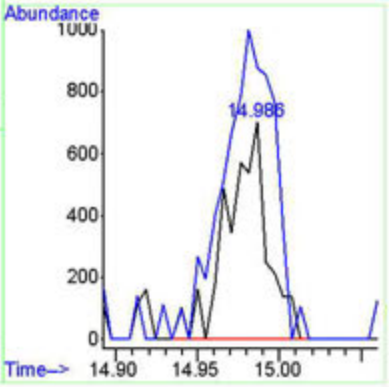


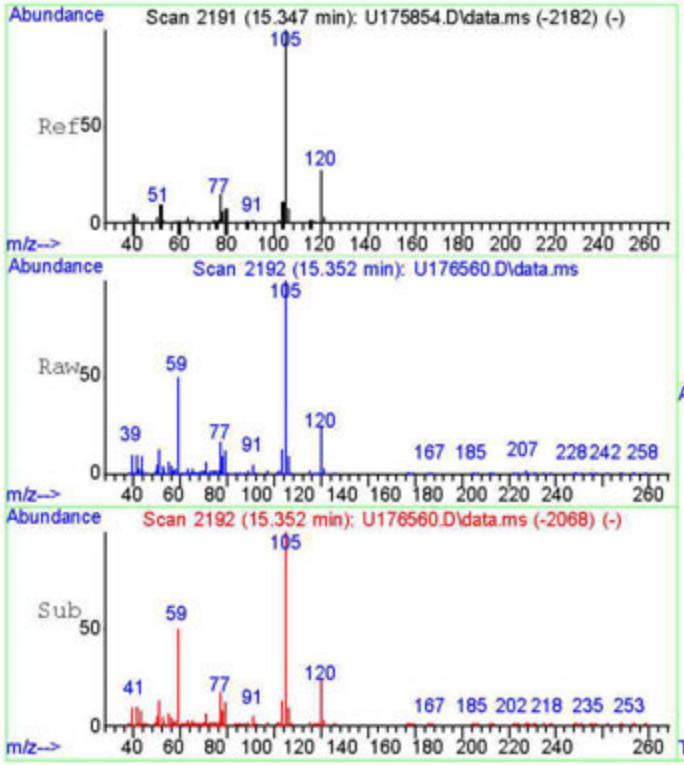


#109
o-xylene
Concen: 0.67 ug/L
RT: 14.986 min Scan# 2122
Delta R.T. 0.001 min
Lab File: U176560.D
Acq: 4 Oct 2013 8:32 pm

Tgt Ion:106 Resp: 1205

Ion	Ratio	Lower	Upper
106	100		
91	125.3	179.9	239.9#

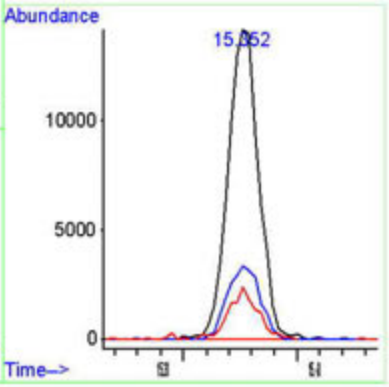


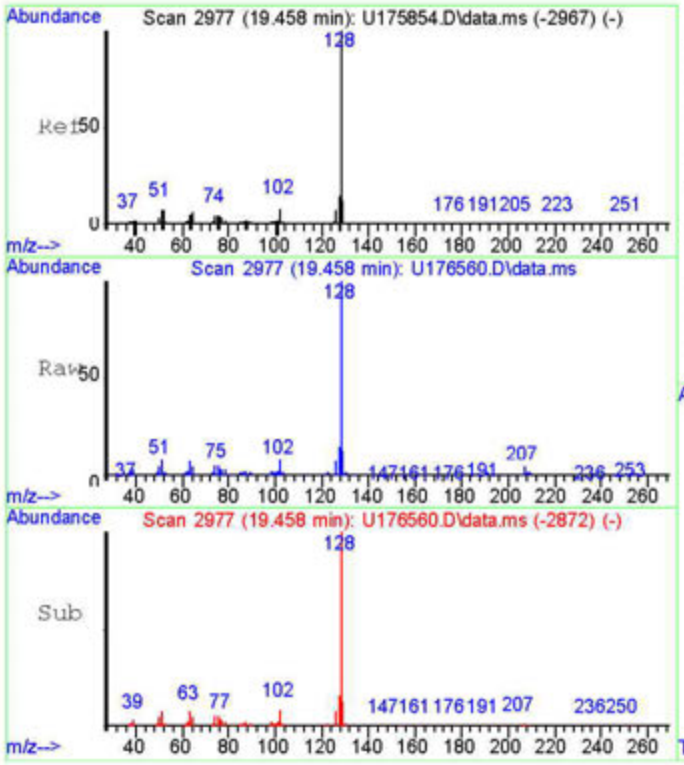


#113
isopropylbenzene
Concen: 5.78 ug/L
RT: 15.352 min Scan# 2192
Delta R.T. -0.009 min
Lab File: U176560.D
Acq: 4 Oct 2013 8:32 pm

Tgt Ion:105 Resp: 27083

Ion	Ratio	Lower	Upper
105	100		
120	24.0	0.0	56.1
77	17.0	0.0	45.4

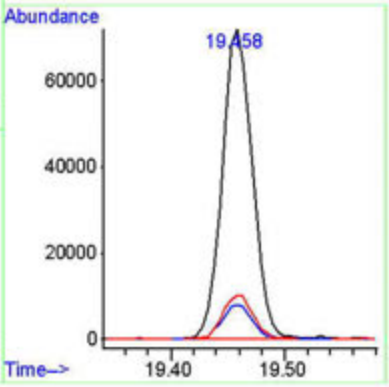




#141
naphthalene
Concen: 27.09 ug/L
RT: 19.458 min Scan# 2977
Delta R.T. -0.009 min
Lab File: U176560.D
Acq: 4 Oct 2013 8:32 pm

Tgt Ion:128 Resp: 135661

Ion	Ratio	Lower	Upper
128	100		
129	11.6	0.0	40.5
127	14.5	0.0	43.3



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176645.D
Acq On : 7 Oct 2013 1:52 pm
Operator : natet
Sample : jb48380-1
Misc : ms55650,vu8162,5.0,,,,25
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 08 12:08:59 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

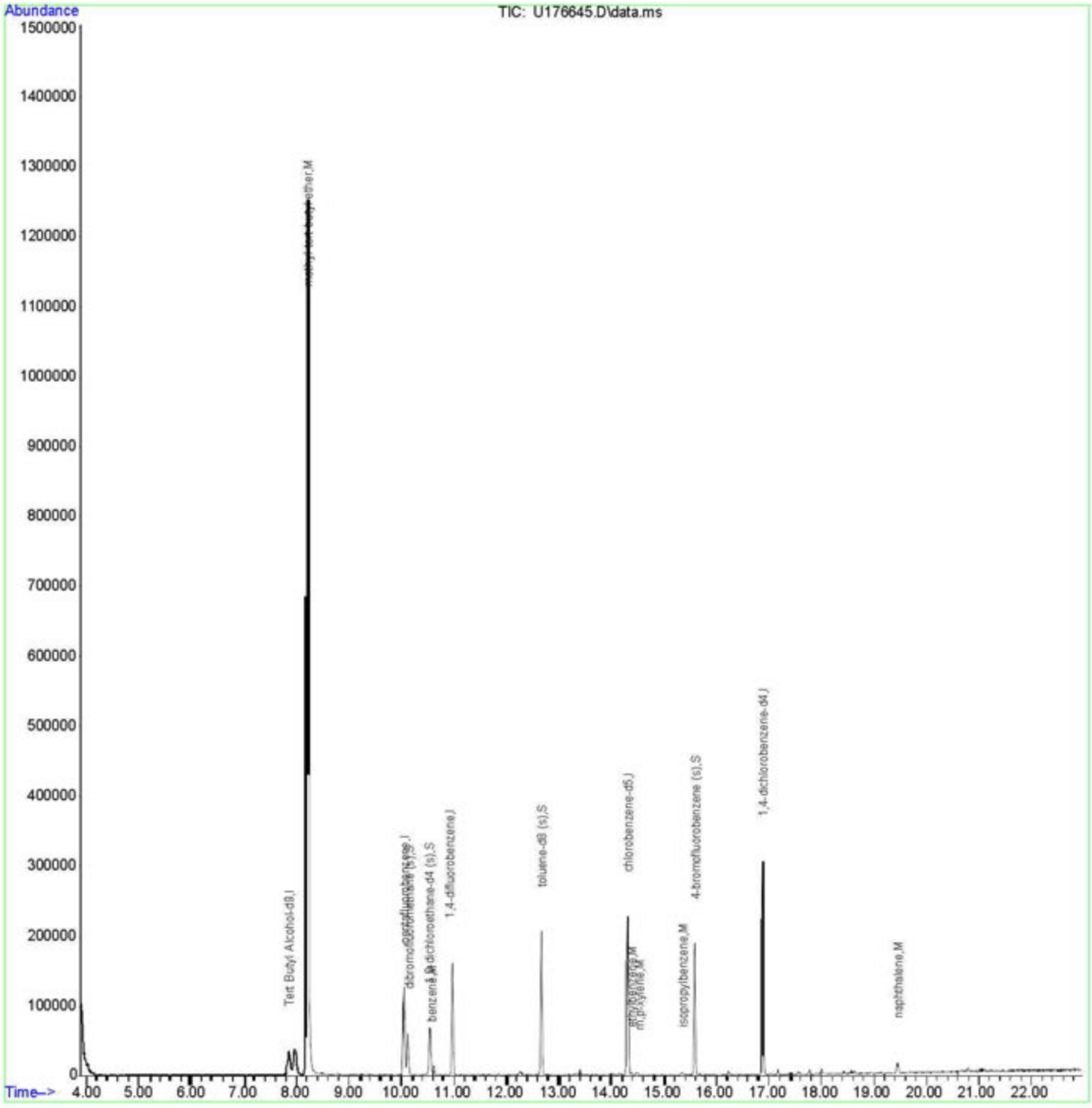
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.847	65	78783	500.00	ug/L	0.00
5) pentafluorobenzene	10.060	168	109867	50.00	ug/L	0.00
64) 1,4-difluorobenzene	10.986	114	144053	50.00	ug/L	0.00
96) chlorobenzene-d5	14.317	117	137314	50.00	ug/L	0.00
112) 1,4-dichlorobenzene-d4	16.890	152	91913	50.00	ug/L	0.00
System Monitoring Compounds						
56) dibromofluoromethane (s)	10.133	113	41434	49.13	ug/L	0.00
Spiked Amount 50.000	Range 79 - 117		Recovery = 98.26%			
57) 1,2-dichloroethane-d4 (s)	10.557	65	55767	51.86	ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 103.72%			
88) toluene-d8 (s)	12.675	98	152604	48.94	ug/L	0.00
Spiked Amount 50.000	Range 82 - 118		Recovery = 97.88%			
114) 4-bromofluorobenzene (s)	15.593	95	61903	47.84	ug/L	0.00
Spiked Amount 50.000	Range 75 - 118		Recovery = 95.68%			
Target Compounds						Qvalue
37) methyl tert butyl ether	8.214	73	2007485	639.82	ug/L	97
72) benzene	10.630	78	9957	2.83	ug/L	88
107) ethylbenzene	14.396	91	3248	0.75	ug/L	91
108) m,p-xylene	14.526	106	438	0.26	ug/L #	9
113) isopropylbenzene	15.353	105	2498	0.55	ug/L	96
141) naphthalene	19.458	128	13780	2.86	ug/L	96

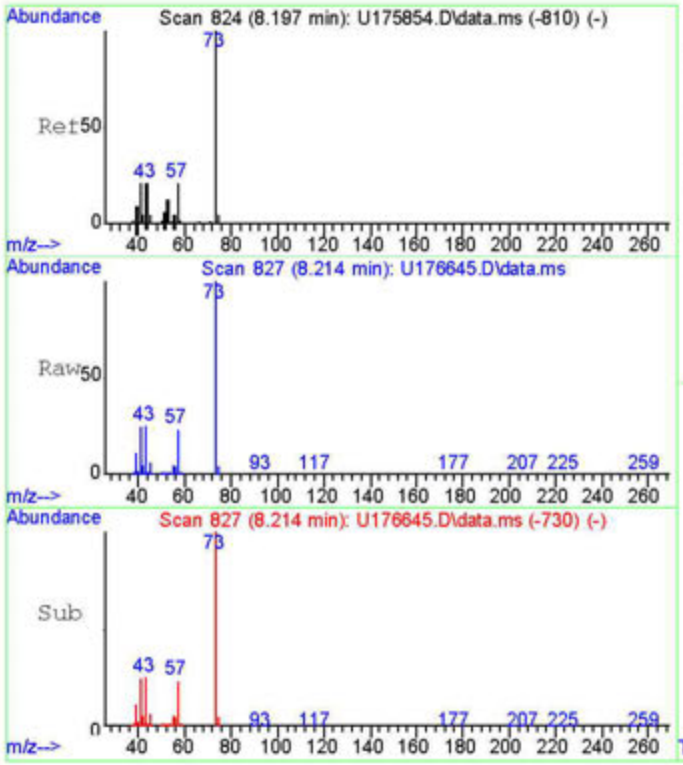
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176645.D
Acq On : 7 Oct 2013 1:52 pm
Operator : natet
Sample : jb48380-1
Misc : ms55650,vu8162,5.0,,,,25
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 08 12:08:59 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

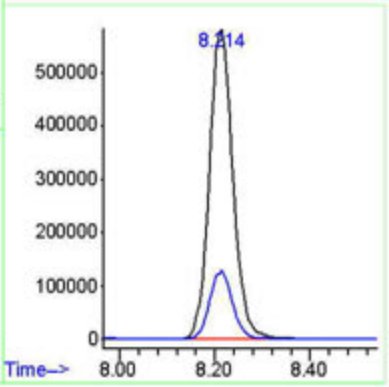


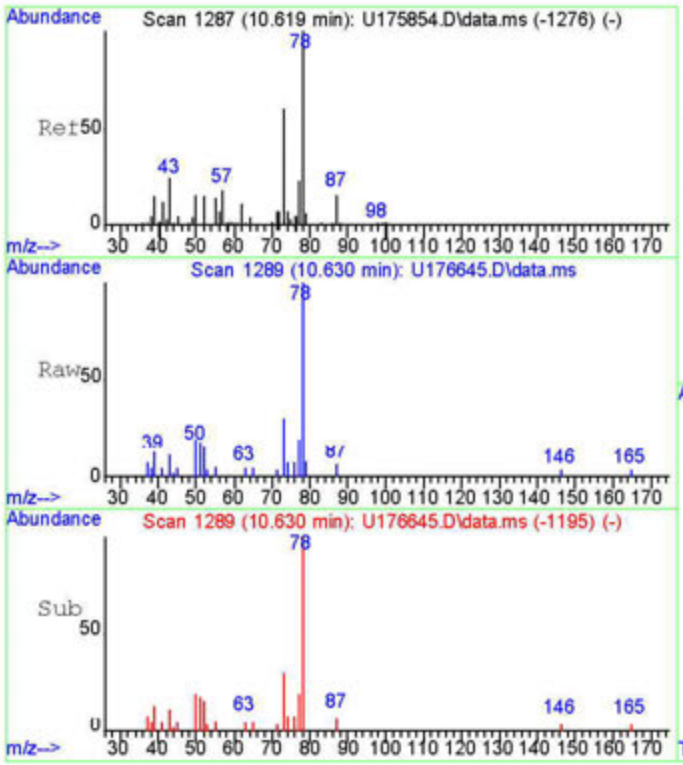


#37
methyl tert butyl ether
Concen: 639.82 ug/L
RT: 8.214 min Scan# 827
Delta R.T. 0.006 min
Lab File: U176645.D
Acq: 7 Oct 2013 1:52 pm

Tgt Ion: 73 Resp: 2007485

Ion	Ratio	Lower	Upper
73	100		
57	22.1	0.0	53.5

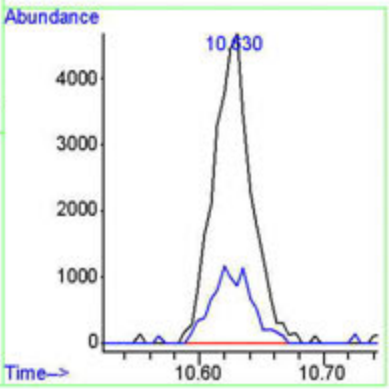


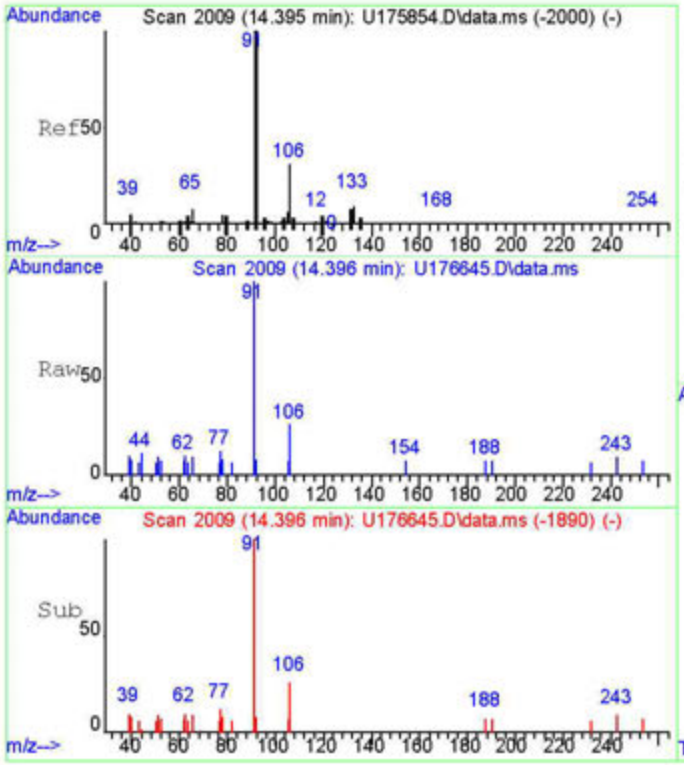


#72
benzene
Concen: 2.83 ug/L
RT: 10.630 min Scan# 1289
Delta R.T. 0.001 min
Lab File: U176645.D
Acq: 7 Oct 2013 1:52 pm

Tgt Ion: 78 Resp: 9957

Ion	Ratio	Lower	Upper
78	100		
77	18.5	0.0	54.6

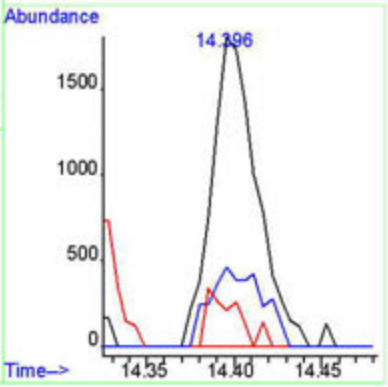


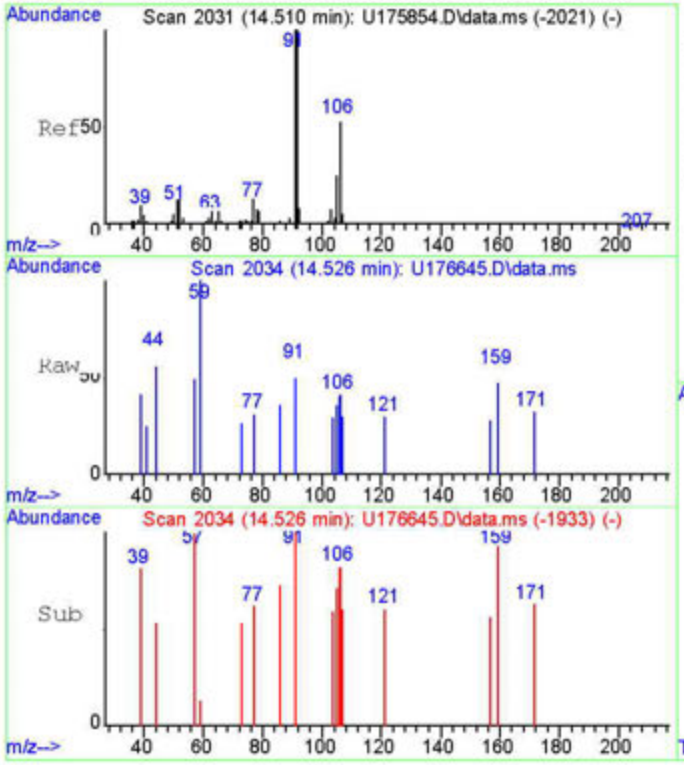


#107
ethylbenzene
Concen: 0.75 ug/L
RT: 14.396 min Scan# 2009
Delta R.T. -0.009 min
Lab File: U176645.D
Acq: 7 Oct 2013 1:52 pm

Tgt Ion: 91 Resp: 3248

Ion	Ratio	Lower	Upper
91	100		
106	25.9	0.7	60.7
77	11.7	0.0	38.6

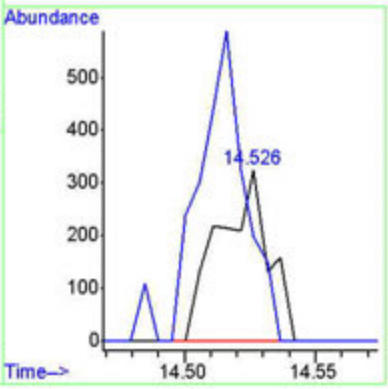


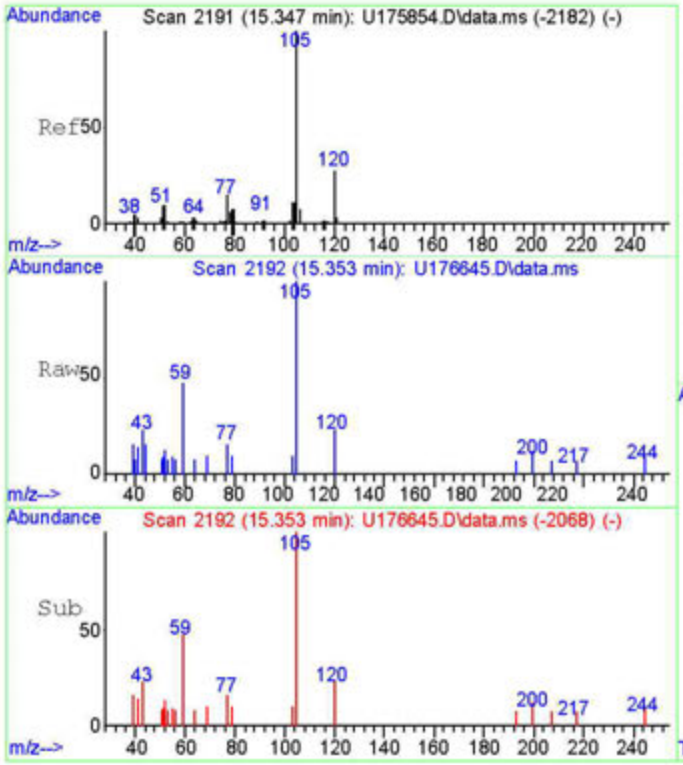


#108
m,p-xylene
Concen: 0.26 ug/L
RT: 14.526 min Scan# 2034
Delta R.T. 0.006 min
Lab File: U176645.D
Acq: 7 Oct 2013 1:52 pm

Tgt Ion:106 Resp: 438

Ion	Ratio	Lower	Upper
106	100		
91	61.2	167.7	227.7#

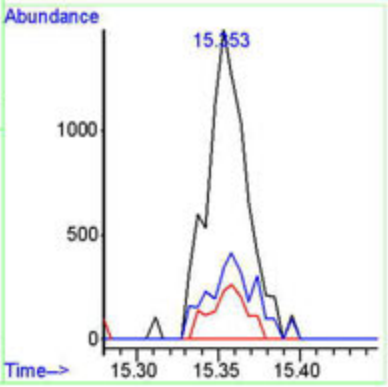


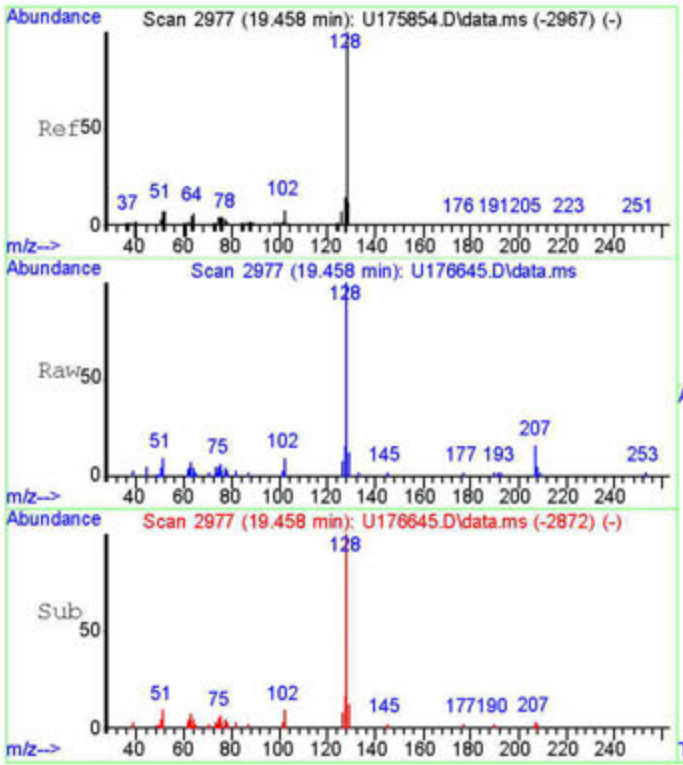


#113
isopropylbenzene
Concen: 0.55 ug/L
RT: 15.353 min Scan# 2192
Delta R.T. -0.009 min
Lab File: U176645.D
Acq: 7 Oct 2013 1:52 pm

Tgt Ion:105 Resp: 2498

Ion	Ratio	Lower	Upper
105	100		
120	23.0	0.0	56.1
77	15.7	0.0	45.4

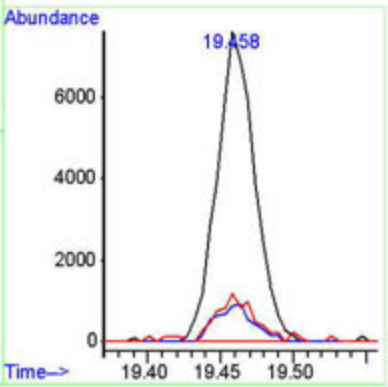




#141
naphthalene
Concen: 2.86 ug/L
RT: 19.458 min Scan# 2977
Delta R.T. -0.009 min
Lab File: U176645.D
Acq: 7 Oct 2013 1:52 pm

Tgt Ion:128 Resp: 13780

Ion	Ratio	Lower	Upper
128	100		
129	11.5	0.0	40.5
127	15.6	0.0	43.3



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176646.D
Acq On : 7 Oct 2013 2:22 pm
Operator : natet
Sample : jb48380-1
Misc : ms55650,vu8162,5.0,,,,250
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 08 12:48:56 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.853	65	81258	500.00 ug/L	0.00
5) pentafluorobenzene	10.060	168	109392	50.00 ug/L	0.00
64) 1,4-difluorobenzene	10.981	114	141861	50.00 ug/L	0.00
96) chlorobenzene-d5	14.318	117	136454	50.00 ug/L	0.00
112) 1,4-dichlorobenzene-d4	16.891	152	89062	50.00 ug/L	0.00
System Monitoring Compounds					
56) dibromofluoromethane (s)	10.139	113	41428	49.33 ug/L	0.00
Spiked Amount 50.000	Range 79 - 117		Recovery = 98.66%		
57) 1,2-dichloroethane-d4 (s)	10.557	65	54990	51.36 ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 102.72%		
88) toluene-d8 (s)	12.675	98	149411	48.66 ug/L	0.00
Spiked Amount 50.000	Range 82 - 118		Recovery = 97.32%		
114) 4-bromofluorobenzene (s)	15.594	95	59666	47.59 ug/L	0.00
Spiked Amount 50.000	Range 75 - 118		Recovery = 95.18%		
Target Compounds					Qvalue
37) methyl tert butyl ether	8.214	73	187220	59.93 ug/L	97
72) benzene	10.615	78	941	0.27 ug/L	47

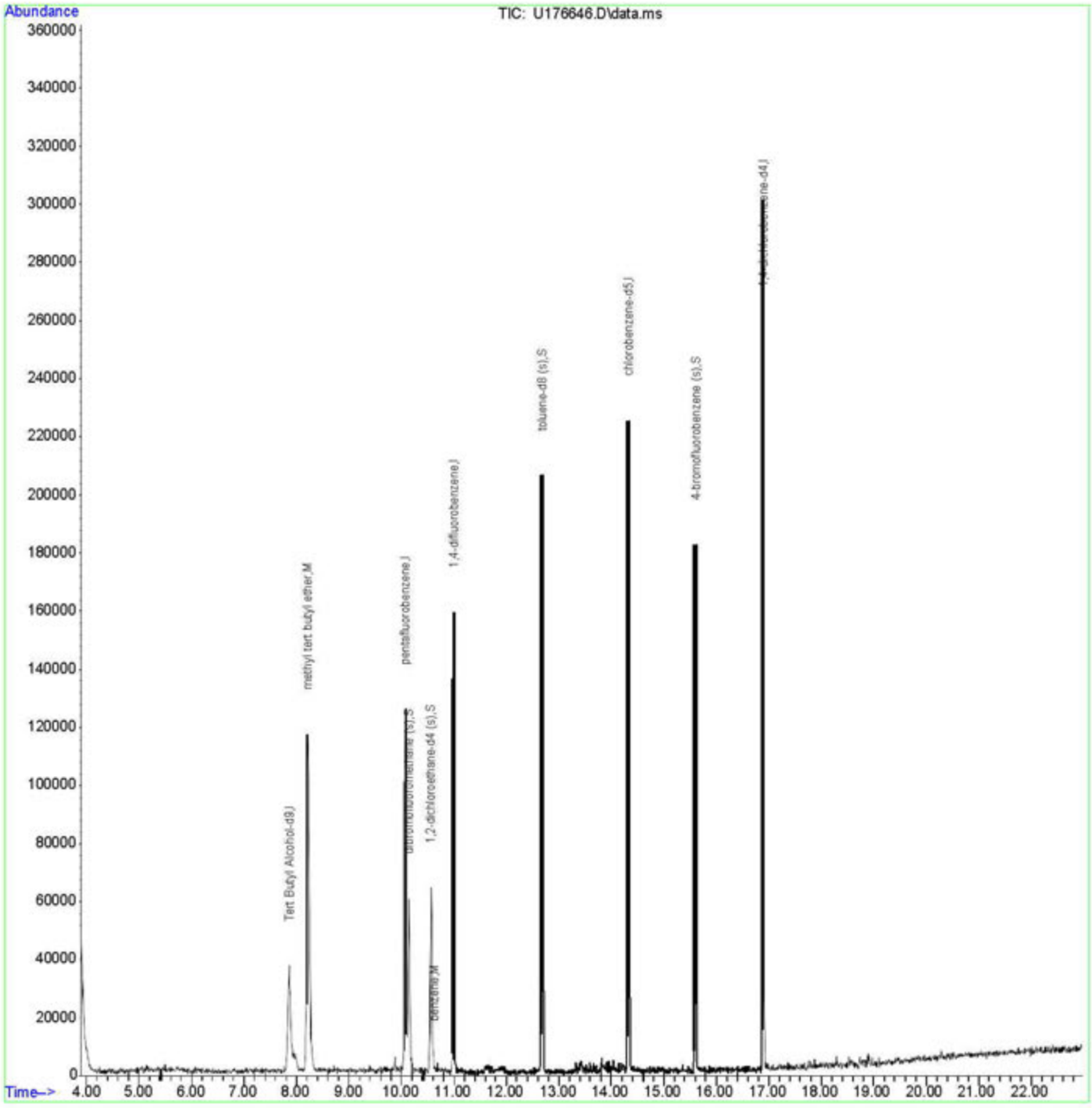
(#) - qualifier out of range (m) - manual integration (+) - signals summed

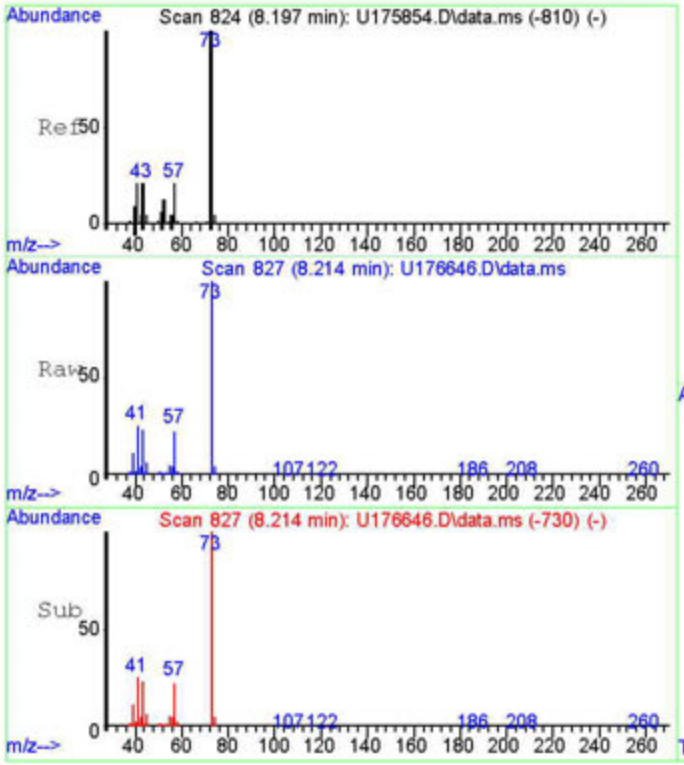
7.1.3 7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176646.D
Acq On : 7 Oct 2013 2:22 pm
Operator : natet
Sample : jb48380-1
Misc : ms55650,vu8162,5.0,,,,250
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 08 12:48:56 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

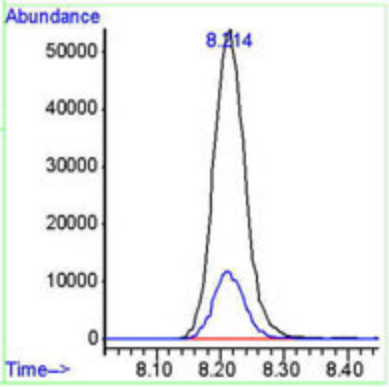


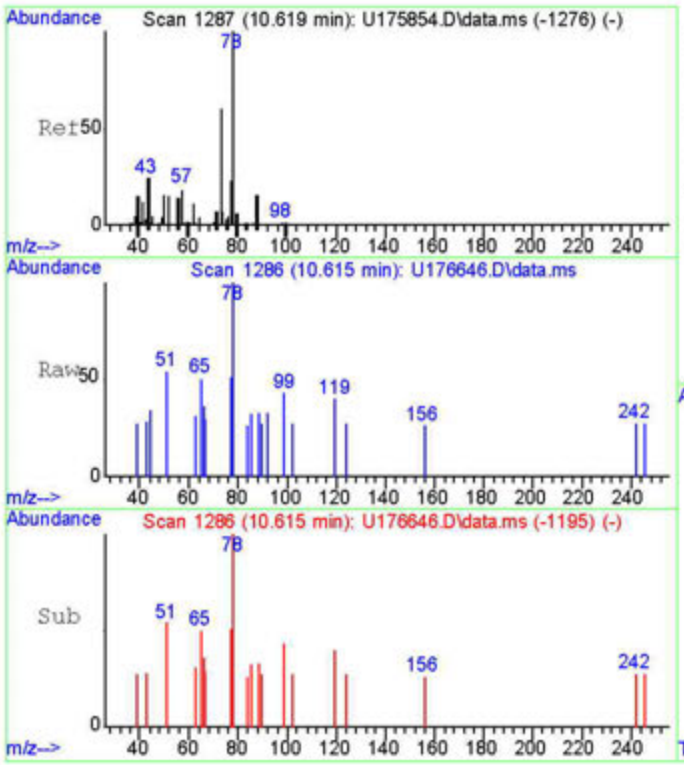


#37
methyl tert butyl ether
Concen: 59.93 ug/L
RT: 8.214 min Scan# 827
Delta R.T. 0.007 min
Lab File: U176646.D
Acq: 7 Oct 2013 2:22 pm

Tgt Ion: 73 Resp: 187220

Ion	Ratio	Lower	Upper
73	100		
57	22.3	0.0	53.5

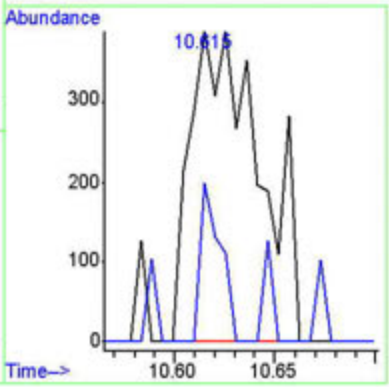




#72
benzene
Concen: 0.27 ug/L
RT: 10.615 min Scan# 1286
Delta R.T. -0.014 min
Lab File: U176646.D
Acq: 7 Oct 2013 2:22 pm

Tgt Ion: 78 Resp: 941

Ion	Ratio	Lower	Upper
78	100		
77	51.2	0.0	54.6



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176557.D
Acq On : 4 Oct 2013 7:04 pm
Operator : natet
Sample : jb48380-2
Misc : ms55650,vu8158,5.0,,,,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Oct 07 16:01:02 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.842	65	77600	500.00	ug/L	0.00
5) pentafluorobenzene	10.060	168	120383	50.00	ug/L	0.00
64) 1,4-difluorobenzene	10.980	114	154747	50.00	ug/L	0.00
96) chlorobenzene-d5	14.317	117	147243	50.00	ug/L	0.00
112) 1,4-dichlorobenzene-d4	16.885	152	99229	50.00	ug/L	0.00
System Monitoring Compounds						
56) dibromofluoromethane (s)	10.133	113	44527	48.18	ug/L	0.00
Spiked Amount 50.000	Range 79 - 117		Recovery = 96.36%			
57) 1,2-dichloroethane-d4 (s)	10.551	65	58882	49.97	ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 99.94%			
88) toluene-d8 (s)	12.675	98	164488	49.11	ug/L	0.00
Spiked Amount 50.000	Range 82 - 118		Recovery = 98.22%			
114) 4-bromofluorobenzene (s)	15.593	95	65366	46.80	ug/L	0.00
Spiked Amount 50.000	Range 75 - 118		Recovery = 93.60%			

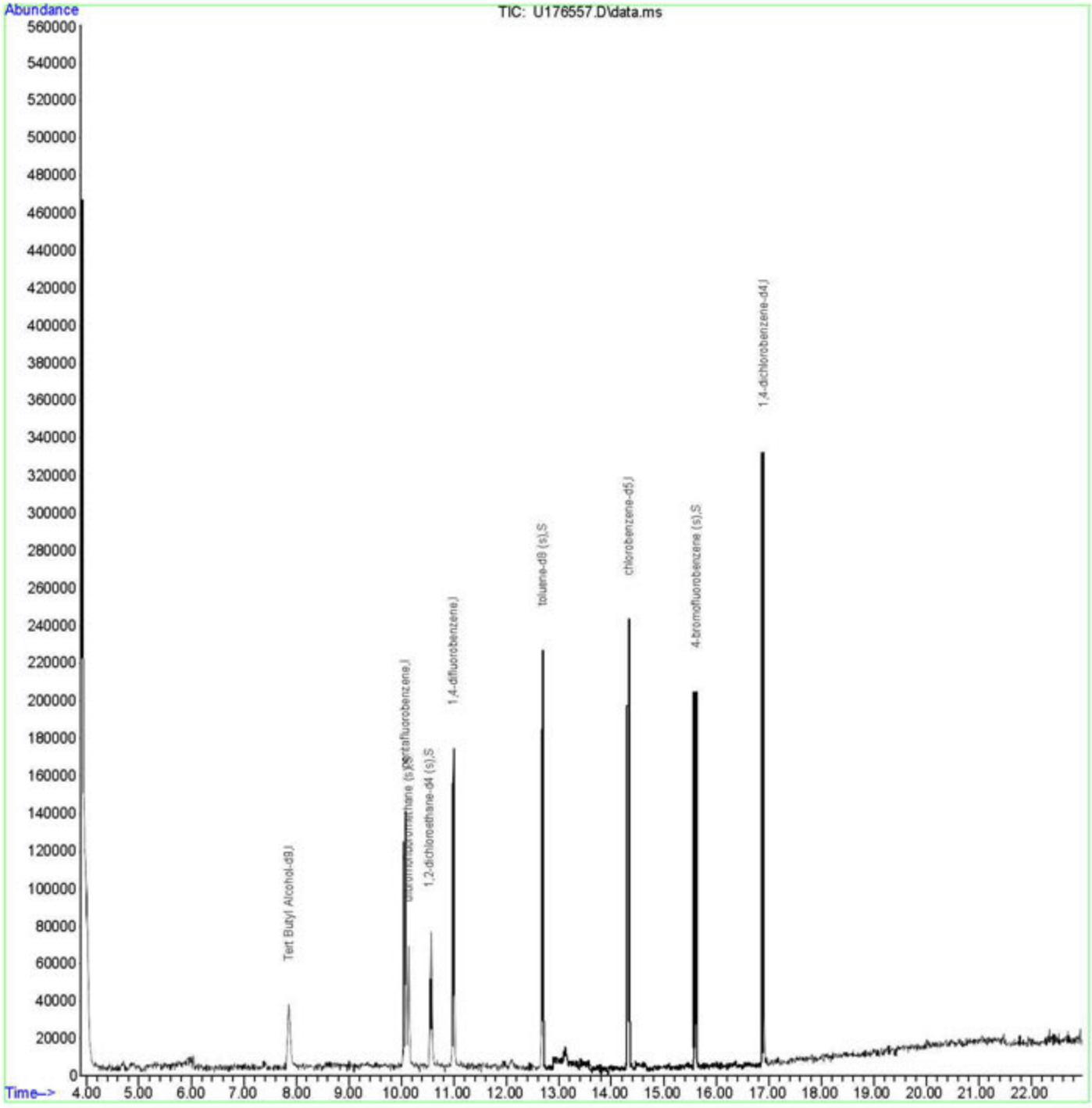
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176557.D
Acq On : 4 Oct 2013 7:04 pm
Operator : natet
Sample : jb48380-2
Misc : ms55650,vu8158,5.0,,,,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Oct 07 16:01:02 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176558.D
Acq On : 4 Oct 2013 7:33 pm
Operator : natet
Sample : jb48380-3
Misc : ms55650,vu8158,5.0,,,,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 07 16:01:52 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

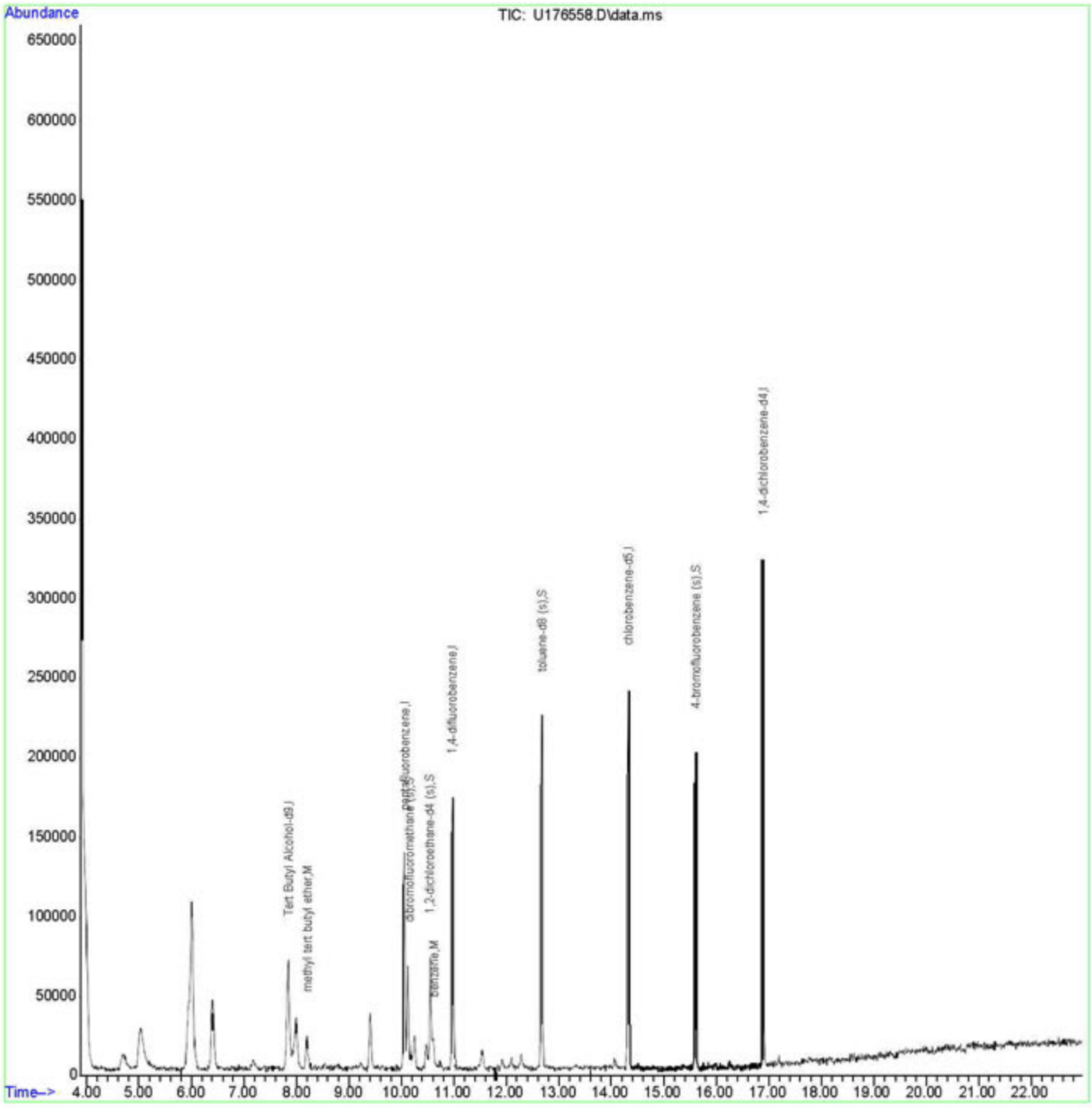
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.852	65	76040	500.00	ug/L	0.00
5) pentafluorobenzene	10.059	168	118901	50.00	ug/L	0.00
64) 1,4-difluorobenzene	10.985	114	153461	50.00	ug/L	0.00
96) chlorobenzene-d5	14.316	117	145620	50.00	ug/L	0.00
112) 1,4-dichlorobenzene-d4	16.889	152	95909	50.00	ug/L	0.00
System Monitoring Compounds						
56) dibromofluoromethane (s)	10.132	113	44324	48.56	ug/L	0.00
Spiked Amount 50.000	Range 79 - 117		Recovery = 97.12%			
57) 1,2-dichloroethane-d4 (s)	10.556	65	59734	51.33	ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 102.66%			
88) toluene-d8 (s)	12.674	98	165746	49.90	ug/L	0.00
Spiked Amount 50.000	Range 82 - 118		Recovery = 99.80%			
114) 4-bromofluorobenzene (s)	15.592	95	65823	48.75	ug/L	0.00
Spiked Amount 50.000	Range 75 - 118		Recovery = 97.50%			
Target Compounds						Qvalue
37) methyl tert butyl ether	8.207	73	10059	2.96	ug/L	# 1
72) benzene	10.624	78	11064	2.95	ug/L	99

(#) - qualifier out of range (m) - manual integration (+) - signals summed

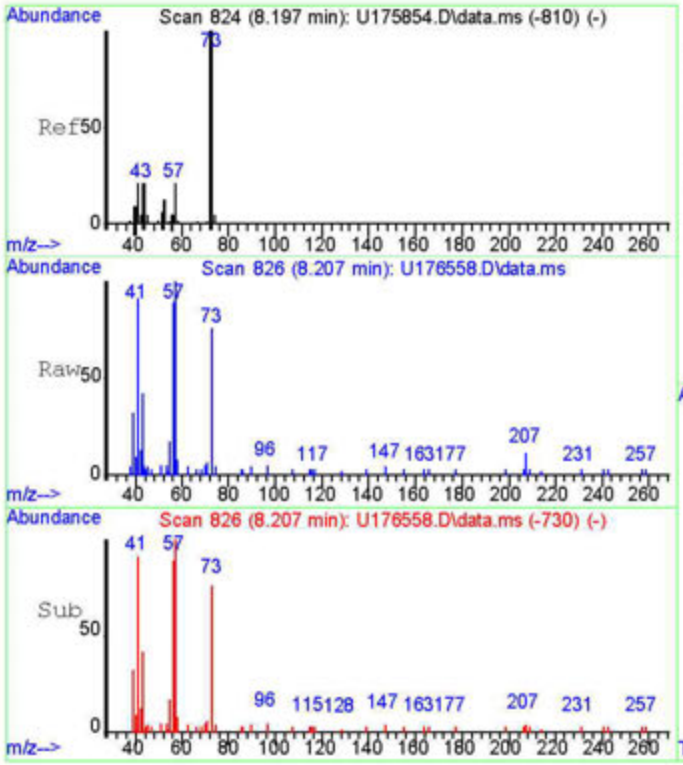
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176558.D
Acq On : 4 Oct 2013 7:33 pm
Operator : natet
Sample : jb48380-3
Misc : ms55650,vu8158,5.0,,,,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 07 16:01:52 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration



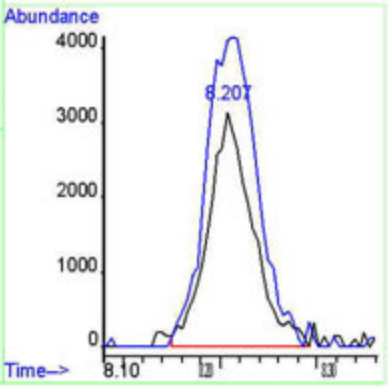
ACCUTEST LABORATORIES JB48380

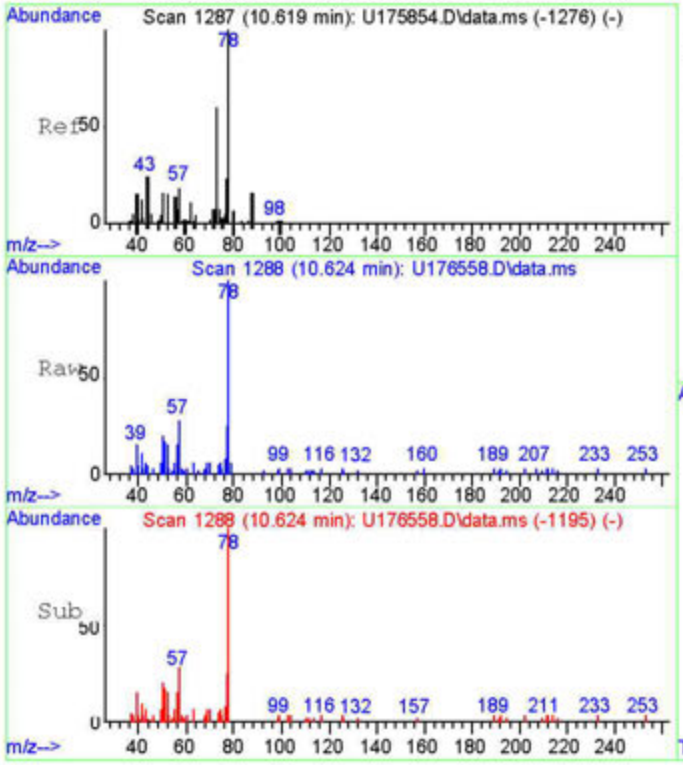


#37
methyl tert butyl ether
Concen: 2.96 ug/L
RT: 8.207 min Scan# 826
Delta R.T. 0.000 min
Lab File: U176558.D
Acq: 4 Oct 2013 7:33 pm

Tgt Ion: 73 Resp: 10059

Ion	Ratio	Lower	Upper
73	100		
57	154.5	0.0	53.5#

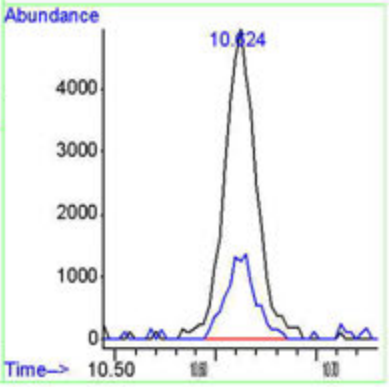




#72
benzene
Concen: 2.95 ug/L
RT: 10.624 min Scan# 1288
Delta R.T. -0.005 min
Lab File: U176558.D
Acq: 4 Oct 2013 7:33 pm

Tgt Ion: 78 Resp: 11064

Ion	Ratio	Lower	Upper
78	100		
77	25.1	0.0	54.6



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176559.D
Acq On : 4 Oct 2013 8:02 pm
Operator : natet
Sample : jb48380-4
Misc : ms55650,vu8158,5.0,,,,1
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Oct 07 16:02:30 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

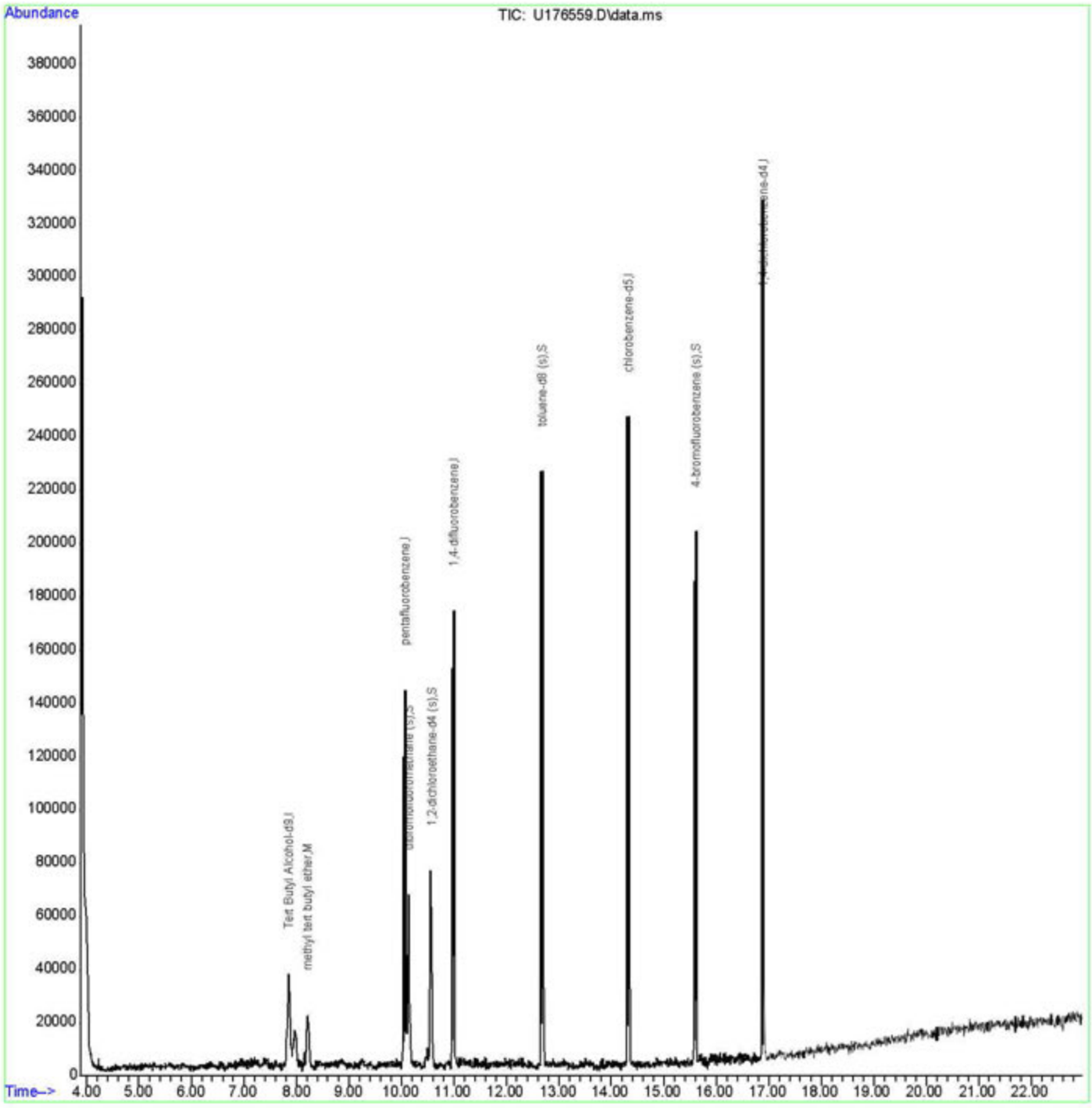
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.847	65	74015	500.00	ug/L	0.00
5) pentafluorobenzene	10.059	168	121219	50.00	ug/L	0.00
64) 1,4-difluorobenzene	10.985	114	154735	50.00	ug/L	0.00
96) chlorobenzene-d5	14.316	117	146974	50.00	ug/L	0.00
112) 1,4-dichlorobenzene-d4	16.889	152	98552	50.00	ug/L	0.00
System Monitoring Compounds						
56) dibromofluoromethane (s)	10.132	113	43067	46.28	ug/L	0.00
Spiked Amount 50.000	Range 79 - 117		Recovery = 92.56%			
57) 1,2-dichloroethane-d4 (s)	10.556	65	59630	50.26	ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 100.52%			
88) toluene-d8 (s)	12.674	98	163174	48.72	ug/L	0.00
Spiked Amount 50.000	Range 82 - 118		Recovery = 97.44%			
114) 4-bromofluorobenzene (s)	15.592	95	65446	47.17	ug/L	0.00
Spiked Amount 50.000	Range 75 - 118		Recovery = 94.34%			
Target Compounds						Qvalue
37) methyl tert butyl ether	8.207	73	29707	8.58	ug/L	98

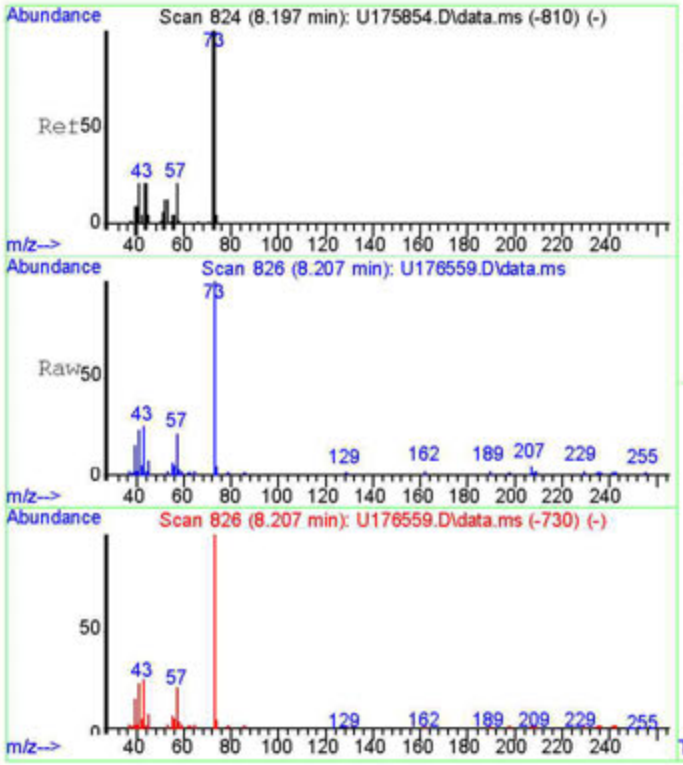
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176559.D
Acq On : 4 Oct 2013 8:02 pm
Operator : natet
Sample : jb48380-4
Misc : ms55650,vu8158,5.0,,,,1
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Oct 07 16:02:30 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

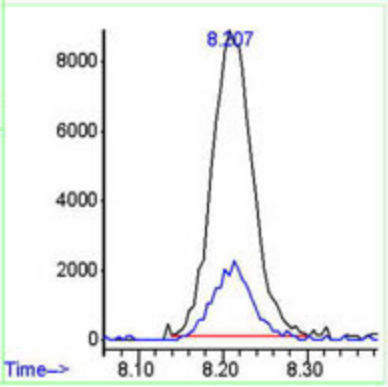




#37
methyl tert butyl ether
Concen: 8.58 ug/L
RT: 8.207 min Scan# 826
Delta R.T. 0.000 min
Lab File: U176559.D
Acq: 4 Oct 2013 8:02 pm

Tgt Ion: 73 Resp: 29707

Ion	Ratio	Lower	Upper
73	100		
57	24.7	0.0	53.5



7.1.6

7

Quantitation Report (LSC Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176540.D
Acq On : 4 Oct 2013 10:44 am
Operator : natet
Sample : mb1
Misc : ms55721,vu8158,5.0,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Oct 04 14:23:00 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.843	65	82438	500.00	ug/L	0.00
5) pentafluorobenzene	10.055	168	117127	50.00	ug/L	0.00
64) 1,4-difluorobenzene	10.981	114	148908	50.00	ug/L	0.00
96) chlorobenzene-d5	14.312	117	143921	50.00	ug/L	0.00
112) 1,4-dichlorobenzene-d4	16.886	152	95515	50.00	ug/L	0.00
System Monitoring Compounds						
56) dibromofluoromethane (s)	10.134	113	41616	46.29	ug/L	0.00
Spiked Amount 50.000	Range 79 - 117		Recovery = 92.58%			
57) 1,2-dichloroethane-d4 (s)	10.552	65	56878	49.61	ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 99.22%			
88) toluene-d8 (s)	12.670	98	159434	49.47	ug/L	0.00
Spiked Amount 50.000	Range 82 - 118		Recovery = 98.94%			
114) 4-bromofluorobenzene (s)	15.594	95	64317	47.83	ug/L	0.00
Spiked Amount 50.000	Range 75 - 118		Recovery = 95.66%			

Target Compounds	Qvalue

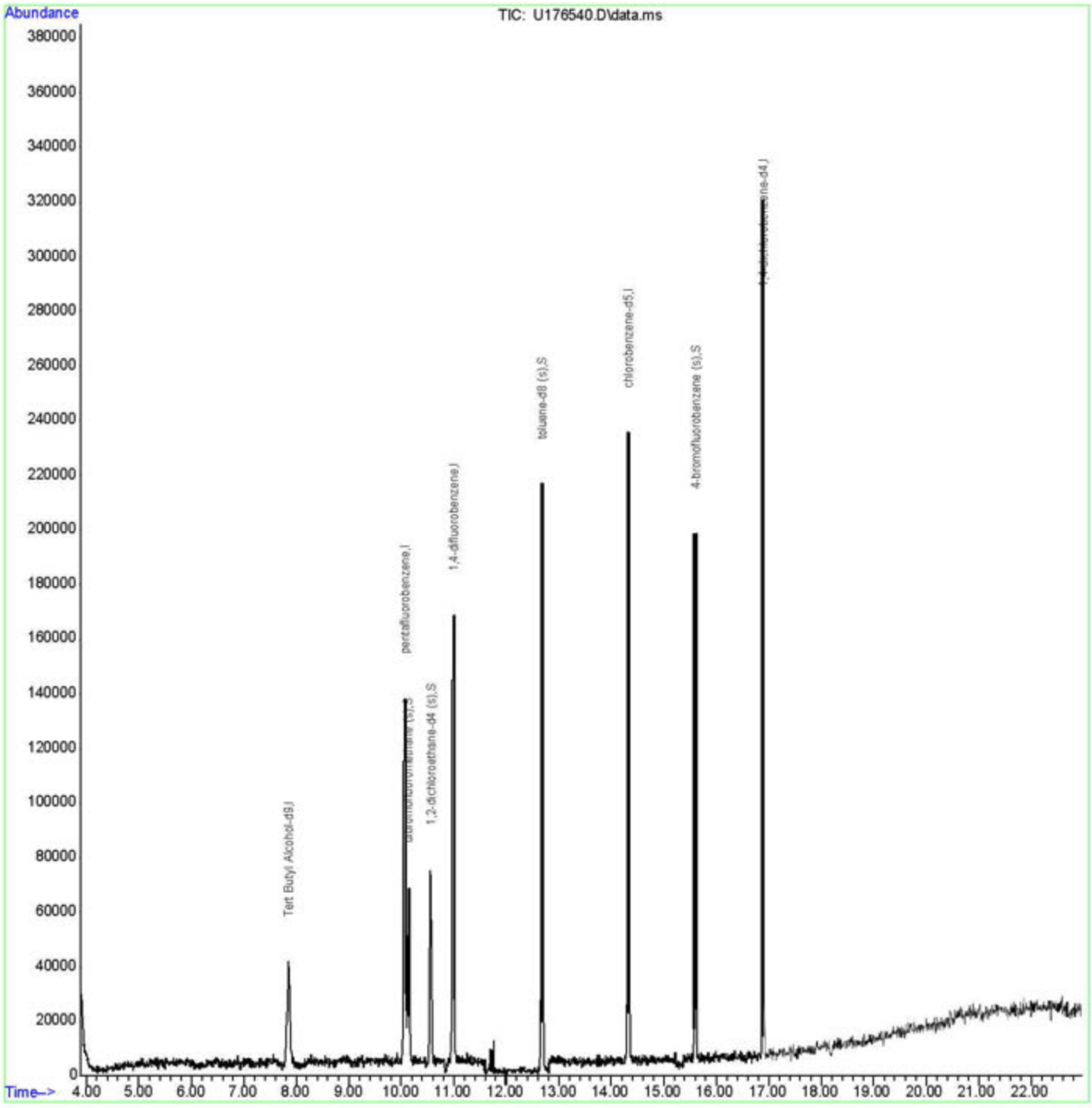
(#) = qualifier out of range (m) = manual integration (+) = signals summed

7.2.1
7

Quantitation Report (LSC Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176540.D
Acq On : 4 Oct 2013 10:44 am
Operator : natet
Sample : mb1
Misc : ms55721,vu8158,5.0,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Oct 04 14:23:00 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration



ACCUTEST LABORATORIES JB48380

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176640.D
Acq On : 7 Oct 2013 11:15 am
Operator : natet
Sample : mb1
Misc : ms55705,vu8162,5.0,,,,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Oct 08 12:04:43 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.853	65	86419	500.00	ug/L	0.00
5) pentafluorobenzene	10.055	168	112382	50.00	ug/L	0.00
64) 1,4-difluorobenzene	10.980	114	143581	50.00	ug/L	0.00
96) chlorobenzene-d5	14.317	117	137809	50.00	ug/L	0.00
112) 1,4-dichlorobenzene-d4	16.885	152	94108	50.00	ug/L	0.00
System Monitoring Compounds						
56) dibromofluoromethane (s)	10.133	113	41670	48.30	ug/L	0.00
Spiked Amount 50.000	Range 79 - 117		Recovery = 96.60%			
57) 1,2-dichloroethane-d4 (s)	10.552	65	54150	49.23	ug/L	0.00
Spiked Amount 50.000	Range 72 - 123		Recovery = 98.46%			
88) toluene-d8 (s)	12.675	98	153790	49.49	ug/L	0.00
Spiked Amount 50.000	Range 82 - 118		Recovery = 98.98%			
114) 4-bromofluorobenzene (s)	15.593	95	62192	46.95	ug/L	0.00
Spiked Amount 50.000	Range 75 - 118		Recovery = 93.90%			

Target Compounds	Qvalue

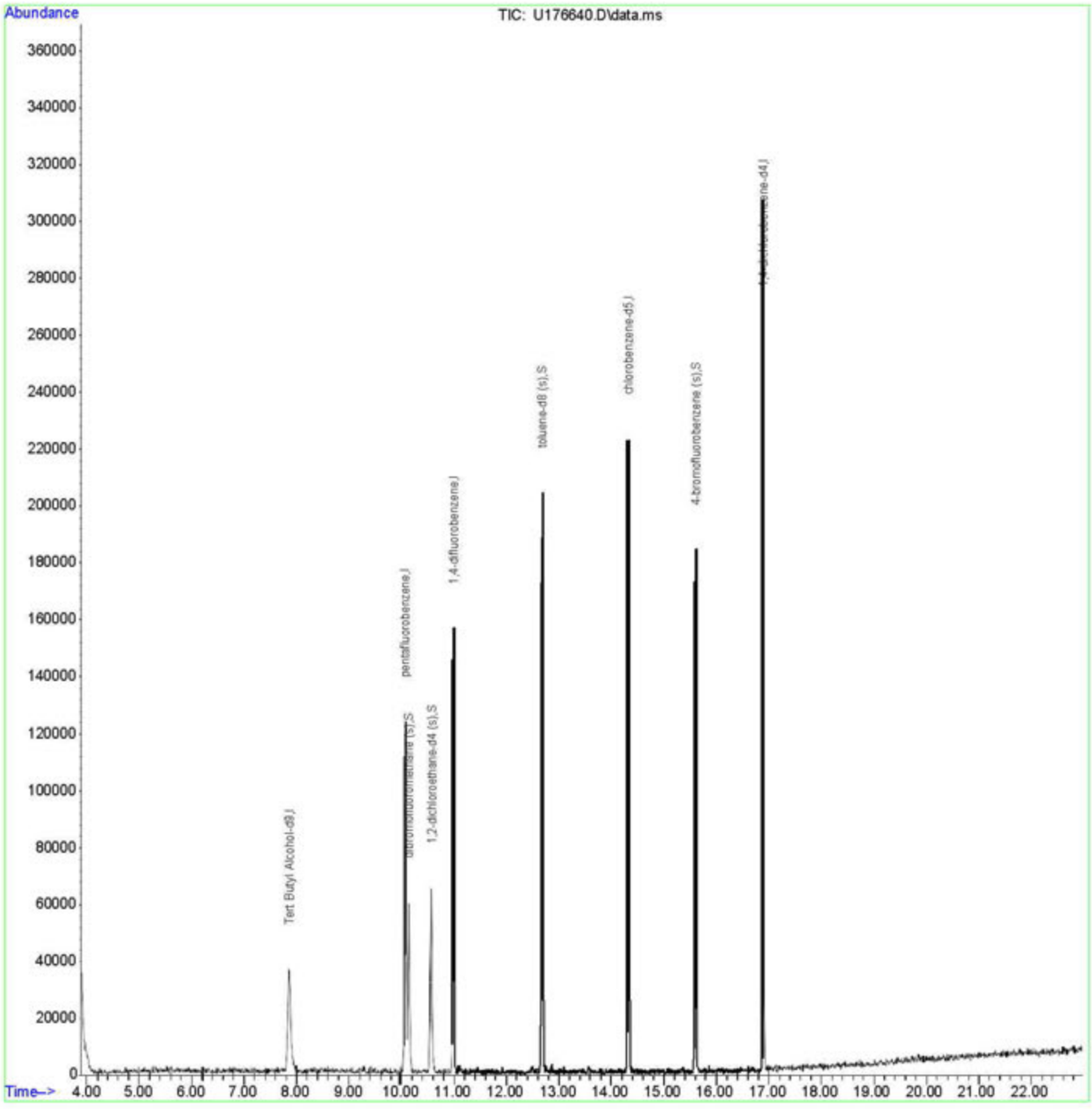
(#) = qualifier out of range (m) = manual integration (+) = signals summed

7.2.2
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : U176640.D
Acq On : 7 Oct 2013 11:15 am
Operator : natet
Sample : mb1
Misc : ms55705,vu8162,5.0,,,,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Oct 08 12:04:43 2013
Quant Method : C:\MSDCHEM\1\METHODS\MU8071.M
Quant Title : SW-846 8260B, DB624 60m x 250um x 1.40um
QLast Update : Wed Sep 25 09:57:09 2013
Response via : Initial Calibration



New Jersey ACCUTEST LABORATORIES

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69436-MB1	WW120656.D	1	10/03/13	VDT	10/01/13	OP69436	GWW4293

The QC reported here applies to the following samples: **Method:** SW846-8011

JB48380-1, JB48380-2, JB48380-3, JB48380-4

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.011	ug/l	

CAS No.	Surrogate Recoveries		Limits
3017-95-6	2-Bromo-1-chloropropane	91%	38-167%
3017-95-6	2-Bromo-1-chloropropane	94%	38-167%

Blank Spike Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69436-BS1	WW120657.D	1	10/03/13	VDT	10/01/13	OP69436	GWW4293

The QC reported here applies to the following samples: **Method:** SW846-8011

JB48380-1, JB48380-2, JB48380-3, JB48380-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
106-93-4	1,2-Dibromoethane	0.5	0.57	114	54-162

CAS No.	Surrogate Recoveries	BSP	Limits
3017-95-6	2-Bromo-1-chloropropane	66%	38-167%
3017-95-6	2-Bromo-1-chloropropane	67%	38-167%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69436-MS	WW120658.D	1	10/03/13	VDT	10/01/13	OP69436	GWW4293
OP69436-MSD	WW120659.D	1	10/03/13	VDT	10/01/13	OP69436	GWW4293
JB48407-1	WW120660.D	1	10/03/13	VDT	10/01/13	OP69436	GWW4293

The QC reported here applies to the following samples: **Method:** SW846-8011

JB48380-1, JB48380-2, JB48380-3, JB48380-4

CAS No.	Compound	JB48407-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
106-93-4	1,2-Dibromoethane	ND		0.875	1.1	126	1.1	126	0	55-163/29

CAS No.	Surrogate Recoveries	MS	MSD	JB48407-1	Limits		
3017-95-6	2-Bromo-1-chloropropane	72%	68%	91%	38-167%		
3017-95-6	2-Bromo-1-chloropropane	79%	75%	96%	38-167%		

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

JB48380

Volatile Surrogate Recovery Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Method: SW846-8011 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
JB48380-1	WW120680.D	95.0	145.0
JB48380-2	WW120681.D	94.0	95.0
JB48380-3	WW120682.D	88.0	140.0
JB48380-4	WW120683.D	92.0	130.0
OP69436-BS1	WW120657.D	66.0	67.0
OP69436-MB1	WW120656.D	91.0	94.0
OP69436-MS	WW120658.D	72.0	79.0
OP69436-MSD	WW120659.D	68.0	75.0

Surrogate Compounds	Recovery Limits
S1 = 2-Bromo-1-chloropropane	38-167%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

GC Surrogate Retention Time Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Check Std:	GWW4293-CC4292	**Injection Date:**	10/03/13
Lab File ID:	WW120654.D	**Injection Time:**	09:51
Instrument ID:	GCWW	**Method:**	SW846-8011

	S1 [a] RT	S1 [b] RT
Check Std	2.75	3.05

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
OP69436-MB1	WW120656.D	10/03/13	10:30	2.76	3.05
OP69436-BS1	WW120657.D	10/03/13	10:48	2.76	3.05
OP69436-MS	WW120658.D	10/03/13	11:07	2.76	3.05
OP69436-MSD	WW120659.D	10/03/13	11:25	2.76	3.05
JB48407-1	WW120660.D	10/03/13	11:43	2.76	3.05
ZZZZZZ	WW120661.D	10/03/13	12:01	2.76	3.05
ZZZZZZ	WW120662.D	10/03/13	12:19	2.76	3.05
ZZZZZZ	WW120663.D	10/03/13	12:37	2.76	3.05

Surrogate Compounds

S1 = 2-Bromo-1-chloropropane

(a) Retention time from GC signal #2
(b) Retention time from GC signal #1

GC Surrogate Retention Time Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Check Std:	GWW4293-CC4292	**Injection Date:**	10/03/13
Lab File ID:	WW120674.D	**Injection Time:**	15:57
Instrument ID:	GCWW	**Method:**	SW846-8011

	S1 [a] RT	S1 [b] RT
Check Std	2.76	3.04

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
ZZZZZZ	WW120676.D	10/03/13	16:34	2.76	3.04
ZZZZZZ	WW120677.D	10/03/13	16:52	2.76	3.04
ZZZZZZ	WW120678.D	10/03/13	17:10	2.75	3.04
ZZZZZZ	WW120679.D	10/03/13	17:28	2.75	3.04
JB48380-1	WW120680.D	10/03/13	17:47	2.75	3.04
JB48380-2	WW120681.D	10/03/13	18:05	2.75	3.04
JB48380-3	WW120682.D	10/03/13	18:23	2.75	3.04
JB48380-4	WW120683.D	10/03/13	18:41	2.75	3.04

Surrogate Compounds

S1 = 2-Bromo-1-chloropropane

(a) Retention time from GC signal #2
(b) Retention time from GC signal #1

Initial Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: GWW4292-ICC4292
Lab FileID: WW120648.D

Response Factor Report HP G1530A

Method : C:\MSDCHEM\1\METHODS\504M4292.M (Chemstation Integrator)
Title : GC/ECD- EDB
Last Update : Thu Oct 03 09:09:42 2013
Response via : Initial Calibration

Calibration Files
2 =WW120647.D 1 =WW120648.D 0.5 =WW120649.D 0.2 =WW120650.D
0.1 =WW120651.D 0.02 =WW120652.D

	Compound	2	1	0.5	0.2	0.1	0.02	Avg		%RSD
1) S	2-Bromo-1-Chloropro	8.542	8.399	9.060	9.093	8.761		8.771	E5	3.50
2)	1,2-Dibromoethane	6.323	6.221	6.303	6.525	6.270	7.071	6.452	E6	4.97
3)	1,2,3-Trichloroprop	6.443	6.641	7.652	5.425	6.360		6.504	E5	12.22
4)	1,2-Dibromo-3-Chlor	1.238	1.187	1.184	1.090	1.175	1.143	1.169	E7	4.23

Signal #2

	Compound	2	1	0.5	0.2	0.1	0.02	Avg		%RSD
1) S	2-Bromo-1-Chloropro	2.190	2.271	2.449	2.474	2.267		2.330	E5	5.33
2)	1,2-Dibromoethane	1.693	1.679	1.768	1.722	1.672	1.445	1.663	E6	6.77
3)	1,2,3-Trichloroprop	1.911	2.068	2.440	2.479	3.180		2.416	E5	20.33
4)	1,2-Dibromo-3-Chlor	3.124	2.988	2.975	2.883	3.114	2.958	3.007	E6	3.13

(#) = Out of Range

504M4292.M Thu Oct 03 11:39:21 2013

8.6.1

8

Initial Calibration Verification

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: GWW4292-ICV4292
Lab FileID: WW120653.D

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\WW4292\WW120653.D\ECD1A.CH Vial: 8
Signal #2 : C:\msdchem\1\DATA\WW4292\WW120653.D\ECD2B.CH
Acq On : 02 Oct 2013 7:28 pm Operator: vinced
Sample : icv4292-1.0 Inst : HP G1530A
Misc : OP69419,Gww4292,35,,,2,1 Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\504M4292.M (Chemstation Integrator)
Title : GC/ECD- EDB
Last Update : Thu Oct 03 09:09:42 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT Window
1 S	2-Bromo-1-Chloropropan	877.102	908.479 E3	-3.6	108	0.00	3.02- 3.08
2	1,2-Dibromoethane	6.452	5.544 E6	14.1	89	0.00	3.23- 3.29
3	1,2,3-Trichloropropane	650.414	497.254 E3	23.5#	75	0.00	4.86- 4.92
4	1,2-Dibromo-3-Chloropr	11.694	11.019 E6	5.8	93	0.00	6.46- 6.52

***** Signal #2 *****

1 S	2-Bromo-1-Chloropropan	233.044	244.627 E3	-5.0	108	0.00	2.73- 2.79
2	1,2-Dibromoethane	1.663	1.514 E6	9.0	90	0.00	3.16- 3.22
3	1,2,3-Trichloropropane	241.551	171.236 E3	29.1#	83	0.00	4.71- 4.77
4	1,2-Dibromo-3-Chloropr	3.007	2.770 E6	7.9	93	0.00	6.51- 6.57

(#) = Out of Range SPCC's out = 0 CCC's out = 0
WW120648.D 504M4292.M Thu Oct 03 11:39:03 2013

Continuing Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: GWW4293-CC4292
Lab FileID: WW120654.D

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\WW4293\WW120654.D\ECD1A.CH Vial: 3
Signal #2 : C:\msdchem\1\DATA\WW4293\WW120654.D\ECD2B.CH
Acq On : 03 Oct 2013 9:51 am Operator: vinced
Sample : cc4292-1.0 Inst : HP G1530A
Misc : OP69419,Gww4293,35,,,2,1 Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\504M4292.M (Chemstation Integrator)
Title : GC/ECD- EDB
Last Update : Thu Oct 03 09:09:42 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF		%Dev	Area%	Dev(min)	RT Window
1 S	2-Bromo-1-Chloropropan	877.102	922.571	E3	-5.2	110	0.00	3.02- 3.08
2	1,2-Dibromoethane	6.452	6.559	E6	-1.7	105	0.00	3.24- 3.30
3	1,2,3-Trichloropropane	650.414	573.230	E3	11.9	86	0.00	4.87- 4.93
4	1,2-Dibromo-3-Chloropr	11.694	12.259	E6	-4.8	103	0.00	6.46- 6.52

***** Signal #2 *****

	Compound	AvgRF	CCRF		%Dev	Area%	Dev(min)	RT Window
1 S	2-Bromo-1-Chloropropan	233.044	230.538	E3	1.1	101	0.00	2.72- 2.78
2	1,2-Dibromoethane	1.663	1.722	E6	-3.5	103	0.00	3.16- 3.22
3	1,2,3-Trichloropropane	241.551	218.850	E3	9.4	106	0.00	4.71- 4.77
4	1,2-Dibromo-3-Chloropr	3.007	2.872	E6	4.5	96	0.00	6.51- 6.57

(#) = Out of Range SPCC's out = 0 CCC's out = 0
WW120648.D 504M4292.M Mon Oct 07 13:02:22 2013

Continuing Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: GWW4293-CC4292
Lab FileID: WW120664.D

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\WW4293\WW120664.D\ECD1A.CH Vial: 2
Signal #2 : C:\msdchem\1\DATA\WW4293\WW120664.D\ECD2B.CH
Acq On : 03 Oct 2013 12:55 pm Operator: vinced
Sample : cc4292-0.5 Inst : HP G1530A
Misc : OP69436,Gww4293,35,,,2,1 Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\504M4292.M (Chemstation Integrator)
Title : GC/ECD- EDB
Last Update : Thu Oct 03 09:09:42 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF		%Dev	Area%	Dev(min)	RT Window
1 S	2-Bromo-1-Chloropropan	877.102	945.387	E3	-7.8	104	0.00	3.01- 3.07
2	1,2-Dibromoethane	6.452	6.546	E6	-1.5	104	0.00	3.23- 3.29
3	1,2,3-Trichloropropane	650.414	759.989	E3	-16.8#	99	0.00	4.86- 4.92
4	1,2-Dibromo-3-Chloropr	11.694	11.723	E6	-0.2	99	0.00	6.46- 6.52

***** Signal #2 *****

1 S	2-Bromo-1-Chloropropan	233.044	245.413	E3	-5.3	100	0.00	2.73- 2.79
2	1,2-Dibromoethane	1.663	1.804	E6	-8.5	102	0.00	3.16- 3.22
3	1,2,3-Trichloropropane	241.551	224.474	E3	7.1	92	0.00	4.71- 4.77
4	1,2-Dibromo-3-Chloropr	3.007	2.921	E6	2.9	98	0.00	6.51- 6.57

(#) = Out of Range SPCC's out = 0 CCC's out = 0
WW120649.D 504M4292.M Mon Oct 07 13:02:42 2013

Continuing Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: GWW4293-CC4292
Lab FileID: WW120674.D

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\WW4293\WW120674.D\ECD1A.CH Vial: 3
Signal #2 : C:\msdchem\1\DATA\WW4293\WW120674.D\ECD2B.CH
Acq On : 03 Oct 2013 3:57 pm Operator: vinced
Sample : cc4292-1.0 Inst : HP G1530A
Misc : OP69436,Gww4293,35,,,2,1 Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\504M4292.M (Chemstation Integrator)
Title : GC/ECD- EDB
Last Update : Thu Oct 03 09:09:42 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF		%Dev	Area%	Dev(min)	RT Window
1 S	2-Bromo-1-Chloropropan	877.102	881.980	E3	-0.6	105	0.00	3.01- 3.07
2	1,2-Dibromoethane	6.452	6.385	E6	1.0	103	0.00	3.23- 3.29
3	1,2,3-Trichloropropane	650.414	577.749	E3	11.2	87	0.00	4.86- 4.92
4	1,2-Dibromo-3-Chloropr	11.694	11.923	E6	-2.0	100	0.00	6.46- 6.52

***** Signal #2 *****

1 S	2-Bromo-1-Chloropropan	233.044	226.650	E3	2.7	100	0.00	2.73- 2.79
2	1,2-Dibromoethane	1.663	1.702	E6	-2.3	101	0.00	3.16- 3.22
3	1,2,3-Trichloropropane	241.551	188.706	E3	21.9#	91	0.00	4.71- 4.77
4	1,2-Dibromo-3-Chloropr	3.007	2.936	E6	2.4	98	0.00	6.51- 6.57

(#) = Out of Range SPCC's out = 0 CCC's out = 0
WW120648.D 504M4292.M Mon Oct 07 13:02:24 2013

8.6.5

Continuing Calibration Summary

Job Number: JB48380
Account: KEMPAE KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

Sample: GWW4293-CC4292
Lab FileID: WW120684.D

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\WW4293\WW120684.D\ECD1A.CH Vial: 2
Signal #2 : C:\msdchem\1\DATA\WW4293\WW120684.D\ECD2B.CH
Acq On : 03 Oct 2013 7:00 pm Operator: vinced
Sample : cc4292-0.5 Inst : HP G1530A
Misc : OP69436,Gww4293,35,,,2,1 Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\504M4292.M (Chemstation Integrator)
Title : GC/ECD- EDB
Last Update : Thu Oct 03 09:09:42 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF		%Dev	Area%	Dev(min)	RT Window
1 S	2-Bromo-1-Chloropropan	877.102	904.837	E3	-3.2	100	-0.01	3.00- 3.06
2	1,2-Dibromoethane	6.452	6.428	E6	0.4	102	0.00	3.22- 3.28
3	1,2,3-Trichloropropane	650.414	601.961	E3	7.4	79	0.00	4.86- 4.92
4	1,2-Dibromo-3-Chloropr	11.694	11.181	E6	4.4	94	0.00	6.45- 6.51

***** Signal #2 *****

1 S	2-Bromo-1-Chloropropan	233.044	244.345	E3	-4.8	100	-0.01	2.72- 2.78
2	1,2-Dibromoethane	1.663	1.672	E6	-0.5	95	0.00	3.15- 3.21
3	1,2,3-Trichloropropane	241.551	210.871	E3	12.7	86	0.00	4.71- 4.77
4	1,2-Dibromo-3-Chloropr	3.007	2.913	E6	3.1	98	0.00	6.51- 6.57

(#) = Out of Range SPCC's out = 0 CCC's out = 0
WW120649.D 504M4292.M Mon Oct 07 13:02:45 2013

8.6.6

8

New Jersey ACCUTEST LABORATORIES

GC Volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Wen Wen Chi
10/07/13 21:34

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\WW4293\
Data File : WW120680.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 03 Oct 2013 5:47 pm
Operator : vinced
Sample : jb48380-1
Misc : OP69436,Gww4293,35,,,2,1
ALS Vial : 24 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 07 12:56:35 2013
Quant Method : C:\MSDCHEM\1\METHODS\504M4292.M
Quant Title : GC/ECD- EDB
QLast Update : Thu Oct 03 09:09:42 2013
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1UL/COLUMN
Signal #1 Phase : RTXCLP Signal #2 Phase: RTXCLPII
Signal #1 Info : 30mx0.32mmx0.50um Signal #2 Info : 30m x 0.32mm x 0.25um

Compound	RT#1	RT#2	Resp#1	Resp#2	PPB	PPB
System Monitoring Compounds						
1) S 2-Bromo-1...	3.042	2.752	12755457	2207699	14.543m	9.473m#
Spiked Amount 10.000			Recovery =		145.43%	94.73%
Target Compounds						

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

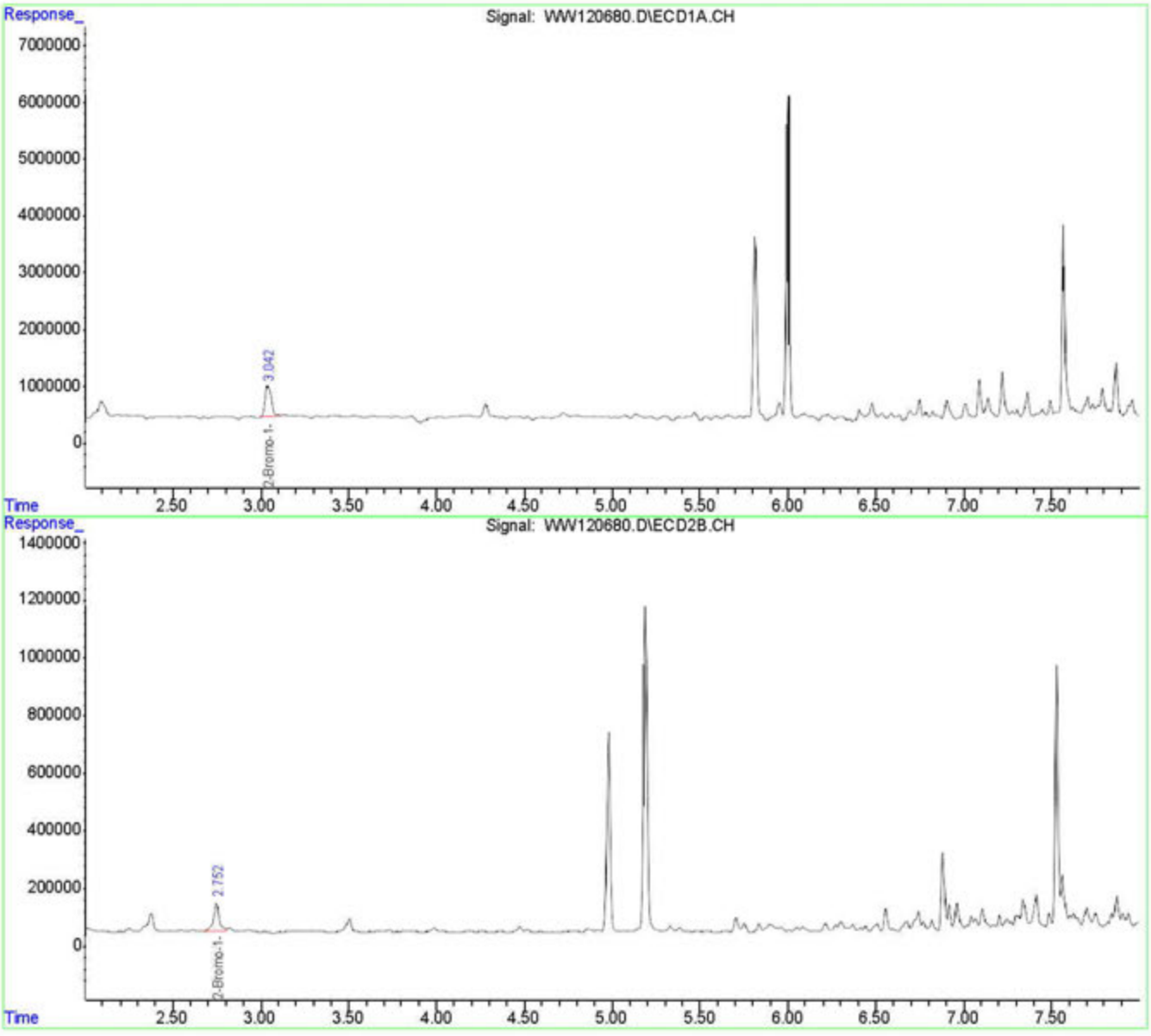
9.1.1 9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\WW4293\
Data File : WW120680.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 03 Oct 2013 5:47 pm
Operator : vinced
Sample : jb48380-1
Misc : OP69436,Gww4293,35,,,2,1
ALS Vial : 24 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 07 12:56:35 2013
Quant Method : C:\MSDCHEM\1\METHODS\504M4292.M
Quant Title : GC/ECD- EDB
QLast Update : Thu Oct 03 09:09:42 2013
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1UL/COLUMN
Signal #1 Phase : RTXCLP Signal #2 Phase: RTXCLPII
Signal #1 Info : 30mx0.32mmx0.50um Signal #2 Info : 30m x 0.32mm x 0.25um



ACCUTEST LABORATORIES JB48380

Manual Integrations APPROVED (compounds with "m" flag)
Wen Wen Chi
10/07/13 21:34

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\WW4293\
Data File : WW120681.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 03 Oct 2013 6:05 pm
Operator : vinced
Sample : jb48380-2
Misc : OP69436,Gww4293,35,,,2,1
ALS Vial : 25 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 07 12:57:12 2013
Quant Method : C:\MSDCHEM\1\METHODS\504M4292.M
Quant Title : GC/ECD- EDB
QLast Update : Thu Oct 03 09:09:42 2013
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1UL/COLUMN
Signal #1 Phase : RTXCLP Signal #2 Phase: RTXCLPII
Signal #1 Info : 30mx0.32mmx0.50um Signal #2 Info : 30m x 0.32mm x 0.25um

Compound	RT#1	RT#2	Resp#1	Resp#2	PPB	PPB
System Monitoring Compounds						
1) S 2-Bromo-1...	3.038	2.752	8323889	2198285	9.490m	9.433m
Spiked Amount 10.000			Recovery =		94.90%	94.33%
Target Compounds						

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

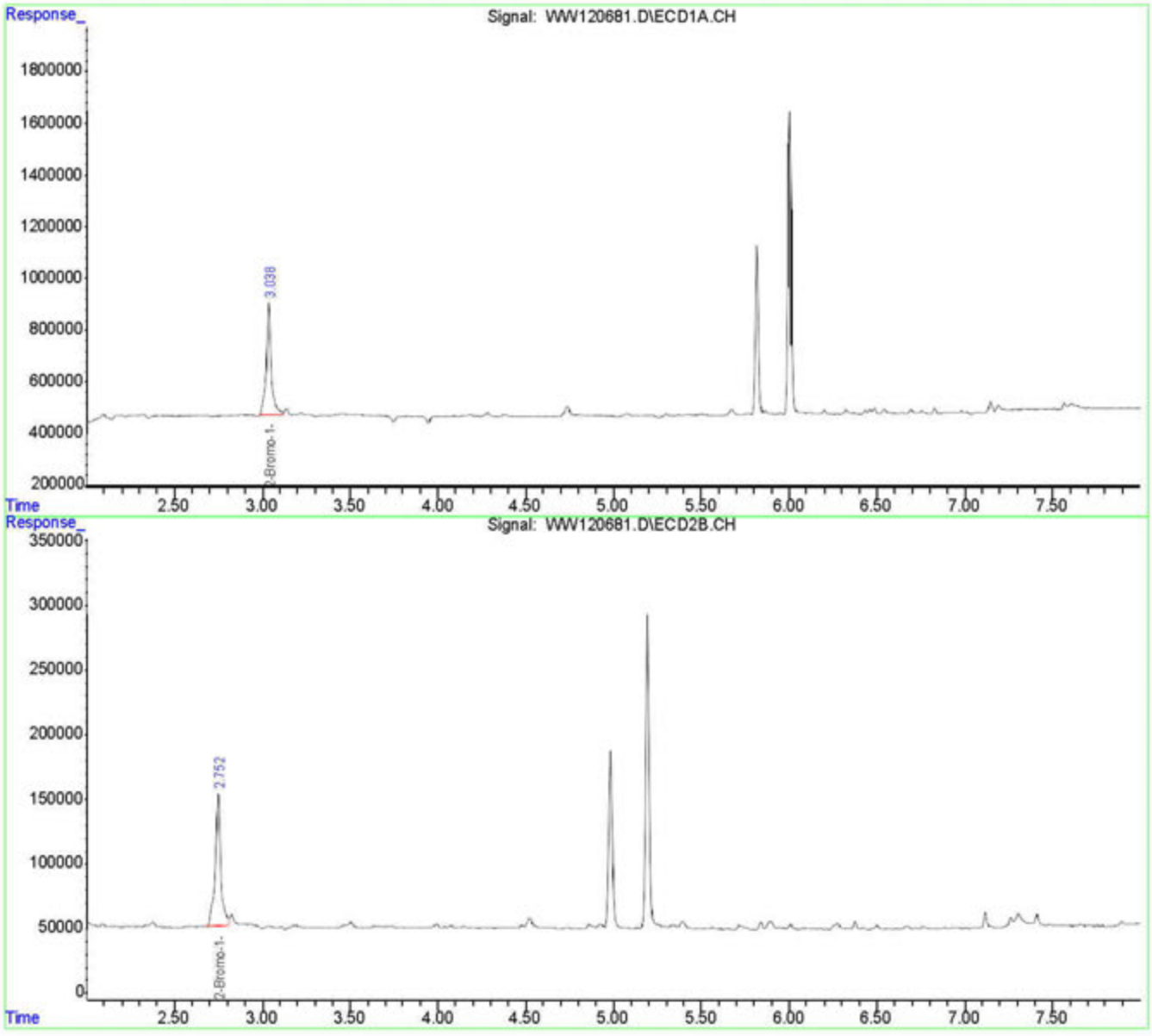
9.1.2 9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\WW4293\
Data File : WW120681.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 03 Oct 2013 6:05 pm
Operator : vinced
Sample : jb48380-2
Misc : OP69436,Gww4293,35,,,2,1
ALS Vial : 25 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 07 12:57:12 2013
Quant Method : C:\MSDCHEM\1\METHODS\504M4292.M
Quant Title : GC/ECD- EDB
QLast Update : Thu Oct 03 09:09:42 2013
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1UL/COLUMN
Signal #1 Phase : RTXCLP Signal #2 Phase: RTXCLPII
Signal #1 Info : 30mx0.32mmx0.50um Signal #2 Info : 30m x 0.32mm x 0.25um



9.1.2 9

Manual Integrations APPROVED (compounds with "m" flag)
Wen Wen Chi
10/07/13 21:34

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\WW4293\
Data File : WW120682.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 03 Oct 2013 6:23 pm
Operator : vinced
Sample : jb48380-3
Misc : OP69436,Gww4293,35,,,2,1
ALS Vial : 26 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 07 12:57:49 2013
Quant Method : C:\MSDCHEM\1\METHODS\504M4292.M
Quant Title : GC/ECD- EDB
QLast Update : Thu Oct 03 09:09:42 2013
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1UL/COLUMN
Signal #1 Phase : RTXCLP Signal #2 Phase: RTXCLPII
Signal #1 Info : 30mx0.32mmx0.50um Signal #2 Info : 30m x 0.32mm x 0.25um

Compound	RT#1	RT#2	Resp#1	Resp#2	PPB	PPB
System Monitoring Compounds						
1) S 2-Bromo-1...	3.039	2.751	12301264	2046197	14.025m	8.780m#
Spiked Amount 10.000			Recovery =		140.25%	87.80%
Target Compounds						

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

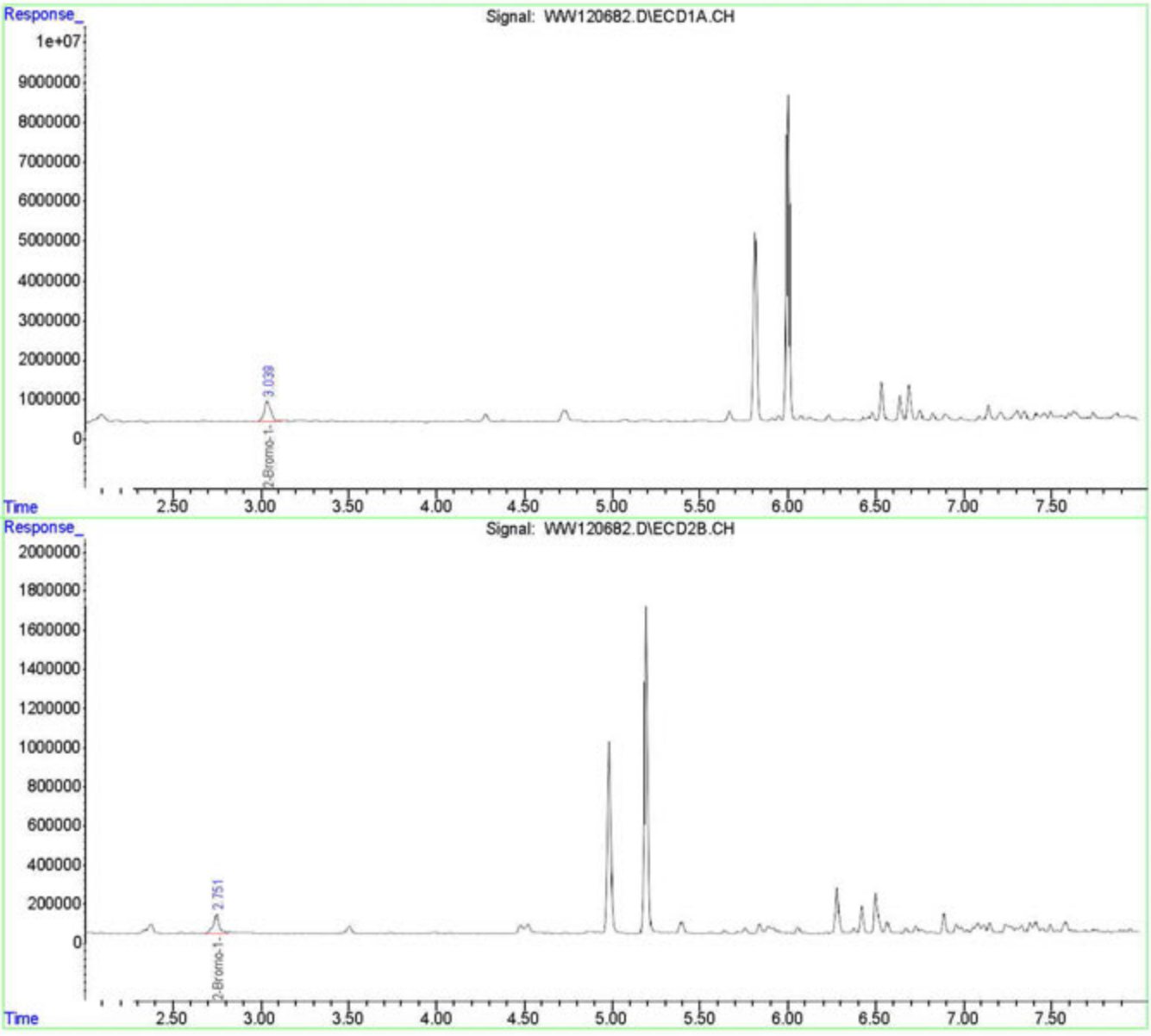
9.1.3 9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\WW4293\
Data File : WW120682.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 03 Oct 2013 6:23 pm
Operator : vinced
Sample : jb48380-3
Misc : OP69436,Gww4293,35,,,2,1
ALS Vial : 26 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 07 12:57:49 2013
Quant Method : C:\MSDCHEM\1\METHODS\504M4292.M
Quant Title : GC/ECD- EDB
QLast Update : Thu Oct 03 09:09:42 2013
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1UL/COLUMN
Signal #1 Phase : RTXCLP Signal #2 Phase: RTXCLPII
Signal #1 Info : 30mx0.32mmx0.50um Signal #2 Info : 30m x 0.32mm x 0.25um



9.1.3

9

Manual Integrations APPROVED (compounds with "m" flag)
Wen Wen Chi 10/07/13 21:34

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\WW4293\
Data File : WW120683.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 03 Oct 2013 6:41 pm
Operator : vinced
Sample : jb48380-4
Misc : OP69436,Gww4293,35,,,2,1
ALS Vial : 27 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 07 12:58:41 2013
Quant Method : C:\MSDCHEM\1\METHODS\504M4292.M
Quant Title : GC/ECD- EDB
QLast Update : Thu Oct 03 09:09:42 2013
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1UL/COLUMN
Signal #1 Phase : RTXCLP Signal #2 Phase: RTXCLPII
Signal #1 Info : 30mx0.32mmx0.50um Signal #2 Info : 30m x 0.32mm x 0.25um

Compound	RT#1	RT#2	Resp#1	Resp#2	PPB	PPB
System Monitoring Compounds						
1) S 2-Bromo-1...	3.036	2.749	11422139	2138523	13.023m	9.176m#
Spiked Amount 10.000			Recovery =		130.23%	91.76%
Target Compounds						

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

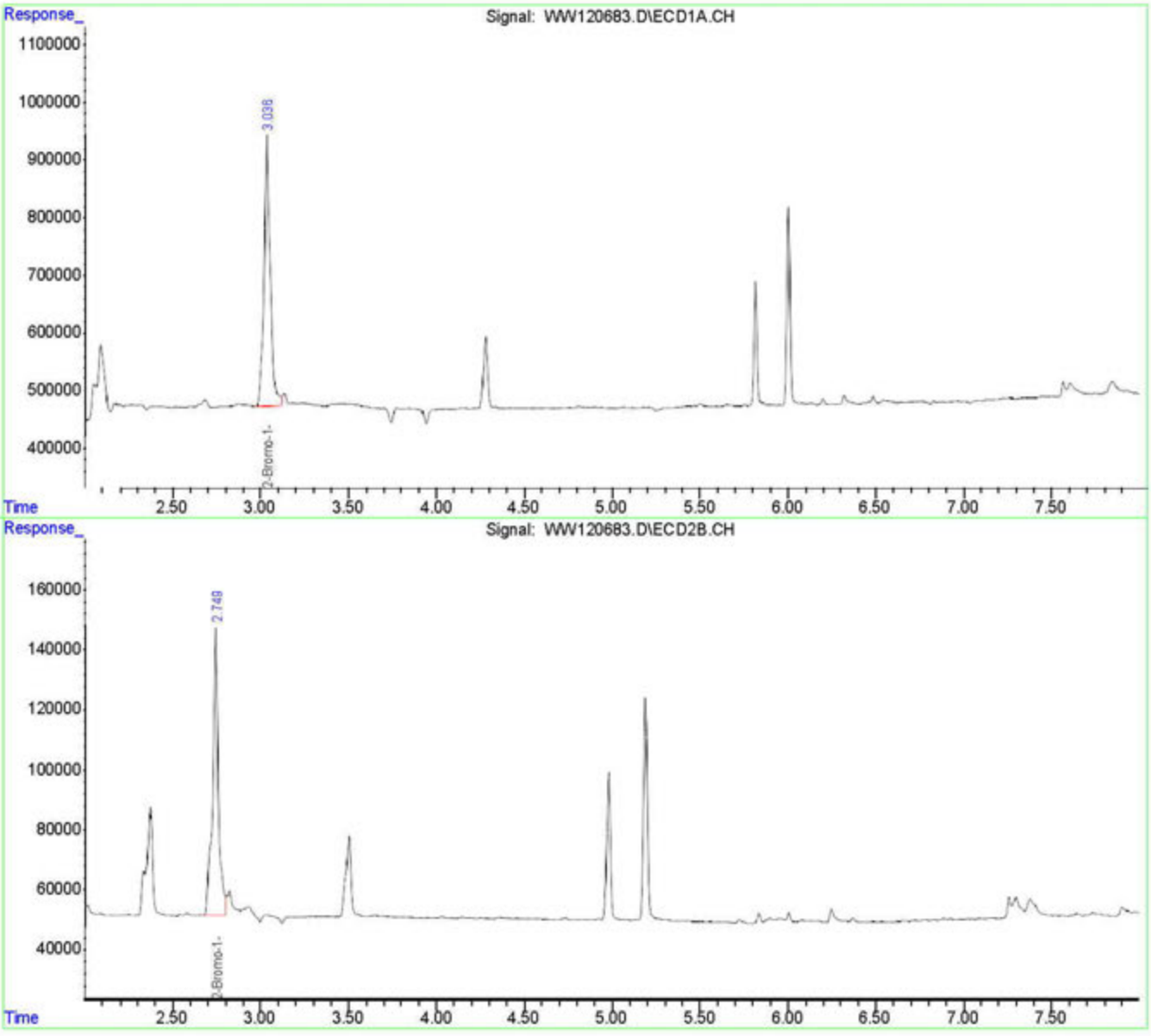
9.1.4 9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\WW4293\
Data File : WW120683.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 03 Oct 2013 6:41 pm
Operator : vinced
Sample : jb48380-4
Misc : OP69436,Gww4293,35,,,2,1
ALS Vial : 27 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 07 12:58:41 2013
Quant Method : C:\MSDCHEM\1\METHODS\504M4292.M
Quant Title : GC/ECD- EDB
QLast Update : Thu Oct 03 09:09:42 2013
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1UL/COLUMN
Signal #1 Phase : RTXCLP Signal #2 Phase: RTXCLPII
Signal #1 Info : 30mx0.32mmx0.50um Signal #2 Info : 30m x 0.32mm x 0.25um



Manual Integrations APPROVED (compounds with "m" flag)
Cheng-Hwan Ao 10/08/13

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\WW4293\
Data File : WW120656.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 03 Oct 2013 10:30 am
Operator : vinced
Sample : op69436-mb1
Misc : OP69436,Gww4293,35,,,2,1
ALS Vial : 4 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 07 12:34:10 2013
Quant Method : C:\MSDCHEM\1\METHODS\504M4292.M
Quant Title : GC/ECD- EDB
QLast Update : Thu Oct 03 09:09:42 2013
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1UL/COLUMN
Signal #1 Phase : RTXCLP Signal #2 Phase: RTXCLPII
Signal #1 Info : 30mx0.32mmx0.50um Signal #2 Info : 30m x 0.32mm x 0.25um

Compound	RT#1	RT#2	Resp#1	Resp#2	PPB	PPB
System Monitoring Compounds						
1) S 2-Bromo-1...	3.047	2.759	8239597	2124007	9.394m	9.114m
Spiked Amount 10.000			Recovery =		93.94%	91.14%
Target Compounds						

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

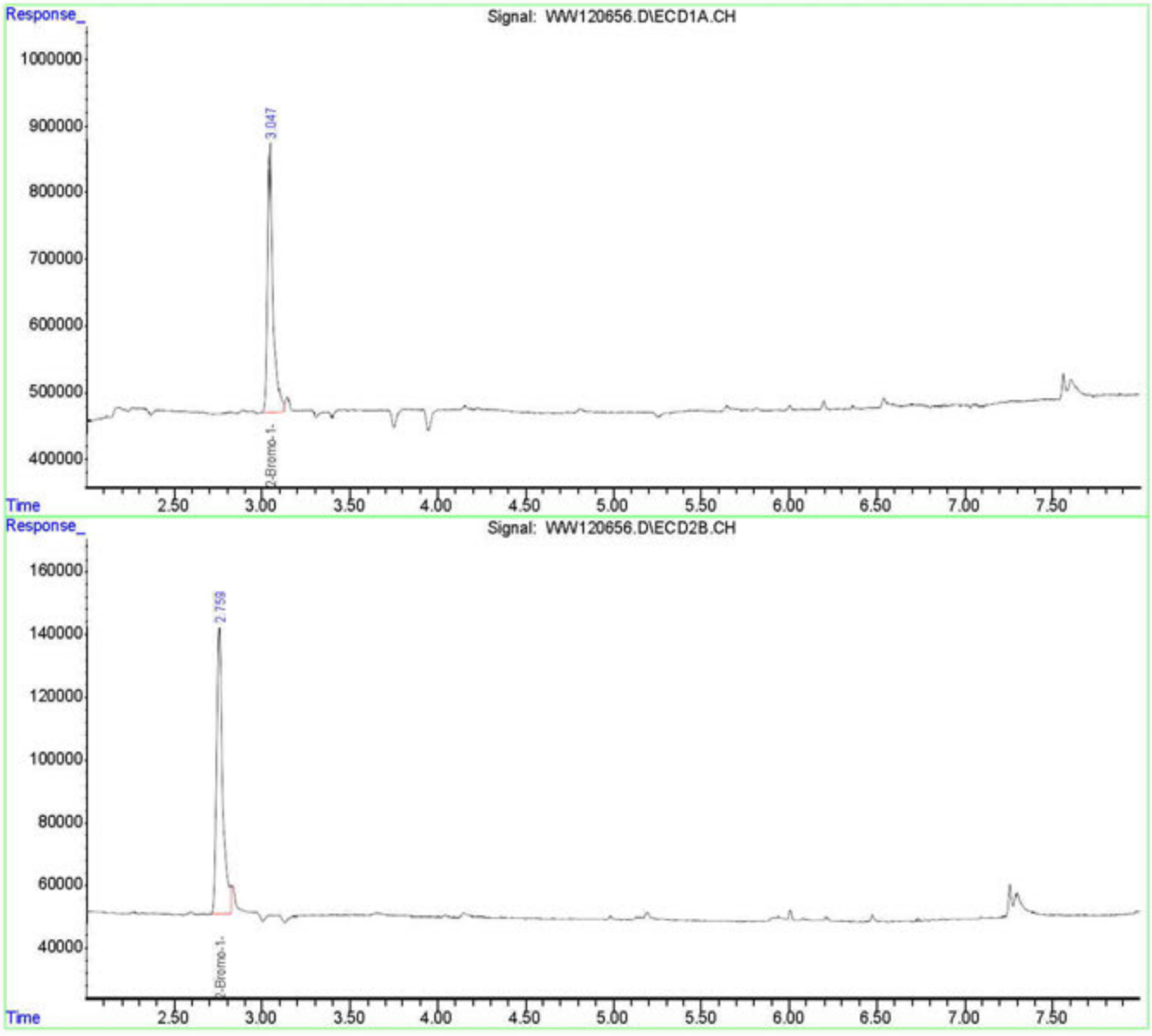
9.2.1 9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\WW4293\
Data File : WW120656.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 03 Oct 2013 10:30 am
Operator : vinced
Sample : op69436-mb1
Misc : OP69436,Gww4293,35,,,2,1
ALS Vial : 4 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 07 12:34:10 2013
Quant Method : C:\MSDCHEM\1\METHODS\504M4292.M
Quant Title : GC/ECD- EDB
QLast Update : Thu Oct 03 09:09:42 2013
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. : 1UL/COLUMN
Signal #1 Phase : RTXCLP Signal #2 Phase: RTXCLPII
Signal #1 Info : 30mx0.32mmx0.50um Signal #2 Info : 30m x 0.32mm x 0.25um



ACCUTEST LABORATORIES JB48380

New Jersey ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:36	MA32391-STD1	1		STDA
10:43	MA32391-STD2	1		STDB
10:49	ZZZZZZ	1		
10:55	ZZZZZZ	1		
11:04	MA32391-ICV1	1		
11:14	MA32391-ICB1	1		
11:20	MA32391-ICCV1	1		
11:34	MA32391-CCB1	1		
11:40	MA32391-CRID1	1		
11:46	MA32391-CRI1	1		
11:53	ZZZZZZ	5		
11:59	MA32391-CRIA1	1		
12:05	MA32391-ICSA1	1		
12:12	MA32391-ICSAB1	1		
12:22	MA32391-ICSA2	1		
12:29	MA32391-ICSAB2	1		
12:35	ZZZZZZ	1		
12:41	ZZZZZZ	1		
12:48	MA32391-CCV1	1		
12:54	MA32391-CCB2	1		
13:00	ZZZZZZ	1		
13:07	ZZZZZZ	1		
13:13	ZZZZZZ	1		
13:19	ZZZZZZ	2		
13:26	ZZZZZZ	1		
13:32	ZZZZZZ	1		
13:38	ZZZZZZ	2		
13:45	ZZZZZZ	1		
13:51	ZZZZZZ	1		
13:57	MA32391-CCV2	1		
14:03	MA32391-CCB3	1		
14:10	MP75022-S1	1		
14:16	MP75022-S1	10		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:22	MP75022-S2	1		
14:28	MP75022-S2	10		Rerun for Zn
14:35	JB48180-6	1		(sample used for QC only; not part of login JB48380)
14:41	MP75022-SD1	5		
14:47	JB48180-6	10		(sample used for QC only; not part of login JB48380)
14:54	MP75022-SD1	50		
15:00	ZZZZZZ	10		
15:07	MA32391-CCV3	1		
15:13	MA32391-CCV4	1		
15:19	MA32391-CCB4	1		
15:25	ZZZZZZ	10		
15:32	ZZZZZZ	1		
15:38	ZZZZZZ	10		
15:44	ZZZZZZ	1		
15:51	ZZZZZZ	10		
15:57	ZZZZZZ	1		
16:03	ZZZZZZ	10		
16:10	ZZZZZZ	1		
16:16	ZZZZZZ	10		
16:22	MA32391-CCV5	1		
16:28	MA32391-CCB5	1		
16:35	ZZZZZZ	1		
16:41	ZZZZZZ	10		
16:47	ZZZZZZ	10		
16:54	ZZZZZZ	10		
17:00	ZZZZZZ	1		
17:06	ZZZZZZ	10		
17:13	ZZZZZZ	1		
17:19	ZZZZZZ	10		
17:25	ZZZZZZ	1		
17:32	MA32391-CCV6	1		
17:38	MA32391-CCB6	1		
17:44	ZZZZZZ	10		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
17:51	ZZZZZZ	1		
17:57	ZZZZZZ	10		
18:03	ZZZZZZ	2		
18:10	ZZZZZZ	10		
18:16	ZZZZZZ	1		
18:22	ZZZZZZ	10		
18:29	MP75055-MB1	1		
18:35	MP75055-MB2	1		
18:41	MA32391-CCV7	1		
18:47	MA32391-CCB7	1		
18:54	MP75055-LC1	1		
19:00	MP75055-LC2	1		
19:06	MP75055-S1	1		
19:12	MP75055-S2	1		
19:18	JB48429-5	1		(sample used for QC only; not part of login JB48380)
19:24	MP75055-SD1	5		
19:30	ZZZZZZ	1		
19:37	ZZZZZZ	1		
19:43	ZZZZZZ	1		
19:49	MA32391-CCV8	1		
19:55	MA32391-CCB8	1		
20:02	ZZZZZZ	1		
20:08	MA32391-CRI2	1		
20:14	MA32391-CRID2	1		
20:21	MA32391-CRIA2	1		
20:27	MA32391-ICSA3	1		
20:33	MA32391-ICSAB3	1		
20:40	ZZZZZZ	1		
20:46	ZZZZZZ	1		
20:52	ZZZZZZ	1		
20:59	MA32391-CCV9	1		
21:05	MA32391-CCB9	1		
21:11	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
21:17	ZZZZZZ	1		
21:23	ZZZZZZ	1		
21:30	ZZZZZZ	1		
21:36	ZZZZZZ	1		
21:42	ZZZZZZ	1		
21:49	ZZZZZZ	1		
21:55	JB48380-1F	1		
22:01	JB48380-2F	1		
22:08	MA32391-CCV10	1		
22:14	MA32391-CCB10	1		
22:20	JB48380-3F	1		
22:26	JB48380-4F	1		
---------->	Last reportable sample/prep for job JB48380			
22:33	ZZZZZZ	1		
22:39	ZZZZZZ	1		
22:45	ZZZZZZ	1		
22:51	ZZZZZZ	1		
22:58	ZZZZZZ	1		
23:04	MP75251-MB1	1		
23:10	MP75251-LC1	1		
23:16	MA32391-CCV11	1		
23:23	MA32391-CCB11	1		
23:29	ZZZZZZ	1		
23:35	ZZZZZZ	1		
23:41	ZZZZZZ	1		
23:48	ZZZZZZ	1		
23:54	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:07	ZZZZZZ	1		
00:13	MP75144-MB1	1		
00:19	MP75144-B1	1		
00:25	MA32391-CCV12	1		
00:31	MA32391-CCB12	1		
00:38	MP75144-S1	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:44	MP75144-S2	1		
00:51	JB48486-1	1		(sample used for QC only; not part of login JB48380)
00:57	MP75144-SD1	5		
01:03	ZZZZZZ	1		
01:09	ZZZZZZ	1		
01:16	ZZZZZZ	1		
01:22	ZZZZZZ	1		
01:28	ZZZZZZ	1		
01:34	MA32391-CCV13	1		
01:40	MA32391-CCB13	1		
01:47	ZZZZZZ	1		
01:53	ZZZZZZ	1		
01:59	ZZZZZZ	1		
02:05	ZZZZZZ	1		
02:12	ZZZZZZ	1		
02:18	ZZZZZZ	1		
02:24	ZZZZZZ	1		
02:30	ZZZZZZ	1		
02:36	ZZZZZZ	1		
02:43	MA32391-CCV14	1		
02:49	MA32391-CCB14	1		
02:55	ZZZZZZ	1		
03:01	ZZZZZZ	1		
03:07	ZZZZZZ	1		
03:13	ZZZZZZ	1		
03:20	MP75145-MB1	1		
03:26	MP75145-MB2	1		Bad rep
03:32	MP75145-LC1	1		
03:38	MP75145-LC2	1		
03:44	MP75145-S1	1		
03:51	MA32391-CCV15	1		
03:57	MA32391-CCB15	1		
04:03	ZZZZZZ	5		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
04:10	MA32391-CRI3	1		
04:16	MA32391-CRID3	1		
04:22	MA32391-CRIA3	1		
04:28	MA32391-ICSA4	1		
04:35	MA32391-ICSAB4	1		
04:41	ZZZZZZ	1		
04:48	ZZZZZZ	1		
04:54	MA32391-CCV16	1		
05:00	MA32391-CCB16	1		
---------->	Last reportable CCB for job JB48380			
05:06	MP75145-S2	1		
05:13	JB48499-6	1		(sample used for QC only; not part of login JB48380)
05:19	MP75145-SD1	5		
05:25	ZZZZZZ	1		
05:31	ZZZZZZ	1		
05:38	ZZZZZZ	1		
05:44	ZZZZZZ	1		
05:50	ZZZZZZ	1		
05:56	ZZZZZZ	1		
06:02	MA32391-CCV17	1		
06:09	MA32391-CCB17	1		
06:15	MA32391-CRID4	1		
06:21	MA32391-CRI4	1		
06:27	ZZZZZZ	1		
06:34	MA32391-CRIA4	1		
06:40	MA32391-ICSA5	1		
06:47	MA32391-ICSAB5	1		
06:53	MA32391-CCV18	1		
06:59	MA32391-CCB18	1		
07:05	MA32391-CRID5	1		
07:12	MA32391-CCV19	1		
07:18	MA32391-CCB19	1		

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
10:36	MA32391-STD1	1382 R	100130 R	26949 R	4554 R
10:43	MA32391-STD2	1269	90646	25735	4077
10:49	ZZZZZZ	1307	94250	26006	4183
10:55	ZZZZZZ	1364	99620	26536	4519
11:04	MA32391-ICV1	1299	92870	25904	4165
11:14	MA32391-ICB1	1367	98361	26240	4517
11:20	MA32391-ICCV1	1302	92082	25837	4174
11:34	MA32391-CCB1	1360	97675	26298	4502
11:40	MA32391-CRID1	1368	99229	26099	4528
11:46	MA32391-CRI1	1347	95823	26120	4420
11:53	ZZZZZZ	1354	95747	26397	4480
11:59	MA32391-CRIA1	1348	97845	25715	4471
12:05	MA32391-ICSA1	No results reported for the elements associated with this internal standard.			
12:12	MA32391-ICSAB1	No results reported for the elements associated with this internal standard.			
12:22	MA32391-ICSA2	1183	82721	25152	3778
12:29	MA32391-ICSAB2	1177	85382	25243	3808
12:35	ZZZZZZ	1315	94386	26019	4542
12:41	ZZZZZZ	1329	90201	27118	4097
12:48	MA32391-CCV1	1283	93617	25841	4161
12:54	MA32391-CCB2	1344	95423	26359	4455
13:00	ZZZZZZ	1323	98325	26585	4455
13:07	ZZZZZZ	1254	91213	25734	4116
13:13	ZZZZZZ	1323	94624	26410	4410
13:19	ZZZZZZ	1111	80030	24239	3463
13:26	ZZZZZZ	1228	89012	25434	3972
13:32	ZZZZZZ	1212	86130	25585	3795
13:38	ZZZZZZ	1096	77718	23888	3424
13:45	ZZZZZZ	1238	87693	25570	3922
13:51	ZZZZZZ	1306	96530	26346	4390
13:57	MA32391-CCV2	1261	92723	25201	4114
14:03	MA32391-CCB3	1307	94512	25953	4379
14:10	MP75022-S1	816 !	60750 !	20788	2453 !
14:16	MP75022-S1	1150	81858	24479	3586

INTERNAL STANDARD SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
14:22	MP75022-S2	816 !	60849 !	20743	2451 !
14:28	MP75022-S2	1154	82049	24585	3575
14:35	JB48180-6	814 !	60483 !	20591	2456 !
14:41	MP75022-SD1	1077	76217	23682	3297
14:47	JB48180-6	1156	82432	24347	3589
14:54	MP75022-SD1	1249	90317	24967	4042
15:00	ZZZZZZ	1193	83441	25064	3769
15:07	MA32391-CCV3	1259	92039	24816	4103
15:13	MA32391-CCV4	1249	91199	25021	4065
15:19	MA32391-CCB4	1304	96525	25898	4354
15:25	ZZZZZZ	1178	84551	24636	3718
15:32	ZZZZZZ	832 !	60971 !	20810	2522 !
15:38	ZZZZZZ	1165	83563	24267	3647
15:44	ZZZZZZ	841 !	60512 !	20588	2529 !
15:51	ZZZZZZ	1160	80981	23988	3595
15:57	ZZZZZZ	1145	82398	24059	3654
16:03	ZZZZZZ	1250	91174	25608	4150
16:10	ZZZZZZ	1071	77455	23276	3364
16:16	ZZZZZZ	1225	88902	25023	4009
16:22	MA32391-CCV5	1255	90278	25196	4083
16:28	MA32391-CCB5	1302	91959	25694	4348
16:35	ZZZZZZ	1119	80989	23272	3528
16:41	ZZZZZZ	1262	89168	25276	4142
16:47	ZZZZZZ	1182	88038	24343	3749
16:54	ZZZZZZ	1172	84187	24816	3693
17:00	ZZZZZZ	827 !	60009 !	20469	2469 !
17:06	ZZZZZZ	1150	81643	24324	3581
17:13	ZZZZZZ	852 !	60928 !	20636	2564 !
17:19	ZZZZZZ	1160	82552	24059	3613
17:25	ZZZZZZ	835 !	62447 !	20464	2509 !
17:32	MA32391-CCV6	1259	90931	24919	4099
17:38	MA32391-CCB6	1299	95629	25114	4353
17:44	ZZZZZZ	1153	81570	24290	3591

INTERNAL STANDARD SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
17:51	ZZZZZZ	1154	83186	23984	3667
17:57	ZZZZZZ	1279	90036	25582	4214
18:03	ZZZZZZ	1122	82902	24067	3563
18:10	ZZZZZZ	1242	89348	25062	4050
18:16	ZZZZZZ	1149	83790	24089	3627
18:22	ZZZZZZ	1279	91137	25249	4169
18:29	MP75055-MB1	1304	95390	25928	4378
18:35	MP75055-MB2	1307	97803	26055	4424
18:41	MA32391-CCV7	1276	91855	25106	4131
18:47	MA32391-CCB7	1316	95396	25862	4389
18:54	MP75055-LC1	1301	94552	25924	4310
19:00	MP75055-LC2	1289	92988	25855	4305
19:06	MP75055-S1	1252	93245	25831	4099
19:12	MP75055-S2	1249	90336	25658	4060
19:18	JB48429-5	1263	92498	25235	4200
19:24	MP75055-SD1	1315	95629	26069	4368
19:30	ZZZZZZ	1247	90520	24798	4024
19:37	ZZZZZZ	1237	89052	25623	4029
19:43	ZZZZZZ	1132	81961	24424	3487
19:49	MA32391-CCV8	1276	90666	25581	4125
19:55	MA32391-CCB8	1322	92960	25623	4375
20:02	ZZZZZZ	1311	93849	25775	4350
20:08	MA32391-CRI2	1295	92775	24830	4294
20:14	MA32391-CRID2	1315	91349	25808	4353
20:21	MA32391-CRIA2	1304	95266	25687	4375
20:27	MA32391-ICSA3	1153	82222	24780	3725
20:33	MA32391-ICSAB3	1148	82303	25031	3767
20:40	ZZZZZZ	1219	88828	24984	3969
20:46	ZZZZZZ	1209	87429	24761	3894
20:52	ZZZZZZ	1324	95998	25688	4443
20:59	MA32391-CCV9	1269	90480	25517	4113
21:05	MA32391-CCB9	1318	97173	25822	4409
21:11	ZZZZZZ	1254	89207	25392	4072

INTERNAL STANDARD SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
21:17	ZZZZZZ	1245	90764	25417	4062
21:23	ZZZZZZ	1289	93563	25813	4278
21:30	ZZZZZZ	1259	89763	25486	4069
21:36	ZZZZZZ	1285	92724	25825	4254
21:42	ZZZZZZ	1288	93090	25707	4269
21:49	ZZZZZZ	1321	95964	25981	4407
21:55	JB48380-1F	1206	86665	25157	3867
22:01	JB48380-2F	1223	88581	25137	3952
22:08	MA32391-CCV10	1275	91257	25482	4122
22:14	MA32391-CCB10	1332	95445	25734	4417
22:20	JB48380-3F	1249	90343	25360	4027
22:26	JB48380-4F	1290	95248	25915	4315
22:33	ZZZZZZ	1228	89658	25384	3953
22:39	ZZZZZZ	1233	89450	25331	3959
22:45	ZZZZZZ	1255	90665	25504	4072
22:51	ZZZZZZ	1324	96586	26062	4423
22:58	ZZZZZZ	1333	95523	25975	4432
23:04	MP75251-MB1	1323	95358	25995	4405
23:10	MP75251-LC1	1305	94647	25974	4328
23:16	MA32391-CCV11	1282	90965	26143	4138
23:23	MA32391-CCB11	1333	96450	25834	4428
23:29	ZZZZZZ	1316	93445	26214	4398
23:35	ZZZZZZ	1317	96044	26163	4402
23:41	ZZZZZZ	1329	95826	26083	4408
23:48	ZZZZZZ	1324	95447	25964	4395
23:54	ZZZZZZ	1311	96763	26066	4395
00:00	ZZZZZZ	1324	97530	26193	4418
00:07	ZZZZZZ	1318	97095	26061	4408
00:13	MP75144-MB1	1313	96298	26062	4398
00:19	MP75144-B1	1290	93707	26102	4268
00:25	MA32391-CCV12	1272	90446	25510	4114
00:31	MA32391-CCB12	1313	96692	25776	4384
00:38	MP75144-S1	1299	94874	27186	4208

INTERNAL STANDARD SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
00:44	MP75144-S2	1307	95029	27147	4246
00:51	JB48486-1	1293	96748	26940	4226
00:57	MP75144-SD1	1315	95669	26128	4322
01:03	ZZZZZZ	1332	96771	27017	4303
01:09	ZZZZZZ	1330	97318	27116	4276
01:16	ZZZZZZ	1307	95993	27112	4218
01:22	ZZZZZZ	1326	95683	27059	4250
01:28	ZZZZZZ	1324	96387	26974	4249
01:34	MA32391-CCV13	1263	90952	25563	4118
01:40	MA32391-CCB13	1315	96701	25687	4406
01:47	ZZZZZZ	1330	97146	27231	4258
01:53	ZZZZZZ	1309	95925	27061	4263
01:59	ZZZZZZ	1361	99629	28224	4203
02:05	ZZZZZZ	1380	100780	28744	4148
02:12	ZZZZZZ	1202	88535	25456	3873
02:18	ZZZZZZ	1298	94578	26349	4317
02:24	ZZZZZZ	1297	93966	26156	4322
02:30	ZZZZZZ	1294	94556	26197	4315
02:36	ZZZZZZ	1319	95643	26600	4329
02:43	MA32391-CCV14	1258	91544	25413	4121
02:49	MA32391-CCB14	1318	96188	25919	4418
02:55	ZZZZZZ	1313	95766	25848	4385
03:01	ZZZZZZ	1310	95696	26564	4293
03:07	ZZZZZZ	1304	95106	26229	4320
03:13	ZZZZZZ	1295	94584	26004	4335
03:20	MP75145-MB1	1301	96279	26037	4386
03:26	MP75145-MB2	1305	96068	26027	4405
03:32	MP75145-LC1	1297	95011	25812	4325
03:38	MP75145-LC2	1287	94910	25848	4327
03:44	MP75145-S1	1211	89035	25034	3932
03:51	MA32391-CCV15	1268	91446	25333	4140
03:57	MA32391-CCB15	1314	96432	25883	4398
04:03	ZZZZZZ	1312	96749	25804	4398

INTERNAL STANDARD SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
04:10	MA32391-CRI3	1304	95353	25607	4353
04:16	MA32391-CRID3	1309	96168	25697	4392
04:22	MA32391-CRIA3	1313	96669	25743	4384
04:28	MA32391-ICSA4	1161	84220	24736	3782
04:35	MA32391-ICSAB4	1152	83709	24695	3788
04:41	ZZZZZZ	1316	96036	25724	4409
04:48	ZZZZZZ	1316	96262	25882	4422
04:54	MA32391-CCV16	1261	90694	25409	4121
05:00	MA32391-CCB16	1310	95667	25547	4381
05:06	MP75145-S2	1208	88567	25039	3928
05:13	JB48499-6	1230	89630	25204	4018
05:19	MP75145-SD1	1286	93931	25692	4280
05:25	ZZZZZZ	1239	91413	25442	4071
05:31	ZZZZZZ	1308	96032	25917	4372
05:38	ZZZZZZ	1280	92963	25855	4222
05:44	ZZZZZZ	1225	90309	25161	4004
05:50	ZZZZZZ	1241	91121	25452	4075
05:56	ZZZZZZ	1235	89978	25298	4023
06:02	MA32391-CCV17	1257	91566	25331	4120
06:09	MA32391-CCB17	1314	96249	25624	4400
06:15	MA32391-CRID4	1312	95741	25506	4388
06:21	MA32391-CRI4	1300	95035	25467	4344
06:27	ZZZZZZ	999999 !	999999 !	25765	999999 !
06:34	MA32391-CRIA4	1313	96134	25735	4402
06:40	MA32391-ICSA5	1153	83779	24703	3772
06:47	MA32391-ICSAB5	1155	83537	24678	3786
06:53	MA32391-CCV18	1254	90971	25304	4097
06:59	MA32391-CCB18	1314	96505	25721	4396
07:05	MA32391-CRID5	1313	96070	25727	4394
07:12	MA32391-CCV19	1265	91542	25259	4130
07:18	MA32391-CCB19	1315	96356	25571	4405

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %

INTERNAL STANDARD SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: JY Run ID: MA32391
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4

Istd#4	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %
Istd#4	Indium	70-130 %

10.1.1
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA32391 Units: ug/l

Time:			11:14		11:34		12:54		14:03	
Sample ID:			ICB1		CCB1		CCB2		CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	46	anr							
Antimony	6.0	1.1	anr							
Arsenic	3.0	.9	anr							
Barium	200	.4	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.2								
Boron	100	.8								
Cadmium	3.0	.2	anr							
Calcium	5000	57	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	1	anr							
Iron	100	8.3	anr							
Lead	3.0	1.5	-0.30	<3.0	0.40	<3.0	1.1	<3.0	1.1	<3.0
Lithium	20	1.3								
Magnesium	5000	34	anr							
Manganese	15	.2	anr							
Molybdenum	20	.4								
Nickel	10	.4	anr							
Palladium	50	1.1								
Potassium	10000	32	anr							
Selenium	10	2.3	anr							
Silicon	200	4								
Silver	10	.4	anr							
Sodium	10000	19	anr							
Sulfur	50	2.8								
Strontium	10	.2								
Thallium	2.0	1.6	anr							
Tin	10	1								
Titanium	10	.3								
Tungsten	50	1.3								
Vanadium	50	.4	anr							
Zinc	20	4.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA32391 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.2

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA32391 Units: ug/l

Time:			15:19		16:28		17:38		18:47	
Sample ID:			CCB4		CCB5		CCB6		CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	46	anr							
Antimony	6.0	1.1	anr							
Arsenic	3.0	.9	anr							
Barium	200	.4	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.2								
Boron	100	.8								
Cadmium	3.0	.2	anr							
Calcium	5000	57	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	1	anr							
Iron	100	8.3	anr							
Lead	3.0	1.5	0.10	<3.0	-0.30	<3.0	1.0	<3.0	0.50	<3.0
Lithium	20	1.3								
Magnesium	5000	34	anr							
Manganese	15	.2	anr							
Molybdenum	20	.4								
Nickel	10	.4	anr							
Palladium	50	1.1								
Potassium	10000	32	anr							
Selenium	10	2.3	anr							
Silicon	200	4								
Silver	10	.4	anr							
Sodium	10000	19	anr							
Sulfur	50	2.8								
Strontium	10	.2								
Thallium	2.0	1.6	anr							
Tin	10	1								
Titanium	10	.3								
Tungsten	50	1.3								
Vanadium	50	.4	anr							
Zinc	20	4.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA32391 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.2

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA32391 Units: ug/l

Time:			19:55		21:05		22:14		23:23	
Sample ID:			CCB8		CCB9		CCB10		CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	46	anr							
Antimony	6.0	1.1	anr							
Arsenic	3.0	.9	anr							
Barium	200	.4	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.2								
Boron	100	.8								
Cadmium	3.0	.2	anr							
Calcium	5000	57	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	1	anr							
Iron	100	8.3	anr							
Lead	3.0	1.5	0.90	<3.0	0.40	<3.0	-0.40	<3.0	0.80	<3.0
Lithium	20	1.3								
Magnesium	5000	34	anr							
Manganese	15	.2	anr							
Molybdenum	20	.4								
Nickel	10	.4	anr							
Palladium	50	1.1								
Potassium	10000	32	anr							
Selenium	10	2.3	anr							
Silicon	200	4								
Silver	10	.4	anr							
Sodium	10000	19	anr							
Sulfur	50	2.8								
Strontium	10	.2								
Thallium	2.0	1.6	anr							
Tin	10	1								
Titanium	10	.3								
Tungsten	50	1.3								
Vanadium	50	.4	anr							
Zinc	20	4.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA32391 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.2

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA32391 Units: ug/l

Time:			00:31		01:40		02:49		03:57	
Sample ID:			CCB12		CCB13		CCB14		CCB15	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	46	anr							
Antimony	6.0	1.1	anr							
Arsenic	3.0	.9	anr							
Barium	200	.4	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.2								
Boron	100	.8								
Cadmium	3.0	.2	anr							
Calcium	5000	57	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	1	anr							
Iron	100	8.3	anr							
Lead	3.0	1.5	0.60	<3.0	0.70	<3.0	0.10	<3.0	0.70	<3.0
Lithium	20	1.3								
Magnesium	5000	34	anr							
Manganese	15	.2	anr							
Molybdenum	20	.4								
Nickel	10	.4	anr							
Palladium	50	1.1								
Potassium	10000	32	anr							
Selenium	10	2.3	anr							
Silicon	200	4								
Silver	10	.4	anr							
Sodium	10000	19	anr							
Sulfur	50	2.8								
Strontium	10	.2								
Thallium	2.0	1.6	anr							
Tin	10	1								
Titanium	10	.3								
Tungsten	50	1.3								
Vanadium	50	.4	anr							
Zinc	20	4.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA32391 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.2

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA32391 Units: ug/l

Time:			05:00	
Sample ID:			CCB16	
Metal	RL	IDL	raw	final
Aluminum	200	46	anr	
Antimony	6.0	1.1	anr	
Arsenic	3.0	.9	anr	
Barium	200	.4	anr	
Beryllium	1.0	.1	anr	
Bismuth	20	1.2		
Boron	100	.8		
Cadmium	3.0	.2	anr	
Calcium	5000	57	anr	
Chromium	10	.5	anr	
Cobalt	50	.3	anr	
Copper	10	1	anr	
Iron	100	8.3	anr	
Lead	3.0	1.5	0.80	<3.0
Lithium	20	1.3		
Magnesium	5000	34	anr	
Manganese	15	.2	anr	
Molybdenum	20	.4		
Nickel	10	.4	anr	
Palladium	50	1.1		
Potassium	10000	32	anr	
Selenium	10	2.3	anr	
Silicon	200	4		
Silver	10	.4	anr	
Sodium	10000	19	anr	
Sulfur	50	2.8		
Strontium	10	.2		
Thallium	2.0	1.6	anr	
Tin	10	1		
Titanium	10	.3		
Tungsten	50	1.3		
Vanadium	50	.4	anr	
Zinc	20	4.2	anr	

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA32391 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.2

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA32391 Units: ug/l

	Time:		11:20	
	Sample ID:	ICCV	ICCV1	
Metal		True	Results	% Rec
Aluminum		anr		
Antimony		anr		
Arsenic		anr		
Barium		anr		
Beryllium		anr		
Bismuth				
Boron				
Cadmium		anr		
Calcium		anr		
Chromium		anr		
Cobalt		anr		
Copper		anr		
Iron		anr		
Lead		2000	2110	105.5*(a
Lithium				
Magnesium		anr		
Manganese		anr		
Molybdenum				
Nickel		anr		
Palladium				
Potassium		anr		
Selenium		anr		
Silicon				
Silver		anr		
Sodium		anr		
Sulfur				
Strontium				
Thallium		anr		
Tin				
Titanium				
Tungsten				
Vanadium		anr		
Zinc		anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA32391 Units: ug/l

Time:
Sample ID:
Metal

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested
(a) Within 90 to 110 percent limits required for SW846 6010. No EPA 200.7 samples reported for this element in the area bracketed by this QC.

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA32391 Units: ug/l

Time:		11:04			12:48			13:57	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2100	105.0	2000	2120	106.0	2000	2140	107.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA32391 Units: ug/l

Time:	
Sample ID:	
Metal	

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA32391 Units: ug/l

Time:		15:07			15:13			16:22	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2140	107.0	2000	2160	108.0	2000	2170	108.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP | Date Analyzed: 10/14/13 | Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery | Run ID: MA32391 | Units: ug/l

Time:	
Sample ID:	
Metal	

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA32391 Units: ug/l

Time:		17:32			18:41			19:49	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2170	108.5	2000	2140	107.0	2000	2140	107.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP | Date Analyzed: 10/14/13 | Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery | Run ID: MA32391 | Units: ug/l

Time:	
Sample ID:	
Metal	

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA32391 Units: ug/l

Time:		20:59			22:08			23:16	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2160	108.0	2000	2170	108.5	2000	2180	109.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP | Date Analyzed: 10/14/13 | Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery | Run ID: MA32391 | Units: ug/l

Time:	
Sample ID:	
Metal	

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA32391 Units: ug/l

Time:		00:25			01:34			02:43	
Sample ID:	CCV	CCV12		CCV	CCV13		CCV	CCV14	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2170	108.5	2000	2190	109.5	2000	2200	110.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA32391 Units: ug/l

Time:	
Sample ID:	
Metal	

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA32391 Units: ug/l

Time:		03:51			04:54	
Sample ID:	CCV	CCV15		CCV	CCV16	
Metal	True	Results	% Rec	True	Results	% Rec
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron						
Cadmium	anr					
Calcium	anr					
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron	anr					
Lead	2000	2190	109.5	2000	2200	110.0
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel	anr					
Palladium						
Potassium	anr					
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Sulfur						
Strontium						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					
Zinc	anr					

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA32391 Units: ug/l

Time:	
Sample ID:	
Metal	

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA32391 Units: ug/l

Time:				11:40		11:46		11:59	
Sample ID:	CRI	CRIA	CRID	CRID1		CRI1		CRIA1	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500							
Lead	3.0	20	2.5			3.7	123.3	21.1	105.5
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0						
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0						
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0						
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA32391 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA32391 Units: ug/l

Time:				20:08		20:14		20:21	
Sample ID:	CRI	CRIA	CRID	CRI2		CRID2		CRIA2	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	3.6	120.0			21.8	109.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0						
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA32391 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA32391 Units: ug/l

Time:				04:10		04:16		04:22	
Sample ID:	CRI	CRIA	CRID	CRI3		CRID3		CRIA3	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	3.6	120.0			22.5	112.5
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0						
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA32391 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA32391 Units: ug/l

Time:			12:22		12:29		20:27		20:33	
Sample ID:	ICSA	ICSAB	ICSA2		ICSAB2		ICSA3		ICSAB3	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	495000	99.0	502000	100.4	511000	102.2	496000	99.2
Antimony		1000	-0.30		1040	104.0	0.40		1050	105.0
Arsenic		1000	3.8		1040	104.0	3.2		1060	106.0
Barium		500	-0.60		514	102.8	-0.60		518	103.6
Beryllium		500	0.0		490	98.0	0.0		487	97.4
Bismuth		500	-4.4		514	102.8	-3.7		516	103.2
Boron			-15		-8.0		-16		-8.3	
Cadmium		1000	2.1		1050	105.0	2.1		1040	104.0
Calcium	400000	400000	365000	91.3	365000	91.3	372000	93.0	354000	88.5
Chromium		500	0.60		486	97.2	0.60		500	100.0
Cobalt		500	2.2		483	96.6	2.4		490	98.0
Copper		500	3.4		533	106.6	2.0		550	110.0
Iron	200000	200000	187000	93.5	191000	95.5	180000	90.0	193000	96.5
Lead		1000	-1.9		947	94.7	-2.4		974	97.4
Lithium		500	4.1		514	102.8	3.9		518	103.6
Magnesium	500000	500000	508000	101.6	527000	105.4	519000	103.8	509000	101.8
Manganese		500	1.7		497	99.4	-0.60		511	102.2
Molybdenum		500	-0.30		500	100.0	0.10		514	102.8
Nickel		1000	4.9		931	93.1	5.5		931	93.1
Palladium		500	9.5		574	114.8	20.6		589	117.8
Potassium			67.9		48.1		83.3		88.0	
Selenium		1000	3.8		1000	100.0	-1.5		1010	101.0
Silicon			-8.1		-0.30		-9.0		-2.6	
Silver		1000	4.5		1060	106.0	-0.40		1100	110.0
Sodium			11.8		13.3		66.2		57.9	
Sulfur		500	-3.0		485	97.0	1.6		505	101.0
Strontium			-1.2		-1.1		-0.90		-0.90	
Thallium		1000	-1.2		965	96.5	-3.1		967	96.7
Tin			5.2		6.7		4.9		6.9	
Titanium			2.2		6.4		2.4		6.8	
Tungsten		500	23.6		566	113.2	14.6		575	115.0
Vanadium		500	-0.20		486	97.2	6.3		490	98.0
Zinc		1000	-2.7		974	97.4	-3.5		998	99.8

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA32391 Units: ug/l

Time: / Sample ID: / Metal								
Zirconium	500	1.0	494	98.8	0.70	502	100.4	

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA32391 Units: ug/l

Time:			04:28		04:35	
Sample ID:	ICSA	ICSAB	ICSA4		ICSAB4	
Metal	True	True	Results	% Rec	Results	% Rec
Aluminum	500000	500000	511000	102.2	509000	101.8
Antimony		1000	0.70		1050	105.0
Arsenic		1000	-0.50		1060	106.0
Barium		500	-0.50		521	104.2
Beryllium		500	0.0		489	97.8
Bismuth		500	-4.4		512	102.4
Boron			-16		-10	
Cadmium		1000	2.5		1040	104.0
Calcium	400000	400000	378000	94.5	365000	91.3
Chromium		500	0.50		503	100.6
Cobalt		500	2.5		492	98.4
Copper		500	0.30		543	108.6
Iron	200000	200000	172000	86.0	186000	93.0
Lead		1000	-0.50		983	98.3
Lithium		500	3.8		511	102.2
Magnesium	500000	500000	530000	106.0	527000	105.4
Manganese		500	-2.2		504	100.8
Molybdenum		500	0.60		516	103.2
Nickel		1000	6.0		937	93.7
Palladium		500	27.5		572	114.4
Potassium			89.4		93.1	
Selenium		1000	2.7		1010	101.0
Silicon			-8.5		-1.5	
Silver		1000	-3.4		1070	107.0
Sodium			12.4		15.5	
Sulfur		500	-5.1		497	99.4
Strontium			-0.90		-0.90	
Thallium		1000	2.6		968	96.8
Tin			6.9		5.6	
Titanium			2.0		6.9	
Tungsten		500	15.4		578	115.6
Vanadium		500	10.6		485	97.0
Zinc		1000	-3.3		1010	101.0

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

File ID: SB101413M1.ICP Date Analyzed: 10/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA32391 Units: ug/l

Time: / Sample ID: / Metal				
Zirconium	500	0.90	502	100.4

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

QC Batch ID: MP75055
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal	RL	IDL	MDL	MB raw	MB final	MB raw	MB final
Aluminum	200	46	11				
Antimony	6.0	1.1	1.8				
Arsenic	3.0	.9	1.5				
Barium	200	.4	.36				
Beryllium	1.0	.1	.17				
Bismuth	20	1.2	.98				
Boron	100	.8	2				
Cadmium	3.0	.2	.24				
Calcium	5000	57	55				
Chromium	10	.5	.92				
Cobalt	50	.3	.48				
Copper	10	1	1				
Iron	100	8.3	13				
Lead	3.0	1.5	2.4	-0.30	<3.0	0.30	<3.0
Lithium	20	1.3	2.4				
Magnesium	5000	34	23				
Manganese	15	.2	.18				
Molybdenum	20	.4	2				
Nickel	10	.4	1.6				
Palladium	50	1.1	1.5				
Potassium	10000	32	41				
Selenium	10	2.3	2.4				
Silicon	200	4	29				
Silver	10	.4	1.5				
Sodium	10000	19	58				
Sulfur	50	2.8	5.9				
Strontium	10	.2	.59				
Thallium	10	1.6	1.3				
Tin	10	1	3.7				
Titanium	10	.3	1.2				
Tungsten	50	1.3	6.5				
Vanadium	50	.4	.72				
Zinc	20	4.2	4.4				

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

QC Batch ID: MP75055
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal			
Zirconium	10	.2	1.2

Associated samples MP75055: JB48380-1F, JB48380-2F, JB48380-3F, JB48380-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

QC Batch ID: MP75055
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/05/13

Metal	JB48429-5 Original	MS	Spikelot MPIRW1		QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron					
Cadmium	anr				
Calcium	anr				
Chromium	anr				
Cobalt	anr				
Copper	anr				
Iron	anr				
Lead	2.2	485	500	96.6	75-125
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum					
Nickel	anr				
Palladium					
Potassium	anr				
Selenium	anr				
Silicon					
Silver	anr				
Sodium	anr				
Sulfur					
Strontium					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	anr				
Zinc	anr				

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

QC Batch ID: MP75055
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

Zirconium

Associated samples MP75055: JB48380-1F, JB48380-2F, JB48380-3F, JB48380-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

QC Batch ID: MP75055
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal	JB48429-5 Original	MSD	Spikelot MPIRW1	% Rec	RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron						
Cadmium	anr					
Calcium	anr					
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron	anr					
Lead	2.2	476	500	94.8	1.9	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel	anr					
Palladium						
Potassium	anr					
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Sulfur						
Strontium						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					
Zinc	anr					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

QC Batch ID: MP75055
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

Zirconium

Associated samples MP75055: JB48380-1F, JB48380-2F, JB48380-3F, JB48380-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

QC Batch ID: MP75055
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:		10/05/13				10/05/13		
Metal	LCS Result	Spikelot MPLCW3	% Rec	QC Limits	LCS Result	Spikelot MPLCW3	% Rec	QC Limits
Aluminum	anr							
Antimony	anr							
Arsenic	anr							
Barium	anr							
Beryllium	anr							
Bismuth								
Boron								
Cadmium	anr							
Calcium	anr							
Chromium	anr							
Cobalt	anr							
Copper	anr							
Iron	anr							
Lead	532	500	106.4	80-120	507	500	101.4	80-120
Lithium								
Magnesium	anr							
Manganese	anr							
Molybdenum								
Nickel	anr							
Palladium								
Potassium	anr							
Selenium	anr							
Silicon								
Silver	anr							
Sodium	anr							
Sulfur								
Strontium								
Thallium	anr							
Tin								
Titanium								
Tungsten								
Vanadium	anr							
Zinc	anr							

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

QC Batch ID: MP75055
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

Zirconium

Associated samples MP75055: JB48380-1F, JB48380-2F, JB48380-3F, JB48380-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

QC Batch ID: MP75055
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal	JB48429-5 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	2.20	0.00	100.0(a)	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Palladium				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Sulfur				
Strontium				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			
Zinc	anr			

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB48380
Account: KEMPAE - KEM Partners, Inc.
Project: Newtown Square Amoco, Newton Square, PA

QC Batch ID: MP75055
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal
Zirconium

Associated samples MP75055: JB48380-1F, JB48380-2F, JB48380-3F, JB48380-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

KEATING Environmental Management, Inc.
123 John Robert Thomas Drive, Exton, Pennsylvania 19341
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PHASE I ENVIRONMENTAL SITE ASSESSMENT

3608 West Chester Pike
Newtown Square,
Delaware County, Pennsylvania

File No. 6866

November 2007

Prepared for:

Mr. Harbir Singh
4 Troon Court
Moorestown, New Jersey 08057

Prepared by:

Paul M. Davis
Senior Environmental Specialist

Reviewed by:

Chris Orzechowski, P.G.
Project Director

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1.0 INTRODUCTION

In accordance with our Agreement, Keating Environmental Management, Inc. (Keating Environmental) has performed a Phase I Environmental Site Assessment for the property located at 3608 West Chester Pike, Newtown Square, Delaware County, Pennsylvania (site). A site location map is provided as Figure 1.

The purpose of this Phase I Environmental Site Assessment was to identify, to the extent feasible and pursuant to the American Society for Testing and Materials (ASTM) standard practice (E 1527-05), recognized environmental conditions in connection with the site. This Phase I Environmental Site Assessment included the following:

- a site reconnaissance;
- a review of reasonably obtainable site history documentation back to the first developed use, or back to 1940, whichever is earlier;
- a review of files maintained at the Township of Newtown - Municipal Office;
- an interview with the reported most knowledgeable individuals relative to historic site use, Mr. Pali (current owner) and Mr. Harbir Singh (purchaser);
- a review of a commercial, state and federal regulatory agency database to identify recognized environmental conditions at or near the site; and
- the preparation of this report containing an opinion regarding recognized environmental conditions at the site.

This report details information obtained during the investigation through 20 November 2007. If applicable, pertinent information made available after this date, which would change the conclusions and recommendations of this report, will be forwarded upon receipt.

It is noted that, in accordance with E 1527-05 protocol, no subsurface explorations, matrix sampling, or evaluation of suspected wetlands regulatory compliance, cultural and historical resources, industrial hygiene, health and safety, ecological resources or endangered species were conducted as part of this Phase I Environmental Site Assessment. In addition, no chemical analyses for suspected asbestos containing materials, lead-based paint, radon gas, lead in drinking water, microbial growth or indoor air quality were performed as part of this assessment.

2.0 BACKGROUND

The following paragraphs describe the physical layout of the site and vicinity.

2.1 Site Description

The site is located at 3608 West Chester Pike, Newtown Square, Delaware County, Pennsylvania, and is further defined as Tax Parcel No. 30-00-02861-00 on the Township of Newtown Tax Map. The site is approximately 0.4-acres, and is currently improved with one structure, asphalt parking areas, a refueling area with two pump islands under a canopy with ten dispensing pumps, and four underground storage tanks (USTs). Historically, the site has been used as a retail gas station since 1956. The previous structure at the site was demolished in 2003 and replaced with the current structure in the same footprint area. The structure is a one-story approximately 500 square foot frame and panel building on a concrete slab. Currently, the site structure is utilized as a convenient store selling food, drinks, tobacco products, and miscellaneous automotive supplies in small quantities. The site also dispenses gasoline and diesel fuel and has a propane gas tank exchange. The site building is heated and cooled by an electric rooftop unit.

The reported USTs currently on-site consist of the following: three 10,000-gallon tanks for the storage of gasoline and one tank for the storage of diesel fuel (unknown capacity). Keating Environmental requested information regarding the construction of the tanks and their spill and overfill prevention devices as well as leak detection systems. However, at the time of this report, this information has not been received. Also, Keating Environmental asked if the current USTs replaced any previous USTs at the site or if any USTs have been removed from the site, but at the time of this report, no response has been received.

Philadelphia Electric Company (PECO) provides electric service to the site. The site building is connected to the public water and sewer services provided by Aqua PA and Newtown Township, respectively. There is no natural gas service connection at the site. Four groundwater monitoring wells were observed on-site. A site plan has been furnished as Figure 2.

2.2 Topography and Drainage

Interpretation of the U.S. Geological Survey (USGS) topographic quadrangle map of the area (see Figure 1 – Media, PA, dated 1966 and photorevised 1994), the site is located in an undulating area that slopes generally to the northeast.

Based upon the review of the regional topography, Keating Environmental infers that regional shallow groundwater flow is to the northeast. However, it is noted that localized flow directions in the vicinity of the site may vary. No subsurface explorations have been conducted as part of this evaluation to confirm the actual groundwater flow direction at the site.

3.0 SITE HISTORY

The following paragraphs describe the history of site use

3.1 Historical Aerial Photographs

Keating Environmental reviewed six historical aerial photographs for the site area dated 1937, 1953, 1965, 1971, 1980, and 1992 from Environmental Data Resources (EDR), located in Milford, Connecticut. Due to the small scale of the photographs, it was difficult to observe fine details related to the site. Copies of the aerial photographs are provided in Appendix A.

The 1937 photograph depicted the site with an apparent structure. Surrounding properties included West Chester Pike to the north, with agricultural land beyond; residential properties to the east and south; and Newtown Street Road to the west, with residential properties beyond.

The 1953 photograph depicted the site and surrounding area similar to the 1937 photo, with the exception that the agricultural land north of West Chester Pike has become developed with residential and commercial properties and there is more development east, south, and west of the site.

The 1965 photograph depicted the site with a structure in the eastern area of the site surrounded by a paved lot. Surrounding properties north of West Chester Pike and to the east, south, and west are more developed with commercial properties.

The 1971, 1980, and 1992 photographs depicted the site and surrounding areas similar to the 1965 photo.

3.2 Sanborn Maps

Keating Environmental requested Environmental Data Resources, Inc. (EDR) of Milford, Connecticut to conduct a search for historical Sanborn Fire Insurance maps, which typically show past land uses and owners. No Sanborn maps were available for the subject site or surrounding area. A copy of the Sanborn Map Report indicating no coverage is provided as Appendix B.

3.3 All Appropriate Inquiry Information

In accordance with Section 6.0 "User's Responsibilities" of ASTM's Standard Practice E 1527-05, the current owner of the site and/or the individual who commissioned the performance of this Phase I Environmental Site Assessment was asked to respond to the series of questions listed

below[1]. As indicated by ASTM, the items listed below are generally not performed by environmental professionals performing the Phase I Environmental Site Assessment. These items are performed by the "user" to assist in identifying recognized environmental conditions. The series of questions that were asked and the responses that were provided by the potential buyer, Mr. Harbir Singh, are provided below:

1. Is the organization/person aware of any environmental cleanup liens against the property/site that are filed or recorded under federal, tribal, state or local law? **No.**
2. Is the organization/person aware of any Activity and Use Limitations, such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law? **No.**
3. Does the organization/person have any specialized knowledge or experience related to the property or nearby properties? For example, is the organization/person involved in the same line of business as the current or former occupants of the property or an adjoining property so that they would have specialized knowledge of the chemicals and processes used by this type of business? **No.**
4. Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If there is a difference, has it been considered whether the lower purchase price is because contamination is known or believed to be present at the property? **No.**
5. Is the organization/person aware of known or reasonably ascertainable information about the property that would help Keating Environmental identify conditions indicative of releases or threatened releases? For example, does the organization/person know of past uses of the property, environmental cleanups that have taken place at the property, chemicals that are currently or were used at the property, spills or releases that have occurred? **No.**
6. Does the organization/person have knowledge and experiences related to the property, and are there any obvious indicators that point to the presence or likely presence of contamination at the property? **No.**
7. Is a Title Report being provided to Keating Environmental Management? **Yes.** The Title Report is included as Appendix C and summarizes the June 2002 exchange of the site between 3608 West Chester Pike Realty Corp. and Allied Petroleum Ventures, Inc.

3.4 Local Building Department/Zoning Land Use Records

The site and surrounding area are currently zoned as C-1 (Commercial).

[1] From "User Questionnaire" contained in ASTM Standard Practice E 1527-05. Per ASTM, the user must provide the above information, if available, to the environmental professional as part of the Phase I Environmental Site Assessment.

3.5 Previous Environmental Assessment Reports and Studies

No previous environmental studies were provided by the client to Keating Environmental as part of this Phase I Environmental Site Assessment

An UST integrity test conducted on 22 March 2007 by Mid-Atlantic Petroleum Services, Inc. was reviewed as part of this Phase I Environmental Assessment. Three gasoline USTs and associated piping were tested for tightness and determined to be tight. Also, the piping associated with the diesel UST was tested for tightness and passed. Documentation for the diesel UST regarding tightness testing was not included with this inspection.

A copy of the UST integrity test is provided in Appendix D.

4.0 REGULATORY INFORMATION CONCERNING SITE AND VICINITY

Local and state agencies were contacted, and a commercial database of state and federal regulatory agency files was reviewed to identify recognized environmental conditions at or near the site. Information from the local agency was obtained by requesting available files and/or interviewing available personnel and the state inquiry was performed by accessing the PADEP internet web page. The commercial database was provided by EDR. The database lists, which were reviewed, are those specified by ASTM Standard E 1527-05. The information made available to Keating Environmental is summarized in the following paragraphs.

4.1 Local Agency Inquiry

To obtain information regarding environmental concerns on or near the site, Keating Environmental reviewed the property file maintained at the Township of Newtown - Municipal Office on 8 November 2007. The Township's file is identified as 3608 West Chester Pike. The file contained a letter from PADEP that was a carbon copy of a letter sent to the then owner of the site (Mr. Ron Singh). The letter dated 31 May 2006 for Facility ID No. 23-09154 is a PADEP Notice of Violation (NOV) – Request for Release Detection Records for the period April, May, and June 2006 for Tanks 001 and 002. The facility was operating in violation of the release detection regulations. Also included in the Township file were analytical groundwater sampling results prepared by Mehar Investment Group, LLC in May 2002 that stated that the only detected compounds in groundwater samples obtained at the site were methyl tert-butyl ether (MTBE) and toluene. MTBE was detected at a concentration of 7.29 parts per billion (ppb) in MW-1 and at 17.8 ppb in MW-3. Toluene was detected at a concentration of 0.38 ppb in MW-3. The detected compounds were below the PADEP Statewide Health Standards. Also, according to permits in the site file, the subject property has been a gasoline station since 1956. No other environmental related documentation was in the file.

4.2 State Agency Inquiry

To obtain information regarding potential environmental concerns on the site, Keating Environmental reviewed the PADEP internet web page. A search of the Environmental, Facility, Application, Compliance Tracking System (e.F.A.C.T.S.) was conducted for facilities located in the same zip code as the site. e.F.A.C.T.S. is a system developed by PADEP to make readily available to the public, compliance and permitting information, including inspections, violations, orders, penalties, etc.

The site was listed in the e.F.A.C.T.S. database under Newtown Square Amoco (Site ID Number 573044). The site has active status under the PADEP Land Recycling & Waste Management Program. PADEP facility inspections included the following:

- Stage II Gasoline Vapor Recovery Equipment on 10 August 2006 (no violation),
- Stage II Gasoline Vapor Recovery Equipment on 21 July 2006 (violation),

- Standards for sources, mobile sources, control of VOCs from gasoline dispensing facilities (Stage II). Failure to comply with the requirements for properly transferring gasoline from storage tanks into motor vehicle fuel tanks in specific counties. Corrected/abated on 10 August 2006.

- Stage II Gasoline Vapor Recovery Equipment on 7 July 2006 (violation),
  - Standards for sources, mobile sources, control of VOCs from gasoline dispensing facilities (Stage II). Failure to comply with the requirements for properly transferring gasoline from storage tanks into motor vehicle fuel tanks in specific counties. Corrected/abated on 10 August 2006.
- Facility Operations Inspection on 20 March 2006 (violation),
  - Failure to comply with UST system release detection requirements. Corrected/abated on 27 July 2006.
- Follow-up Inspection on 17 November 2004 (no violation),
- Follow-up Inspection on 29 March 2004 (violation),
  - Failure to comply with UST system release detection requirements. Corrected/abated on 31 March 2004.
- Facility Operations Inspection on 25 March 2004 (violation),
  - Failure to comply with UST system release detection requirements. Corrected/abated on 17 November 2004.
- Compliance Evaluation on 24 March 2004 (violation),
  - UST registration violation(s). Corrected/abated on 31 March 2004.
- Stage II Gasoline Vapor Recovery Equipment on 15 October 2003 (no violation),
- Stage II Gasoline Vapor Recovery Equipment on 10 September 2003 (violation),
  - Standards for sources, mobile sources, control of VOCs from gasoline dispensing facilities (Stage II). Failure to comply with the requirements for properly transferring gasoline from storage tanks into motor vehicle fuel tanks in specific counties. Corrected/abated on 15 October 2003.
- Facility Operations Inspection on 21 November 2000 (no violation), and
- Facility Operations Inspection on 9 November 1996 (no violation)

Copies of the e.F.A.C.T.S. records are provided in Attachment E.

4.3 Federal and State Regulatory Agency Database Review

Keating Environmental reviewed the following 16 database lists provided by EDR. The minimum search radii for each list were those specified by ASTM Standard E 1527-05. Table 1

provides a summary of the search radius for each database.

- The National Priority List (NPL) includes sites that have been evaluated by the U.S. Environmental Protection Agency (USEPA) and identified as being uncontrolled or abandoned hazardous waste sites. Additionally, the Agency for Toxic Substances and Disease Registry adds sites to the NPL by issuing health advisories that recommend human evacuation from these sites.

- Delisted-NPL sites includes sites that were previously listed as NPL sites. The sites are deleted from the NPL when the EPA decides that no further response is appropriate.

- The Comprehensive Environmental Response, Compensation and Liability Index System (CERCLIS) list includes sites identified by, reported to, or investigated by the USEPA as having actual or suspected uncontrolled releases of hazardous substances, contaminants, or pollutants.

- CERCLIS-NFRAP (No Further Remedial Action Planned) sites are sites that have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require NPL status.

- The Corrective Action Report (CORRACTS) list includes sites that handle hazardous waste and have undertaken a RCRA correction action activity.

- The Emergency Response Notification System (ERNS) list includes information concerning the sudden and/or accidental release of hazardous substances, including petroleum, into the environment.

- The Resource Conservation and Recovery Act Information System - Treatment, Storage and Disposal facilities (RCRIS-TSD) list includes facilities that treat, store, or dispose of hazardous wastes.

- The Resource Conservation and Recovery Act Information System - Large Quantity Generators (RCRIS-LQG) list includes information on facilities that either generate more than 1,000 kilograms of hazardous waste per month, or meet other requirements of the Resource Conservation and Recovery Act (RCRA).

- The Resource Conservation and Recovery Act Information System - Small Quantity Generators (RCRIS-SQG) list includes information on facilities that generate between 100 kg and 1,000 kg of hazardous waste per month, or meet other requirements of RCRA.

- The Solid Waste Facilities/Landfill Sites (SWF/LS) list includes information on facilities which contain different types of waste (i.e., construction/demolition landfills, residual waste landfills, municipal waste landfills, asbestos landfills, virgin fuel contaminated soil landfills, etc.).

- The State Hazardous Waste Sites (SHWS) list includes facilities that are deemed hazardous (i.e., soil or groundwater contamination) by the state.

- The Leaking Underground Storage Tank (LUST) list includes information on facilities which have had confirmed releases from underground storage tanks that have been reported to the state.

- The Registered Underground Storage Tank (UST) list includes information on facilities that have underground storage tanks registered with the state.

- Voluntary Cleanup Program (VCP) list includes information on facilities where voluntary remediation/cleanup has been performed with state approval.

- Brownfield List includes information on former contaminated industrial sites that have been remediated under a State Brownfields program to return them to productive use.

- Federal and State Institutional/Engineering Controls list includes information concerning the use of institutional and/or engineering controls as part of a response action to attain a cleanup standard for a particular site.

NPL Sites

The EDR report did not reveal any NPL sites located within one mile of the subject site.

Delisted-NPL Sites

The EDR report did not reveal any Delisted-NPL sites located within one-half mile of the subject site.

CERCLIS Sites

The EDR report did not reveal any CERCLIS sites located within one-half mile of the subject site.

CERCLIS-NFRAP Sites

The EDR report did not reveal any CERCLIS-NFRAP sites located within one-half mile of the subject site.

CORRACTS Sites

The EDR report revealed one CORRACTS site located within one mile of the subject site. The site listed below is located upgradient of the subject site, based upon the inferred groundwater flow direction:

- Lyondell Chemical Co
  3801 West Chester Pike
  Newtown Square, PA 19073

ERNS Sites

The EDR report did not identify the subject site as an ERNS site.

RCRIS-TSD Sites

The EDR report did not reveal any RCRIS-TSD sites located within one-half mile of the subject site.

RCRIS-LQG Sites

The EDR report did not reveal any RCRIS-LQG sites located within one-quarter mile of the subject site.

RCRIS-SQG Sites

The EDR report revealed nine RCRIS-SQG sites located within one-quarter mile of the subject site. The eight sites listed below are located upgradient of the subject site, based upon the inferred groundwater flow direction:

- Sunoco Service Station
  3601 West Chester Pike
  Newtown Square, PA 19073

- Videon Chevrolet
  3599 West Chester Pike
  Newtown Square, PA 19073

- Sook, Robert J Co
  7 St. Albans Circle
  Newtown Square, PA 19073

- D & B Tailors
  3620 Chapel Road
  Newton Square, PA 19073

- Mobil Oil Corp SS# LRY
  3592 West Chester Pike
  Newtown Square, PA 19073

- The Original Wagners
  3584 West Chester Pike
  Newtown Square, PA 19073

- Newtown Square Laundry & Dry Cleaners
  11 Clyde Lane
  Newtown Square, PA 19073

- Frank C Videon Chrysler Plymouth
  3737 West Chester Pike
  Newtown Square, PA 19073

SHWS Sites

The EDR report did not reveal any SHWS sites located within one mile of the subject site.

SWF/LF Sites

The EDR report did not reveal any SWF/LF sites located within one-half mile of the subject site.

LUST Sites

The EDR report revealed the subject site as a LUST site as well as seven other LUST sites located within one-half mile of the subject site. Listed below are the target facility and the four sites that are located upgradient, based upon the inferred groundwater flow direction:

- Newtown Square Amoco **(Subject Site)**
  3608 West Chester Pike
  Newtown Square, PA 19073
  Facility Status: Cleanup Completed.

- Sunoco Service Station - Newtown
  3601 West Chester Pike
  Newtown Square, PA 19073
  Facility Status: Cleanup Completed.

- Don Kelley's Mobil
  3592 West Chester Pike
  Newtown Square, PA 19073
  Facility Status: Interim Remedial Actions Initiated or Completed.

- Newtown Square USPS
  20 North Newtown Street Road
  Newtown Square, PA 19073
  Facility Status: Cleanup Completed.

- Frank C Videon, Inc.
  3737 West Chester Pike
  Newtown Square, PA 19073
  Facility Status: Cleanup Completed.

The EDR report also revealed one leaking storage tank case from unregulated tanks. Listed below is the one site that is located upgradient, based upon the inferred groundwater flow direction:

- Carriage House Apartments
  20 Bishop Hollow Road
  Newtown Township, PA
  Closed: 6/10/1996

UST Sites

The EDR report revealed the subject site as an UST site as well as three sites located within one-quarter mile of the subject site. Listed below are the target facility and the two sites that are located upgradient, based upon the inferred groundwater flow direction:

- Newtown Square Amoco **(Subject Site)**
  3608 West Chester Pike
  Newtown Square, PA 19073

- Getty 67602
  3710 West Chester Pike
  Newtown Square, PA 19073

- Don Kelley's Mobil
  3592 West Chester Pike
  Newtown Square, PA 19073

VCP Sites

The EDR report revealed one VCP site located within one-half mile of the subject site. Listed below is the one site that is located upgradient, based upon the inferred groundwater flow direction:

- St. Albans Circle Project
  11 St. Albans Circle
  Newtown Township, PA

Brownfields Sites

The EDR report did not reveal any Brownfields sites located within one-half mile of the subject site.

Federal and State Institutional/Engineering Control Sites

The EDR report did not reveal the subject site as a Federal or State Institutional/Engineering Control site.

Potential for Impact to the Site

Thirteen facilities are identified within the E 1527-05 specified search radii and are located upgradient, or in close proximity to the site, based upon the inferred regional groundwater flow direction. Also, the subject site is identified in the search. Therefore, it is possible that site soils or groundwater have been adversely impacted by a release from these facilities.

The database identified four "orphan" sites whose actual location could not be mapped. A listing of these orphan sites is included in the "Orphan Summary" section of EDR's report included as Appendix F. Keating Environmental did not identify any of the facilities as abutting the site; however, the orphan sites may be located within the E 1527-05 specified search radii.

The presence of facilities in the state and federal databases does not necessarily indicate that these facilities are impacting regional soil or groundwater quality, but provides a relative indication of hazardous material or petroleum product use in the area of the site, and the potential for on-site impacts from these facilities.

5.0 SITE RECONNAISSANCE

The following paragraphs describe the observed conditions at the site.

5.1 Site Operations and Current Use

On 8 November 2007, Mr. Paul M. Davis, of Keating Environmental, conducted a reconnaissance of the subject site to observe present site conditions and to identify potential areas of recognized environmental concern. Mr. Harbir Singh (purchaser) and Mr. Pali (current owner), arranged access to the subject site, and provided information relative to known site conditions. Photographs are included as Appendix G.

The site is located at 3608 West Chester Pike, Newtown Square, Delaware County, Pennsylvania. The site is approximately 0.4-acres, and is currently improved with one structure, asphalt parking areas, a refueling area with two pump islands under a canopy with ten dispensing pumps, and four USTs. Historically, the site has been used as a retail gas station since 1956. The previous structure at the site was demolished in 2003 and replaced with the current structure in the same footprint area. The structure is a one-story approximately 500 square foot frame and panel building on a concrete slab. Currently, the site structure is utilized as a convenient store selling food, drinks, tobacco products, and miscellaneous automotive supplies in small quantities. The site also dispenses gasoline and diesel fuel and has a propane gas tank exchange. The site building is heated and cooled by an electric rooftop unit.

The reported USTs currently on-site consist of the following: three 10,000-gallon tanks for the storage of gasoline and one tank for the storage of diesel fuel (unknown capacity). Keating Environmental requested information regarding the construction of the tanks and their spill and overfill prevention devices as well as leak detection systems. However, at the time of this report, this information has not been received. Also, Keating Environmental asked if the current USTs replaced any previous USTs at the site or if any USTs have been removed from the site, but at the time of this report, no response has been received.

Philadelphia Electric Company provides electric service to the site. The site building is connected to the public water and sewer services provided by Aqua PA and Newtown Township, respectively. There is no natural gas service connection at the site. Four groundwater monitoring wells were observed on-site.

5.2 Underground Storage Tanks

Four vent lines were observed in the northwestern corner of the site. The vent lines are believed to be associated with the three 10,000-gallon gasoline USTs, located in the northwestern area of the site, and a diesel fuel UST (unknown capacity), located south of the three gasoline USTs. The USTs have direct fill ports above them and are situated beneath a concrete surface.

5.3 Aboveground Storage Tanks

Keating Environmental visually inspected the subject site for the presence of ASTs. No ASTs were reported or observed at the subject site other than approximately 30 small propane gas cylinders (barbeque grill-type) used in the retail exchange system. The propane gas cylinders are not filled at the site and are stored in steel cages with bollards to protect them. For the purpose of this Phase I Assessment, the propane gas tanks do not constitute a recognized environmental condition, since propane is gaseous at atmospheric pressure.

5.4 Fluid-Filled Transformers and Electrical Devices

Transformers and other miscellaneous electrical devices (capacitors, circuit breakers, etc.) that contain dielectric fluids are a potential area of environmental concern, since the fluid is petroleum based and may contain polychlorinated biphenyls (PCBs). No fluid filled electrical transformers or other electrical devices were observed at the site.

5.5 Fluorescent Light Ballasts

Fluorescent light ballasts that contain capacitors filled with dielectric fluid are a potential area of environmental concern, due to the potential presence of PCBs in the dielectric fluid. Such ballasts do not pose an environmental risk unless they begin to leak or are involved in a fire, in which case PCBs could be released from the light ballasts into the environment.

Keating Environmental was unable to inspect the light fixtures observed at the site. Given the age of the building, the potential for PCB containing light ballasts is low.

5.6 Fluorescent Light Bulbs

Fluorescent light bulbs may contain small amounts of mercury, lead, and cadmium. Fluorescent light bulbs were observed at the site.

5.7 Asbestos Containing Materials

The Occupational Safety and Health Administration's (OSHA) general industry safety standard for asbestos (29 CFR 1910.1001) applies to all non-residential buildings constructed prior to 1980, which are automatically presumed to contain asbestos-containing material.

The regulation requires non-residential building owners, operators, and employers to identify suspect asbestos-containing material through inspection and sampling, or presume that all materials are asbestos containing. Employees must then be informed of the presence of asbestos in their work areas, materials that may release fibers must be labeled, and employees who may be exposed must be medically monitored and appropriately trained. Service employees who may come in contact with the suspected asbestos-containing material must receive asbestos awareness training, and maintenance staff who disturb asbestos must be trained in work practices and

engineering controls.

No obvious asbestos-containing materials were observed at the site during the site reconnaissance. Given that the building was constructed in 2003, asbestos-containing materials are not expected to be present.

5.8 Elevators

Elevators that contain hydraulic oil are a potential recognized environmental condition. No elevators were reported or observed at the site.

5.9 Hydraulic Lifts

Lifts that contain hydraulic oil are a potential area of environmental concern, since the associated appurtenances (pipelines, tank and pistons) have a tendency to develop leaks. No in-ground or aboveground hydraulic lifts were observed or reported at the site.

5.10 Chemical/Raw Material Storage

Keating Environmental visually inspected the interior and exterior of the site for the presence of hazardous chemicals and stored raw materials. Approximately 30 small propane gas cylinders (for the retail exchange system) were observed in the southern area of the site. Small quantities of motor oil, brake fluid, and miscellaneous automotive supplies were observed in one area of the convenience store. No spills or staining were observed around them. The site stores unleaded gasoline and diesel fuel in USTs.

5.11 Interior Floor Drains/Sumps/Pits

Floor drains, sumps and pits create possible pathways for the migration of contamination. No drains, sumps or pits were observed at the site.

5.12 Exterior Pits, Ponds, and Lagoons

No exterior pits, ponds, or lagoons were observed on the subject site.

5.13 Waste Generation

Waste generated on the subject site consists of municipal solid waste (MSW), which is disposed of in a trash dumpster. No residual or hazardous waste is reportedly generated at the site.

5.14 Lead-Based Paint

Painted surfaces are present in the site building. Lead-based paint is a potential environmental concern in buildings constructed prior to 1979. Building occupants could be exposed to elevated

levels of airborne lead-contaminated dust in buildings that have peeling or damaged lead-based painted surfaces.

Given that the building was constructed in 2003, lead-based paint at the site is not expected to be present. All of the painted surfaces in the building appeared to be in good condition.

5.15 Lead in Drinking Water

Drinking water distribution systems in buildings constructed prior to 1987 may contain components that were manufactured with lead. Such components include pipe, pipefittings, solder, etc. These lead containing components could cause elevated levels of lead in the potable water supply.

Given that the building was constructed in 2003, "lead free" plumbing components would be expected to be present.

5.16 Radon

Radon is a cancer-causing radioactive gas, which is generated from the natural decay of uranium that is found in nearly all subsurface soils. Radon typically permeates through the subsurface soils and enters buildings through cracks and other penetrations in building foundations.

The EDR report included results of USEPA radon testing at 1,543 buildings within the same zip code (19073) as the site. The radon results indicated that 18 percent of the tested facilities had levels greater than the USEPA action level of 4 pCi/L. It is noted, however, that radon testing results can vary greatly, even over a small geographic area, and that the only accurate method to determine radon levels at a particular property is by on-site testing.

5.17 Stressed Vegetation/Surface Staining/Disturbed Soil

Stressed vegetation, surface staining, and/or disturbed soil can be indicative of an environmental release, dumping, backfilling, or burial of items of possible environmental concern. No stressed vegetation was observed at the site. Some minor petroleum staining was observed on the asphalt and concrete surfaces near the refueling areas (dispensing islands).

5.18 Odors

No odors were detected at the time of the site reconnaissance.

5.19 Pools of Liquid

No pools of liquid were observed at the site at the time of the site reconnaissance.

5.20 Adjacent Properties

Adjacent property usage is a consideration in evaluating site conditions since surface water and groundwater flow create potential pathways for migration of contaminants from off-site sources. The following is a list of usage for adjacent properties to the site:

North of the Site:

West Chester Pike, with commercial properties beyond.

East of the Site:

A bank and shopping center, with additional commercial properties beyond.

South of the Site:

Niemeyers Lawn & Garden Power Equipment, with additional commercial properties beyond.

West of the Site:

Newtown Street Road, with residential and commercial properties and a school beyond.

No obvious areas of recognized environmental concern appeared to be associated with the current adjacent properties.

5.21 Storm Water Runoff

Storm water runoff may contain contaminants from the land surface over which the water flows. This runoff may impact underlying soils, surface water, or groundwater as the runoff enters surface water bodies or percolates into the ground.

The site slopes to the north and is graded to direct storm water away from the building's foundation and into the surrounding areas. Based upon visual observations, storm water originating from the neighboring properties does not flow over the site boundaries as the site is graded above the surrounding area and curbs are in place.

5.22 Suspected Wetlands

No suspected wetlands appeared to be associated with the site.

5.23 Site Utilities

Sanitary Sewer

The site is connected to the local sanitary sewer provided by the Newtown Township Sewer Department.

Storm Sewer

The site is graded to direct storm water away from the building's foundation and into the surrounding streets.

Water

The site is connected to the local public water supply provided by Aqua Pennsylvania.

Electric

PECO provides electric service to the site.

Natural Gas

There is no natural gas service connection to the site.

Wells

No potable wells were reported to be historically present at the site or were observed during the site reconnaissance. Four groundwater monitoring wells were observed on the site.

Septic System

No on-site septic systems were observed, or reported to be historically present at the site.

5.24 Miscellaneous Environmental Issues

No miscellaneous environmental issues, beyond the scope of ASTM E1527-05, were observed at the site.

6.0 CONCLUSIONS AND RECOMMENDATIONS

A Phase I Environmental Site Assessment was conducted at the property located at 3608 West Chester Pike, Newtown Square, Delaware County, Pennsylvania.

The assessment was performed in accordance with the scope and limitations of the ASTM practice E 1527-05, and included a site reconnaissance, a review of reasonably obtainable site history documentation back to the first developed use, or back to 1940, whichever is earlier; an interview with the reported most knowledgeable individual relative to historic site use; a review of files maintained at the Township of Newtown - Municipal Office; and a review of a commercial database that summarizes state and federal environmental regulatory records.

No subsurface explorations, matrix sampling, or evaluation of suspected wetlands regulatory compliance, cultural and historical resources, industrial hygiene, health and safety, ecological resources or endangered species were conducted as part of this Phase I Environmental Site Assessment. In addition, no chemical analyses for suspected asbestos containing materials, lead-based paint, radon gas, lead in drinking water, microbial growth or indoor air quality were performed as part of this assessment.

Based on the information developed and provided as part of this site assessment, Keating Environmental has reached the following conclusions and recommendations regarding recognized environmental conditions.

1. ***Former Site and LUST Cleanup Completed Status:*** Based on the EDR Report, the previous facility that occupied the site (Newtown Square Amoco) is listed as a LUST site with Cleanup Completed status. There is no further information regarding if the site requested and received a PADEP Release of Liability for the cleanup and what compounds of concern and media were covered. Also, it is unclear if any previous USTs have been removed from the site and if they were replaced with the current USTs. Keating Environmental recommends reviewing files maintained for the site at the PADEP Southeastern Regional Office to determine what the cleanup consisted of and if any USTs have been removed.
2. ***Monitoring Wells and Groundwater Sampling for Chemical Analysis:*** Four groundwater monitoring wells were observed at the site. Based on information found during the file review at the Township of Newtown - Municipal Office, information was discovered that groundwater samples have been collected at the site for analysis. One compound associated with unleaded gasoline (MTBE) was detected at concentrations close to exceeding the PADEP Statewide Health Standard for that compound. Keating Environmental recommends obtaining groundwater samples from all of the on-site monitoring wells and analyzing them for gasoline and diesel fuel parameters of concern to determine current levels. Also, prior to obtaining the groundwater samples, confirmation of the total number of wells at the site should be determined.

3. ***Gasoline and Diesel Fuel UST Areas and Two Associated Dispensing Islands:*** Four USTs and two associated dispensing islands with 10 dispensing pumps (eight for unleaded gasoline and two for diesel fuel) were observed at the site and are currently being used. If the site continues to be used as a gas/diesel fuel retail station, the USTs will need to be properly maintained in accordance with applicable regulations, including periodic testing (tank and line tightness testing, cathodic protection, etc.). If the USTs and dispensing islands will no longer be used, Keating Environmental recommends that they be removed according to local, state, and federal regulations.
4. ***Releases From Neighboring/Upgradient Properties:*** Thirteen facilities, as well as the target property, were identified within the E 1527-05 specified search radii, and are located upgradient or in close proximity to the site, based upon the inferred regional groundwater flow direction. According to the commercial database, these regulated facilities are CORRACTS sites, RCRIS-SQG sites, VCP sites, UST sites, LUST sites, or are leaking unregulated tanks sites. Based upon the location of these facilities, the possibility exists that the site soils and/or groundwater may have been adversely impacted by a release from one or more of these facilities. However, no obvious evidence was observed during the performance of this assessment (other than the site being a UST and LUST site) to indicate that site soils and groundwater have been impacted by neighboring or off-site regulated sources. Therefore, no further investigation is recommended at this time regarding the off-site facilities. However, if a higher level of confidence is desired, a subsurface investigation should be performed.

It is Keating Environmental's opinion that this Phase I Environmental Site Assessment has revealed evidence of recognized environmental conditions in connection with the site. Further investigation of the site appears warranted relative to the conclusions and recommendations provided above.

The following de minimis environmental issues were identified during the performance of this Phase I Environmental Site Assessment. Consideration should also be given to addressing these issues:

- Fluorescent light bulbs were observed at the site. These light bulbs may contain small amounts of mercury, lead, and cadmium. The disposal of fluorescent light bulbs could constitute disposal of a hazardous waste. Fluorescent bulbs should be disposed of in accordance with all applicable environmental regulations.

- Radon is a cancer-causing radioactive gas, which is generated from the natural decay of uranium found in nearly all soils. Radon typically permeates through the subsurface soils and enters buildings through cracks and other penetrations in building foundations. The EDR report indicated that 18 percent of the facilities tested for radon, within the same zip code as the site (19073), had a radon concentration that was greater than the USEPA action level. The potential for an elevated level of radon gas in the site building is low. It should be noted that radon testing results can vary greatly, even over a small

geographic area, and that the only accurate method to determine radon levels at a particular building is by on-site testing. It is recommended that radon testing be performed in the site building.

7.0 CREDENTIALS

This report was prepared by Keating Environmental Management, Inc. Keating Environmental Management, Inc. is an environmental consulting firm, which provides environmental engineering, geology, hydrogeology, remediation, industrial hygiene and environmental compliance management services to both private and public sector clients.

Keating Environmental Management, Inc. declares that its personnel that participated in this assignment meet the definition of an "Environmental Professional", as defined in Section 312.10 of 40 CFR Part 312. Keating Environmental personnel have the specific qualifications based on education, training, and experience to assess a property of nature, history, and setting of the subject site. We have developed and performed all of the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

A written qualifications statement, which includes relevant individual and corporate qualifications, has been provided to Mr. Harbir Singh.

8.0 LIMITATIONS

This report is intended for the exclusive use of Mr. Harbir Singh. This report presents our opinion of the environmental conditions of the aforementioned property, as of this date, based on the data developed during our Phase I Environmental Site Assessment.

It is noted that a Phase I Environmental Site Assessment is a limited evaluation that is often followed by increasingly comprehensive evaluations, if recognized environmental conditions are identified in the Phase I Environmental Site Assessment. These additional evaluations oftentimes require a detailed characterization of underlying soils and groundwater.

The methodologies and procedures utilized in this assessment represent the general standards of practice at this time in the environmental engineering profession.

Pursuant to E1527-05, the following significant data gaps were present during this Phase I Environmental Site Assessment that affected Keating Environmental's ability to identify recognized environmental conditions:

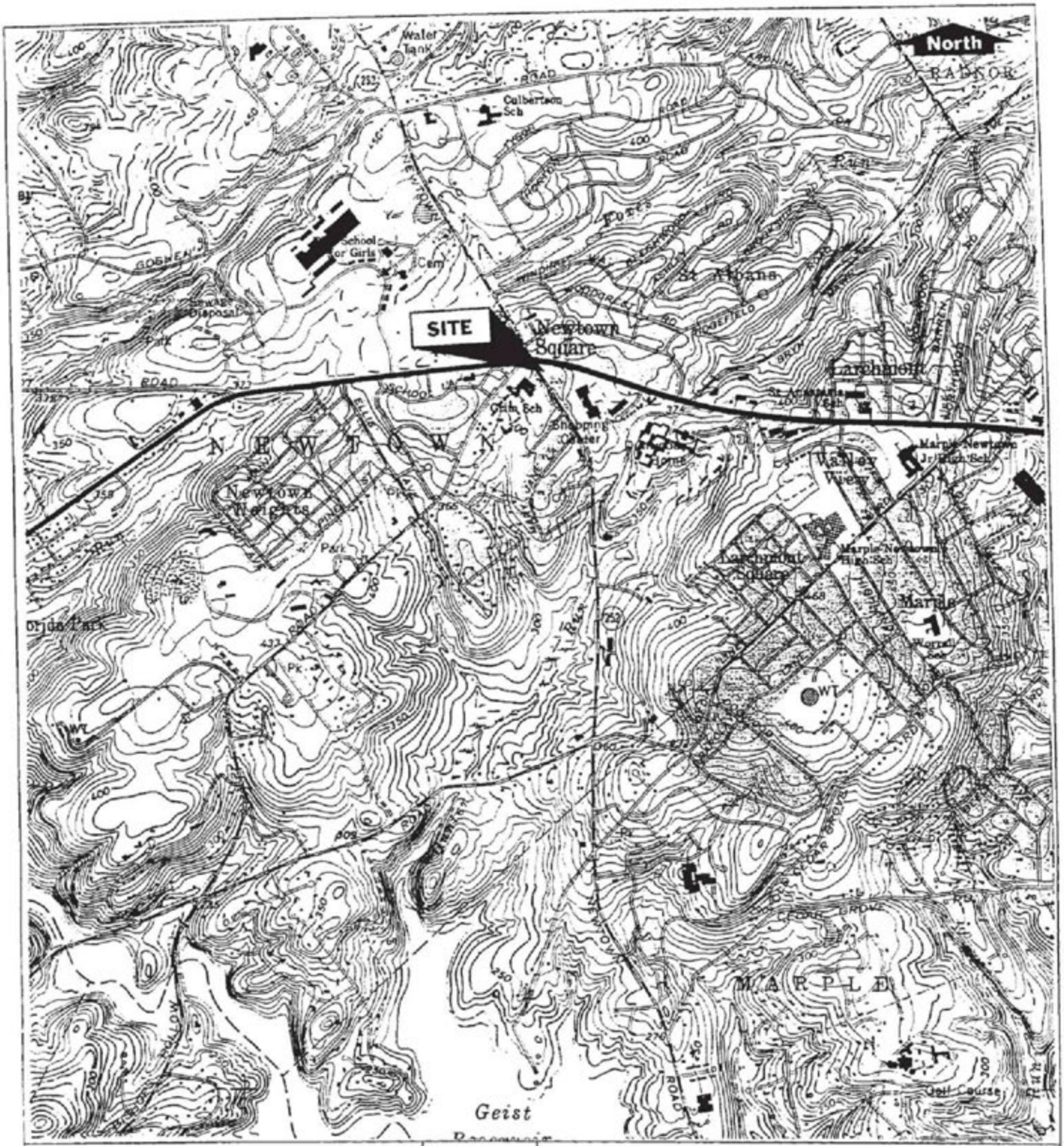
- No "most knowledgeable person(s)" with more than 10 years of knowledge of the subject site were identified to interview for this assessment. However, a local file review was conducted for this site and historical environmental information was obtained for the subject site extending back further than 10 years.
- The roof was not inspected since it was not readily accessible.

A representative of the current site owner was interviewed, to the practical extent possible, in accordance with the requirements of E 1527-05.

Keating Environmental will not be responsible or liable for any penalty, liability, or cost associated with any environmental contamination or condition, whether such contamination or condition existed prior to the date of this report, at the time of this report, or is discovered subsequent to the date of this report. The results of this study may not be relied upon by any parties, other than those described above, without prior written consent of Keating Environmental Management, Inc.

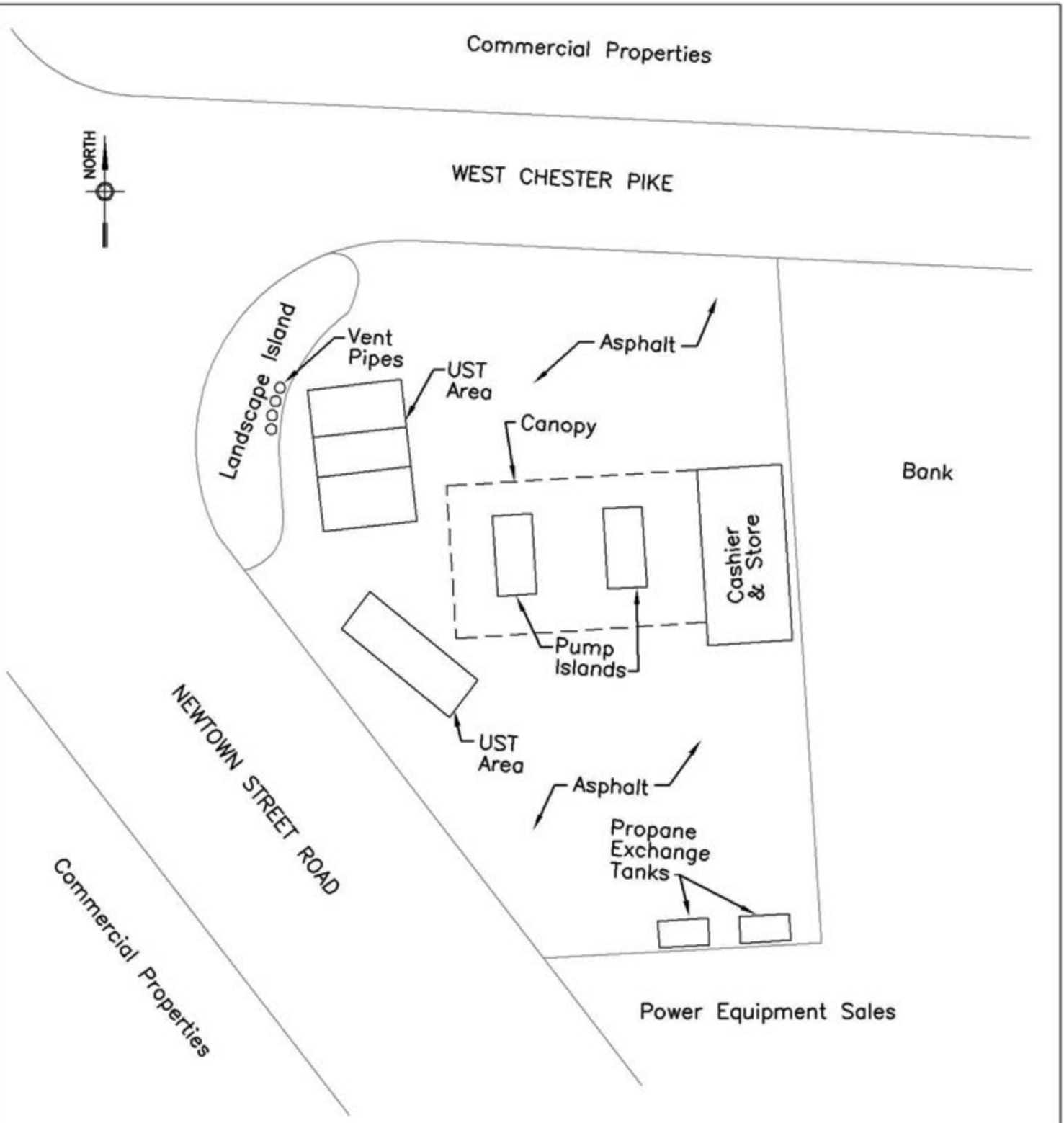
Keating Environmental acknowledges and agrees that this report may be conveyed to the Buyer, Seller or Lender associated with the proximate purchase, sale, or financing of the site, to the extent set forth in our proposal.

FIGURES



THIS FIGURE IS BASED ON
U.S.G.S. 7.5 MINUTE
QUADRANGLE
MEDIA, PA (1966; Revised 1994)
TOPO MAP

Scale: 1" = 2,000'	KEATING
Date: 11/19/2007	Environmental Management, Inc.
Drawn By: PMD	SITE LOCATION MAP 3608 West Chester Pike Newtown Square, Delaware County, Pennsylvania
Checked By: CO	File No. 6866 — Figure 1



Scale: Not to Scale	KEATING
Date: 11/10/2007	Environmental Management, Inc.
Drawn By: PMD & CB	SITE PLAN 3608 West Cester Pike Township of Newtown Delaware County, Pa.
Checked By: CO	File No. 6866 — Figure 2

TABLES

TABLE 1

Summary of Minimum ASTM-Specified State and Federal Environmental Regulatory Databases and Search Radii

State Databases	Search Radius
SHWS Sites	1.0 mile
SWF/LS Sites	0.5 mile
LUST Sites	0.5 mile
UST Sites	Subject property and adjoining properties
VCP Sites	0.5 mile
Brownfield Sites	0.5 mile
Institutional/Engineering Controls	Subject property
Federal Databases	**Search Radii**
NPL Sites	1.0 mile
Delisted NPL Sites	0.5 mile
CERCLIS Sites	0.5 mile
CERCLIS-NFRAP Sites	0.5 mile
RCRIS CORRACTS TSD Facilities	1.0 mile
RCRIS non-CORRACTS TSD Facilities	0.5 mile
RCRIS Generator Facilities	Subject property and adjoining properties
ERNS List	Subject property
Institutional/Engineering Controls	Subject property

File No. 02353

Parcel ID No. 30-00-02861-00

This Indenture, made the 7th day of June, 2002,

Between

3608 WEST CHESTER PIKE REALTY CORP.

(hereinafter called the Grantor), of the one part, and

ALLIED PETROLEUM VENTURES, INC., a Pennsylvania Corp.

(hereinafter called the Grantee), of the other part,

Witnesseth, that the said Grantor for and in consideration of the sum of Six Hundred Ninety Thousand And 00/100 Dollars ($690,000.00) lawful money of the United States of America, unto it well and truly paid by the said Grantee, at or before the sealing and delivery hereof, the receipt whereof is hereby acknowledged, has granted, bargained and sold, released and confirmed, and by these presents does grant, bargain and sell, release and confirm unto the said GranteeSole Owner, his/her personal representatives and assigns its successors and assigns,

ALL THAT CERTAIN lot or piece of ground Situate in the Township of Newtown, County of Delaware and State of Pennsylvania, and being described according to a Map of Property made for Gulf Oil Corporation by Yerkes Engineering Co., Civil Engineers and Surveyors, Bryn Mawr, Pennsylvania, dated the Second day of July A.D. 1958, as follows, to wit:

BEGINNING at the point of intersection of the center line of West Chester Turnpike (One hundred and twenty (120) feet wide) with the Physical Center line of the Newtown Street Road (Sixty (60) feet wide, as shown on said plan); thence extending along the said center line of West Chester Turnpike on the arc of a circle curving to the right having a radius of One thousand Nine hundred and sixteen and Forty-two one-hundredths (1916.42) feet, the arc distance of Two hundred and thirty-seven and Twenty-nine one-hundredths (237.29) feet to a point (the chord of said circle being South Eighty degrees Twenty-five minutes Twenty-three seconds East Two hundred and thirty-seven and Fourteen one-hundredths (237.14) feet); thence leaving the said center line of the West Chester Turnpike and crossing the Southerly side thereof Fifty-three minutes West one hundred and eighty-six and Sixty one-hundredths (186.60) feet to a point; thence extending along lands belonging to Newtown Township, North Seventy-five degrees Fifty-seven minutes Forty-five seconds West, crossing the Easterly side of Newtown Street Road, One hundred and nine and Twenty-seven one-hundredths (109.27) to a point on the aforementioned physical center line of Newtown Street Road; thence extending along the same, North Twenty-three degrees Ten minutes West Two hundred an Eleven One-hundredths (211.11) feet to the first mentioned point and place of beginning.

BEING Parcel No. 30-00-02861-00.

BEING the same premises which Cumberland Farms, Inc. by Deed dated 7/21/1994 and recorded 10/13/1994 in Delaware County in Volume Book 1306 page 626 granted and conveyed unto 3608 West Chester Pike Realty Corporation, in fee.

KEATING Environmental Management, Inc.

APPENDIX A

Aerial Photographs

INQUIRY #: 2073134.4
YEAR: 1971
= 750'
N

INQUIRY #: 2073134.4
YEAR: 1980
= 750'
N

INQUIRY #: 2073134.4
YEAR: 1992
= 750'
N

The EDR Aerial Photo Decade Package

3608 West Chester Pike
3608 West Chester Pike
Newtown Square, PA 19073

Inquiry Number: 2073134.4

November 09, 2007

EDR® Environmental Data Resources Inc

The Standard in Environmental Risk Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

EDR Aerial Photo Decade Package

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Please contact EDR at 1-800-352-0050
with any questions or comments.

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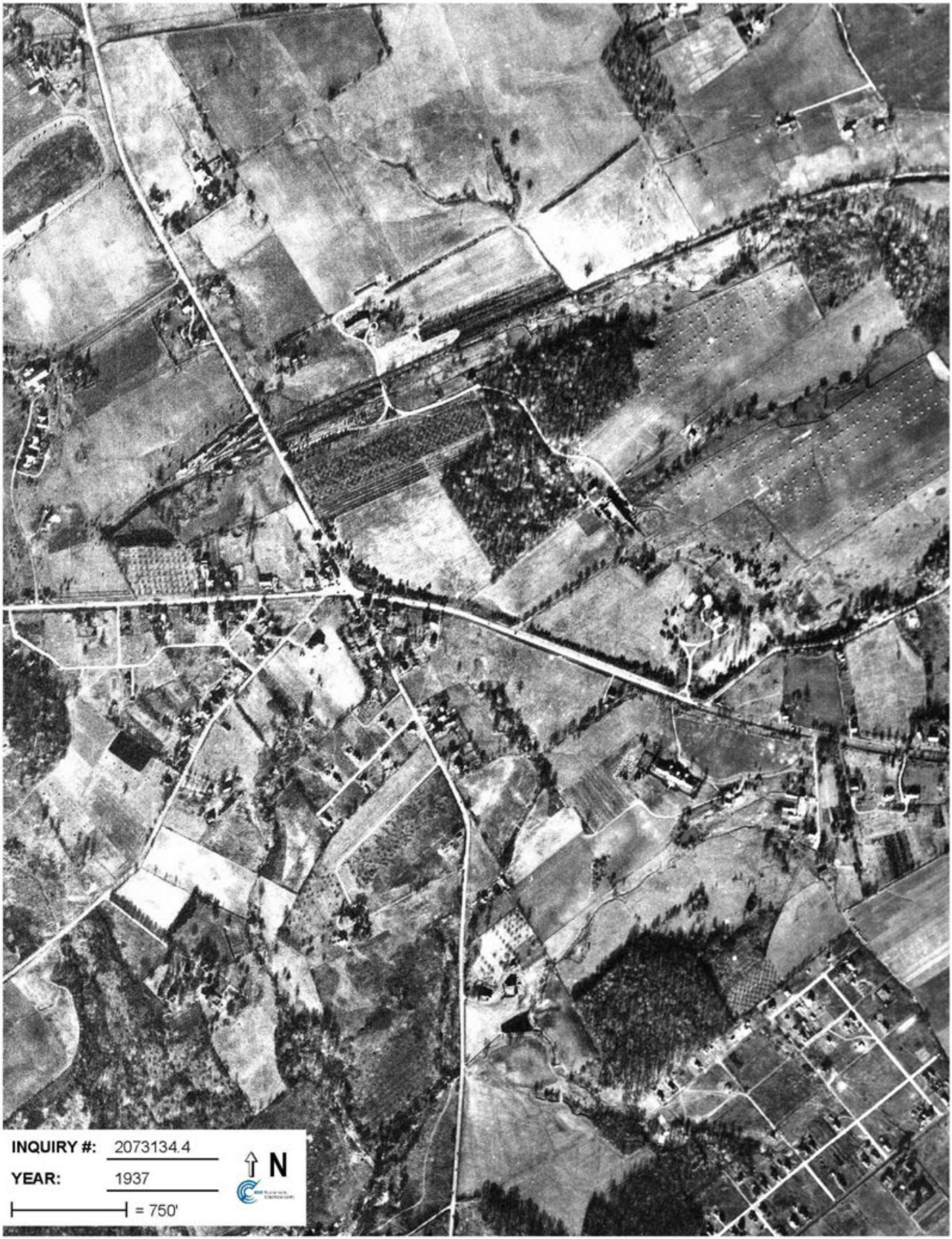
Date EDR Searched Historical Sources:
Aerial Photography November 09, 2007

Target Property:
3608 West Chester Pike
Newtown Square, PA 19073

Year	*Scale*	*Details*	*Source*
1937	Aerial Photograph. Scale: 1"=750'	Panel #: 2439075-H4/Flight Date: December 01, 1937	EDR
1953	Aerial Photograph. Scale: 1"=750'	Panel #: 2439075-H4/Flight Date: March 11, 1953	EDR
1965	Aerial Photograph. Scale: 1"=750'	Panel #: 2439075-H4/Flight Date: April 01, 1965	EDR
1971	Aerial Photograph. Scale: 1"=750'	Panel #: 2439075-H4/Flight Date: July 05, 1971	EDR
1980	Aerial Photograph. Scale: 1"=750'	Panel #: 2439075-H4/Flight Date: May 09, 1980	EDR
1992	Aerial Photograph. Scale: 1"=750'	Panel #: 2439075-H4/Flight Date: March 29, 1992	EDR


INQUIRY #: 2073134.4
YEAR: 1937
= 750'
N

INQUIRY #: 2073134.4
YEAR: 1953
= 750'
N

INQUIRY #: 2073134.4
YEAR: 1965
= 750'
N

KEATING Environmental Management, Inc.

APPENDIX B

Sanborn Fire Insurance Map
(No Coverage Letter)

Certified Sanborn® Map Report

Sanborn® Library search results
Certification # 768A-4183-8A0D

3608 West Chester Pike
3608 West Chester Pike
Newtown Square, PA 19073

Inquiry Number 2073134.3

November 08, 2007

EDR® Environmental Data Resources Inc

The Standard in Environmental Risk Information

440 Wheelers Farms Rd
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

Certified Sanborn® Map Report

11/08/07

Site Name:
3608 West Chester Pike
3608 West Chester Pike
Newtown Square, PA 19073

EDR Inquiry # 2073134.3

Client Name:
Keating Environmental Mgmt.
123 John Robert Thomas Drive
Exton, PA 19341

Contact: Paul M. Davis

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Keating Environmental Mgmt. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: 3608 West Chester Pike
Address: 3608 West Chester Pike
City, State, Zip: Newtown Square, PA 19073
Cross Street:
P.O. # 6866
Project: 3608 West Chest
Certification # 768A-4183-8A0D

Sanborn® Library search results
Certification # 768A-4183-8A0D

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✓ Library of Congress
- ✓ University Publications of America
- ✓ EDR Private Collection

Total Maps: 0

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KEATING Environmental Management, Inc.

APPENDIX C

Title Report

KEATING Environmental Management, Inc.

APPENDIX D

Previous Environmental Studies: UST Integrity Test Report

Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities

SUMMARY OF SOURCE TEST DATA

SOURCE INFORMATION		FACILITY PARAMETERS
GDF Name and address Newtown Sq. BP 3608 West Chester Pike Newtown Sq. Pa. 19073	GDF Representative and Title Ray, Mr. GDF Phone No. 610 359-7321	PHASE II SYSTEM TYPE (Check One) Balance Hirt Red Jacket Hasstech Healy Other Assist
Permit Conditions unknown to tester.	Source: GDF Vapor Recovery System Wayne Vapor Vac GDF # unknown A/C # unknown.	Manifolded? Y or N

Operating Parameters

Number of Nozzles Served by Tank #1 — Number of Nozzles Served by Tank #3

Number of Nozzles Served by Tank #2 — Number of Nozzles Served by Tank #4

Applicable Regulations: CARB and State of Pa — VN Recommended none

Source Test Results and Comments

Tank #:		1	2	3	4
1.	Product Grade	Reg.	Plus	Super	
2.	Actual Tank Capacity, gallons	10,000	10,000	10,000	
3.	Gasoline Volume	4359	2244	3306	
4.	Ullage, gallons (#2-#3) Total 19275	5369	7484	6422	
5.	Initial Pressure, inches H_2O		2.0		
6.	Pressure After 1 Minute, inches H_2O		1.99		
7.	Pressure After 2 Minutes, inches H_2O		1.98		
8.	Pressure After 3 Minutes, inches H_2O		1.97		
9.	Pressure After 4 Minutes, inches H_2O		1.96		
10.	Final Pressure After 5 Minutes, inches H_2O		1.95		
11.	Allowable Final Pressure System passed.		1.95		

Test Conducted by:	Test Company:	Date of Test:
Dennis Berry	Mid-Atlantic Petroleum Services Inc (302) 438-6839	3/22/07

PAGE 02/13
11/15/2007 05:23 6103257760

GDF Name and Address	A/L Field Data Sheet	Testing Firm Name and Address:
Newtown Square BP 3608 West Chester Pike Newtown Square Pa. 19073		Mid-Atlantic Petroleum Services Inc 7-353 Doc Run Court Wilmington, De 19808. Phone No. (302) 438-6839
Test Date/Time: 3/22/07		Test Performed by: Dennis Berry
Pre-Test Leak Check: Initial/Final Pressures, in. H_2O 2.0 / 2.0 **Post-Test Leak Check:** Initial/Final Pressures, in. H_2O 2.0 / 2.0	Source: **GDF Phase II Vapor Recovery** GDF # _____ Permit # _____	VN Recommendation: Y/N unknown. Applicable CARB EO # unknown Allowable A/L Range .90 - 1.10 Wayne Jac

Pump #	Gas Grade	Nozzle Model & Serial #	Initial Totalizer, Gallons	Final Totalizer, Gallons	Gas Pumped, Gallons	Time, Seconds	Dispensing Rate, Gpm	Starting Meter Reading	Ending Meter Reading	A/L
1	Reg	OPW12UW	0	4.50	4.50	35	7.7	0	.58	.96
1	Plus	OPW11VA1	0	4.49	4.49	34	7.9	0	.59	.98
1	Super	CATLOW.	0	4.52	4.52	34	7.9	0	.59	.98
2	Reg	OPW11VA1	0	4.51	4.51	34	7.9	0	.60	1.00
2	Plus	" "	0	4.49	4.49	34	7.9	0	.60	1.00
2	Super	OPW12UW	0	4.48	4.48	33	8.2	0	.59	.98
3	Reg	OPW12UW	0	4.50	4.50	35	7.7	0	.57	.95
3	Plus	OPW11VA1	0	4.52	4.52	34	7.9	0	.57	.95
3	Super	OPW12UW	0	4.53	4.53	34	7.9	0	58	.96
4	Reg	" "	0	4.48	4.49	35	7.7	0	.59	.98
4	Plus	" "	0	4.52	4.52	34	7.9	0	59	.98
4	Super	OPW11VA1	0	4.51	4.51	33	8.2	0	.60	1.00
5	Reg	OPW12UW	0	4.50	4.50	34	7.9	0	.61	1.01
5	Plus	" "	0	4.49	4.49	34	7.9	0	.61	1.01
5	Super	" "	0	4.47	4.47	34	7.9	0	.59	.98

PAGE 03/13

GDF Name and Address	A/L Field Data Sheet	Testing Firm Name and Address:
Newtown Square BP. 3608 West Chester Pike Newtown Square Pa. 19073	Page 2 (continued)	Mid-Atlantic Petroleum Svcs Inc 7-3B Doe Run Court Wilmington, De 19808 Phone No. (302) 938-6839
Test Date/Time: 3/22/07	Source: GDF Phase II Vapor Recovery	Test Performed by:
Pre-Test Leak Check: Initial/Final Pressures, in. H_2O 20 / 20 Post-Test Leak Check: Initial/Final Pressures, in. H_2O 20 / 20	GDF # _____ Permit # _____	VN Recommendation: Y/N _____ Applicable CARB EO # _____ Allowable A/L Range _____

Pump #	Gas Grade	Nozzle Model & Serial #	Initial Totalizer, Gallons	Final Totalizer, Gallons	Gas Pumped, Gallons	Time, Seconds	Dispensing Rate, Gpm	Starting Meter Reading	Ending Meter Reading	A/L
6	Reg	OPW 12VW	0	4.51	4.51	34	7.9	0	.59	.98
6	Plus	CATLOW V34	0	4.50	4.50	33	8.2	0	.59	.98
6	Super	OPW 12VW	0	4.49	4.49	33	8.2	0	.60	1.00
7	Reg	OPW 12VW	0	4.53	4.53	35	7.7	0	.61	1.01
7	Plus	OPW 12VW	0	4.52	4.52	34	7.9	0	.60	1.00
7	Super	" "	0	4.47	4.47	34	7.9	0	.60	1.00
8	Reg	" "	0	4.50	4.50	35	7.7	0	.59	.98
8	Plus	" "	0	4.52	4.52	33	8.2	0	.58	.96
8	Super	" "	0	4.49	4.49	34	7.9	0	.59	.98
		All nozzles passed according to CARB and State								
		Pa. Criteria								

Dennis K. Burns

11/15/2007 05:23 6103257760

PRESSURE VACUUM VALVE

TEST

Date of Test 3/22/07

Location Newtown Square BP 3608 West Chester Pike Newtown

Type of valve 3 - Enco Wheaton A-0084-038 ; Sq. Pa. 19073

Valve settings 3" psi 8" Vacuum.

PRESSURE

Did the valve hold pressure up the the cracking setting? Yes X No____

Did The valve open at the correct cracking setting? Yes X NO____

VACUUM

Did the valve hold vacuum up to the release setting? Yes X No____

Did the valve open at the correct cracking setting? Yes X NO____

Valve Passed? Yes X NO____

PAGE 05/13

Petro Tite Line Tester

1 LOCATION: Newtown Square BP 3608 West Chester Pike Newtown Square Pa
(Street No. and/or Corner / City / State / Telephone No.)

2 OWNER: Allied Petroleum Ventures of Newtown Square
(Name / Address / Representative / Position / Telephone No.)

3 OPERATOR: Mr. Rau
(Name / District, Mgr. or Other / Address (If different than Location) / Telephone No.)

4 REASON FOR TEST: to verify tightness

6 TEST REQUESTED BY: Mr Rau Newtown Square BP.
(Name / Position / Distr No. / Billing Address)

6 SPECIAL INSTRUCTIONS:

7 CONTRACTOR OR COMPANY MAKING TEST MECHANIC(S) NAME: Mid-Atlantic Petroleum Services Inc. Dennis Berry.

8 IS A TANK TEST TO BE MADE WITH THIS LINE TEST? ☐ YES ☒ NO

8 MAKE AND TYPE OF PUMP OR DISPENSERS: Wayne + Red Jacket STP

10 WEATHER: Partly cldy TEMPERATURE IN TANKS ____ °F ____ °C

COVER OVER LINES: concrete (Concrete, Blacktop, etc.)

APPROXIMATE BURIAL DEPTH:

OWNER: Name: Penn Warren; Site: 3; Day: 22; Date of Test: Year 07, Mo. 3

LOCATION: City: Newtown Sq.; State: BP

11 IDENTIFY EACH LINE AS TESTED	12 TIME (MILITARY)	13 LOG OF TEST PROCEDURES, AMBIENT TEMPERATURE, WEATHER, ETC.	14 PRESSURE psi OR kPa BEFORE	14 PRESSURE psi OR kPa AFTER	15 VOLUME READING BEFORE	15 VOLUME READING AFTER	15 VOLUME NET CHANGE	16 TEST RESULTS CONCLUSIONS, REPAIRS AND COMMENTS
Regular	958	Bleedback test	50	0	.041	.080	+.039	Used at STP closed
	1000	Start Line test		50				
	1015	Continue Line test	46	50	.0410	.0380	-.0030	
	1030	" "	47	50	.0380	.0355	-.0025	
	1045	" "	48	50	.0355	.0335	-.0020	-.0090
	11:00	" "	49	50	.0335	.0320	-.0015	
		Bleedback test.	50	0	.032	.066	+.034	

Line tested tight according to NFPA and State of Pa. criteria

Glenn R. Berry

11/15/2007 05:23 6103257760

DATA SHEET

For Use With

Petro Tite (1st Rev.)

1 LOCATION: Newtown Square BP — Street No. and/or Corner: 3608 West Chester Pike — City: Newtown Square — State: Pa. — Telephone No.:

2 OWNER: Allied Petroleum Ventures of Newtown Square — Name / Address / Representative / Position / Telephone No.:

3 OPERATOR: Mr. Rau — Name / Dealer, Mgr. or Other / Address (If different than Location) / Telephone No.:

4 REASON FOR TEST: to verify tightness

5 TEST REQUESTED BY: Mr. Rau — Name: Newtown Square BP. — Position / Order No. / Billing Address

6 SPECIAL INSTRUCTIONS:

7 CONTRACTOR OR COMPANY MAKING TEST MECHANIC(S) NAME: Mid-Atlantic Petroleum Services Inc. Dennis Berry.

8 IS A TANK TEST TO BE MADE WITH THIS LINE TEST? ☐ YES ☒ NO

8 MAKE AND TYPE OF PUMP OR DISPENSERS: Wayne + Red Jacket STP

10 WEATHER: Partly Cloudy — TEMPERATURE IN TANKS ____ °F ____ °C — COVER OVER LINES: Concrete (Concrete, Black Top, etc.) — APPROXIMATE BURIAL DEPTH

OWNER: Name: Pennsylvania — City: Newtown Sq. — State LOCATION: BP

DATE OF TEST: Year 07 — Mo. 3 — Day 22

11 IDENTIFY EACH LINE AS TESTED	12 TIME (MILITARY)	13 LOG OF TEST PROCEDURES, AMBIENT TEMPERATURE, WEATHER, ETC.	14 PRESSURE psi OR kPa BEFORE	14 PRESSURE psi OR kPa AFTER	15 VOLUME READING BEFORE	15 VOLUME READING AFTER	15 VOLUME NET CHANGE	16 TEST RESULTS CONCLUSIONS, REPAIRS AND COMMENTS
Plus.	1004	Bleedback test	50	0	.035	.067	+.032	Valve at STP closed
	1005	Start Line test		50				
	1020	Continue Line test	47	50	.0350	.0325	−.0025	
	1035	" "	47	50	.0325	.0300	−.0025	
	1050	" "	48	50	.0300	.0280	−.0020	−.00856PH
	1105	" "	49	50	.0280	.0265	−.0015	
	1106	Bleedback test.	50	0	.026	.056	+.030	Line tested tight according to NFPA and State of Pa. criteria Klein R. Berry

11/15/2007 05:23 6103257760 PAGE 06/13

DATA SHEET
For Use With
petro tite
TANK TESTS

1 LOCATION: Newtown Square BP — Street No. and/or Corner: 3608 — City: West Chester Pike — State: Newtown Square — Telephone No.: Pa.

2 OWNER: Allied Petroleum Ventures of Newtown Square — Name / Address / Representative / Position / Telephone No.

3 OPERATOR: Mr. Rau — Name / Dealer, Mgr. or Other / Address (if different than Location) / Telephone No.

4 REASON FOR TEST: to verify tightness

5 TEST REQUESTED BY: Mr Rau — Name: Newtown Square BP. — Position / Order No. / Billing Address

6 SPECIAL INSTRUCTIONS:

7 CONTRACTOR OR COMPANY MAKING TEST MECHANIC(S) NAME: Mid-Atlantic Petroleum Services Inc. Dennis Berry.

8 IS A TANK TEST TO BE MADE WITH THIS LINE TEST? ☐ YES ☒ NO

8 MAKE AND TYPE OF PUMP OR DISPENSERS: Wayne + Red Jacket STP

10 WEATHER: Pt cldy — TEMPERATURE IN TANKS ____ °F ____ °C — COVER OVER LINES: concrete (Concrete, Black Top, etc.) — APPROXIMATE BURIAL DEPTH

OWNER: Name: Pennsy Water — Site No.: 3 — City: Newtown Sq. — State: Pa. — LOCATION: BP

DATE OF TEST: Year 07 — Mo. 3 — Day 22

11 IDENTIFY EACH LINE AS TESTED	12 TIME (MILITARY)	13 LOG OF TEST PROCEDURES, AMBIENT TEMPERATURE, WEATHER, ETC.	14 PRESSURE psi OR kPa BEFORE	14 PRESSURE psi OR kPa AFTER	15 VOLUME READING BEFORE	15 VOLUME READING AFTER	15 VOLUME NET CHANGE	16 TEST RESULTS CONCLUSIONS, REPAIRS AND COMMENTS
Super	1008	Bleedback test	50	0	.041	.076	+.035	Valve at STP closed
	1010	Start Line test		50				
	1025	Continue Line test	47	50	.0410	.0385	-.0025	
	1040	" "	48	50	.0385	.0365	-.0020	
	1055	" "	48	50	.0365	.0345	-.0020	-.0080 GPH
	1110	" "	49	50	.0345	.0330	-.0015	
	1111	Bleedback test.	50	0	.033	.064	+.031	

Line tested tight according to NFPA and State of Pa. criteria
Alan R. Berry

11/15/2007 05:23 6103257760 PAGE 07/13

DATA CHART
For Use W[illegible]

petro tite

1 LOCATION: Newtown Square BP 3608 West Chester Pike Newtown Square Pa.
(Street No. and/or Corner / City / State / Telephone No.)

2 OWNER: Allied Petroleum Ventures of Newtown Square
(Name / Address / Representative / Position / Telephone No.)

3 OPERATOR: Mr. Rau
(Name / Owner, Mgr. or Other / Address (if different than Location) / Telephone No.)

4 REASON FOR TEST: to verify tightness

5 TEST REQUESTED BY: Mr. Rau Newtown Square BP.
(Name / Position / Order No. / Billing Address)

6 SPECIAL INSTRUCTIONS:

7 CONTRACTOR OR COMPANY MAKING TEST MECHANIC(S) NAME: Mid-Atlantic Petroleum Services Inc. Dennis Berry.

8 IS A TANK TEST TO BE MADE WITH THIS LINE TEST? ☐ YES ☒ NO

8 MAKE AND TYPE OF PUMP OR DISPENSERS: Wayne + Red Jacket STP

10 WEATHER: Partly cloudy TEMPERATURE IN TANKS ____ °F ____ °C

COVER OVER LINES: concrete (Concrete, Black Top, etc.) APPROXIMATE BURIAL DEPTH

DATE OF TEST: Year 07 Mo. 3 Day 22

OWNER: Name Pennsylvania

LOCATION: Spec. City Newtown Sq. State BP

11 IDENTIFY EACH LINE AS TESTED	12 TIME (MILITARY)	13 LOG OF TEST PROCEDURES, AMBIENT TEMPERATURE, WEATHER, ETC.	14 PRESSURE psi OR kPa BEFORE	14 PRESSURE psi OR kPa AFTER	15 VOLUME READING BEFORE	15 VOLUME READING AFTER	15 VOLUME NET CHANGE	16 TEST RESULTS CONCLUSIONS, REPAIRS AND COMMENTS
Diesel	1143	Bleedback test	50	0	.029	056	+027	Valve at STP closed
	1145	Start line test		50				
	1200	Continue line test	46	50	.0290	.0260	-.0030	
	1215	" "	47	50	.0260	.0235	-.0025	
	1230	" "	48	50	.0235	.0215	-.0020	
	1245	" "	49	50	.0215	.0200	-.0015	
	1246	Bleedback test.	50	0	.020	.044	+.024	

-.0090 GPH

Line tested tight according to NFPA and State of Pa. criteria

Alain R. Berry

11/15/2007 05:23 6103257760 PAGE 08/13

LDT 880 - LEAK DETECTOR CHECKLIST

CONTRACTOR: Mid-Atlantic Petroleum Services Inc.	CUSTOMER: Mr. Rau
DATE: 3/22/07	PRODUCT: Regular
TECHNICIAN: Dennis Berry	LOCATION: Newtown Square BP 3608 West Chester Pike Newtown Square Pa. 19073

LOCATION: Newtown Square BP

I SUBMERSIBLE PUMP IDENTIFICATION

CHECK MFG.
INDICATE MODEL NO. IF KNOWN

RECORD SERIAL #

RED JACKET	TOKHEIM	GILBARCO	BENNETT	ORESSER WAYNE	A.O. SMITH	BOWSER KEENE	SOUTH WEST	OTHER
X								

II LEAK DETECTOR IDENTIFICATION

CHECK TYPE

RED JACKET MODEL 116-030 PLD-2SEC HEX HEAD	RED JACKET MODEL 116-017 OLD 2SEC HEX HEAD	RED JACKET MODEL 116-011A OLD 5SEC ROUND HEAD	TOKHEIM MODEL 58SPM OLD 2SEC SQUARE HEAD	OTHER Vapor Mfg
				X

PRE-TEST CONDITIONS
VOLUME OF PRODUCT FLUSHED THRU LINE 0 GALLONS

OTHER COMMENTS _____

TEST PROCEDURE

LEAK DETECTOR INSTALLED TEST AT DISPENSER

III GENERAL LINE AND PUMP INFORMATION

RECORD OPERATING PUMP PRESSURE 27 psig.
AIR-VAPOR TEST WITH PUMP OFF MEASURE AND RECORD .039 cfh

IV PRESSURE STEP TEST

WITH BOTTOM SELECTOR IN PRESSURE STEP TEST POSITION TURN ON PUMP
RECORD TIME IN SECONDS GUAGE NEEDLE REMAINS IN COLORED ZONE 2 SEC.

V 3 GALLON PER HOUR LEAK SIMULATED TEST

WITH BOTTOM SELECTOR IN 3 GPH TEST POSITION
A) MEASURE AND RECORD VOLUME IN CALIBRATED BEAKER FOR 60 SECOND TEST 1½ qt mls
B) OPEN DISPENSER NOZZLE OR PLACE BOTTOM SELECTOR IN DISPENSER NOZZLE POSITION. FLOW RATE OF APPROX. 1½-3GAL PER MINUTE WILL BE OBSERVED.
DOES GUAGE NEEDLE MOVE TO LOWER END OF COLORED ZONE YES X NO ____
DOES FLOW RATE INCREASE TO APPROX. 1½-3GAL PER MINUTE YES X NO ____
C) CLOSE DISPENSER NOZZLE OR PLACE BOTTOM SELECTOR IN 3GPH TEST POSITION:
GUAGE RETURN TO COLORED ZONE YES X NO ____
GUAGE DOES NOT RETURN TO COLORED ZONE YES ____ NO X
GAUGE GOES TO OPERATING PRESSURE YES X NO ____

LEAK DETECTOR TEST — PASS X — FAIL ____

LEAK DETECTOR ISOLATED FROM PRODUCT LINE - TEST AT PUMP PIT

REFER TO LDT INSTRUCTIONS

III GENERAL PUMP INFORMATION

FLUSH LDT TESTOR
RECORD OPERATING PUMP PRESSURE _____ psig.

IV PRESSURE STEP TEST - SUBMERSIBLE PUMP REMAINS ON THRU-OUT TEST PROCEDURE

WITH BOTTOM SELECTOR IN PRESSURE STEP TEST POSITION ROTATE ISOLATOR FULLY (CC/W)
RECORD TIME IN SECONDS GUAGE NEEDLE REMAINS IN COLORED ZONE _____ SEC.

V 3 GALLON PER HOUR LEAK SIMULATED TEST

WITH BOTTOM SELECTOR IN 3 GPH TEST POSITION
A) MEASURE AND RECORD VOLUME IN CALIBRATED BEAKER FOR 60 SECOND TEST _____ ML
B) PLACE BOTTOM SELECTOR IN DISPENSER NOZZLE POSITION. FLOW RATE OF APPROX. 1½-3GAL PER MINUTE WILL BE OBSERVED.
DOES GUAGE NEEDLE MOVE TO LOWER END OF COLORED ZONE YES ____ NO ____
DOES FLOW RATE INCREASE TO APPROX. 1½-3GAL PER MINUTE YES ____ NO ____
C) PLACE BOTTOM SELECTOR IN 3GPH TEST POSITION:
GUAGE RETURN TO COLORED ZONE YES ____ NO ____
GUAGE DOES NOT RETURN TO COLORED ZONE YES ____ NO ____
GAUGE GOES TO OPERATING PRESSURE YES ____ NO ____

LEAK DETECTOR TEST — PASS ____ — FAIL ____

LDT 880 - LEAK DETECTOR CHECKLIST

CONTRACTOR: Mid-Atlantic Petroleum Services Inc.	CUSTOMER: Mr. Rau
DATE: 3/22/07	PRODUCT: Plus.
TECHNICIAN: Dennis Berry.	LOCATION: Newtown Square BP 3608 West Chester Pike Newtown Square Pa. 19073

LOCATION Newtown Square BP

I SUBMERSIBLE PUMP IDENTIFICATION

CHECK MFG.
INDICATE MODEL NO. IF KNOWN

RECORD SERIAL #

RED JACKET	TOKHEIM	GILBARCO	BENNETT	DRESSER WAYNE	A.O. SMITH	BOWSER KEENE	SOUTH WEST	OTHER
X								

II LEAK DETECTOR IDENTIFICATION

CHECK TYPE

RED JACKET MODEL 116-030 PLD-2SEC HEX HEAD	RED JACKET MODEL 116-017 OLD 2SEC HEX HEAD	RED JACKET MODEL 116-011A OLD 5SEC ROUND HEAD	TOKHEIM MODEL 585PM OLD 2SEC SQUARE HEAD	OTHER FX-1V
				X

PRE-TEST CONDITIONS
VOLUME OF PRODUCT FLUSHED THRU LINE 2 GALLONS

OTHER COMMENTS _____

TEST PROCEDURE

LEAK DETECTOR INSTALLED
TEST AT DISPENSER

III GENERAL LINE AND PUMP INFORMATION

RECORD OPERATING PUMP PRESSURE 27 psig.
AIR-VAPOR TEST WITH PUMP OFF MEASURE AND RECORD .032 mls

IV PRESSURE STEP TEST

WITH BOTTOM SELECTOR IN PRESSURE STEP TEST POSITION TURN ON PUMP
RECORD TIME IN SECONDS GUAGE NEEDLE REMAINS IN COLORED ZONE 2 SEC.

V 3 GALLON PER HOUR LEAK SIMULATED TEST

WITH BOTTOM SELECTOR IN 3 GPH TEST POSITION

A) MEASURE AND RECORD VOLUME IN CALIBRATED BEAKER FOR 60 SECOND TEST 1 1/2 mls

B) OPEN DISPENSER NOZZLE OR PLACE BOTTOM SELECTOR IN DISPENSER NOZZLE POSITION. FLOW RATE OF APPROX. 1 1/2-3GAL PER MINUTE WILL BE OBSERVED.
DOES GUAGE NEEDLE MOVE TO LOWER END OF COLORED ZONE YES X NO ____
DOES FLOW RATE INCREASE TO APPROX. 1 1/2-3GAL PER MINUTE YES X NO ____

C) CLOSE DISPENSER NOZZLE OR PLACE BOTTOM SELECTOR IN 3GPH TEST POSITION:
GUAGE RETURN TO COLORED ZONE YES X NO ____
GUAGE DOES NOT RETURN TO COLORED ZONE YES ____ NO X
GAUGE GOES TO OPERATING PRESSURE YES X NO ____

LEAK DETECTOR TEST PASS X FAIL ____

LEAK DETECTOR ISOLATED
FROM PRODUCT LINE - TEST AT PUMP PIT
REFER TO LDT INSTRUCTIONS

III GENERAL PUMP INFORMATION

FLUSH LDT TESTOR
RECORD OPERATING PUMP PRESSURE _____ psig.

IV PRESSURE STEP TEST - SUBMERSIBLE PUMP REMAINS ON THRU-OUT TEST PROCEDURE

WITH BOTTOM SELECTOR IN PRESSURE STEP TEST POSITION ROTATE ISOLATOR FULLY (CCW)
RECORD TIME IN SECONDS GUAGE NEEDLE REMAINS IN COLORED ZONE _____ SEC.

V 3 GALLON PER HOUR LEAK SIMULATED TEST

WITH BOTTOM SELECTOR IN 3 GPH TEST POSITION

A) MEASURE AND RECORD VOLUME IN CALIBRATED BEAKER FOR 60 SECOND TEST _____ ML

B) PLACE BOTTOM SELECTOR IN DISPENSER NOZZLE POSITION. FLOW RATE OF APPROX. 1 1/2-3GAL PER MINUTE WILL BE OBSERVED.
DOES GUAGE NEEDLE MOVE TO LOWER END OF COLORED ZONE YES ____ NO ____
DOES FLOW RATE INCREASE TO APPROX. 1 1/2-3GAL PER MINUTE YES ____ NO ____

C) PLACE BOTTOM SELECTOR IN 3GPH TEST POSITION:
GUAGE RETURN TO COLORED ZONE YES ____ NO ____
GUAGE DOES NOT RETURN TO COLORED ZONE YES ____ NO ____
GAUGE GOES TO OPERATING PRESSURE YES ____ NO ____

LEAK DETECTOR TEST PASS ____ FAIL ____

LDT 880 - LEAK DETECTOR CHECKLIST

CONTRACTOR: Mid - Atlantic Petroleum Services Inc.		CUSTOMER: Mr. Rau
DATE: 3/22/07	PRODUCT: Super	LOCATION: Newtown Square BP 3608 West Chester Pike Newtown Square Pa. 19073
TECHNICIAN: Dennis Berry		

LOCATION: Newtown Square BP

I SUBMERSIBLE PUMP IDENTIFICATION

CHECK MFG. INDICATE MODEL NO. IF KNOWN — RECORD SERIAL #

RED JACKET	TOKHEIM	GILBARCO	BENNETT	DRESSER WAYNE	A.O. SMITH	BOWSER KEENE	SOUTH WEST	OTHER
X								

II LEAK DETECTOR IDENTIFICATION

CHECK TYPE

RED JACKET MODEL 116-030 PLD-2SEC HEX HEAD	RED JACKET MODEL 116-017 OLD 2SEC HEX HEAD	RED JACKET MODEL 116-011A OLD 5SEC ROUND HEAD	TOKHEIM MODEL 585PM OLD 2SEC SQUARE HEAD	OTHER Vapor only
				X

PRE-TEST CONDITIONS
VOLUME OF PRODUCT FLUSHED THRU LINE 0 GALLONS

OTHER COMMENTS _____

TEST PROCEDURE

LEAK DETECTOR INSTALLED TEST AT DISPENSER

III GENERAL LINE AND PUMP INFORMATION

RECORD OPERATING PUMP PRESSURE 29 psig.
AIR-VAPOR TEST WITH PUMP OFF MEASURE AND RECORD 055 mls

IV PRESSURE STEP TEST

WITH BOTTOM SELECTOR IN PRESSURE STEP TEST POSITION TURN ON PUMP
RECORD TIME IN SECONDS GUAGE NEEDLE REMAINS IN COLORED ZONE 2 SEC.

V 3 GALLON PER HOUR LEAK SIMULATED TEST

WITH BOTTOM SELECTOR IN 3 GPH TEST POSITION

A) MEASURE AND RECORD VOLUME IN CALIBRATED BEAKER FOR 60 SECOND TEST 14 1/2 mls

B) OPEN DISPENSER NOZZLE OR PLACE BOTTOM SELECTOR IN DISPENSER NOZZLE POSITION. FLOW RATE OF APPROX. 1 1/2-3GAL PER MINUTE WILL BE OBSERVED.
DOES GUAGE NEEDLE MOVE TO LOWER END OF COLORED ZONE YES X NO ____
DOES FLOW RATE INCREASE TO APPROX. 1 1/2-3GAL PER MINUTE YES X NO ____

C) CLOSE DISPENSER NOZZLE OR PLACE BOTTOM SELECTOR IN 3GPH TEST POSITION:
GUAGE RETURN TO COLORED ZONE YES X NO ____
GUAGE DOES NOT RETURN TO COLORED ZONE YES ____ NO X
GAUGE GOES TO OPERATING PRESSURE YES X NO ____

LEAK DETECTOR TEST — PASS X / FAIL ____

LEAK DETECTOR ISOLATED FROM PRODUCT LINE - TEST AT PUMP PIT

REFER TO LDT INSTRUCTIONS

III GENERAL PUMP INFORMATION

FLUSH LDT TESTOR
RECORD OPERATING PUMP PRESSURE _____ psig.

IV PRESSURE STEP TEST - SUBMERSIBLE PUMP REMAINS ON THRU-OUT TEST PROCEDURE

WITH BOTTOM SELECTOR IN PRESSURE STEP TEST POSITION ROTATE ISOLATOR FULLY (CC/W)
RECORD TIME IN SECONDS GUAGE NEEDLE REMAINS IN COLORED ZONE _____ SEC.

V 3 GALLON PER HOUR LEAK SIMULATED TEST

WITH BOTTOM SELECTOR IN 3 GPH TEST POSITION

A) MEASURE AND RECORD VOLUME IN CALIBRATED BEAKER FOR 60 SECOND TEST _____ ML

B) PLACE BOTTOM SELECTOR IN DISPENSER NOZZLE POSITION. FLOW RATE OF APPROX. 1 1/2-3GAL PER MINUTE WILL BE OBSERVED.
DOES GUAGE NEEDLE MOVE TO LOWER END OF COLORED ZONE YES ____ NO ____
DOES FLOW RATE INCREASE TO APPROX. 1 1/2-3GAL PER MINUTE YES ____ NO ____

C) PLACE BOTTOM SELECTOR IN 3GPH TEST POSITION:
GUAGE RETURN TO COLORED ZONE YES ____ NO ____
GUAGE DOES NOT RETURN TO COLORED ZONE YES ____ NO ____
GAUGE GOES TO OPERATING PRESSURE YES ____ NO ____

LEAK DETECTOR TEST — PASS ____ / FAIL ____

11/15/2007 05:23 6103257760

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KEATING Environmental Management, Inc.

APPENDIX E

e.F.A.C.T.S Database Information

Site List Search Results

Search Results

Site Name (Site ID)	Status	Programs	Site Details
NEWTOWN SQUARE AMOCO (Site ID: 573044) 3608 WEST CHESTER PIKE NEWTOWN SQUARE, PA 19073 Newtown Township, Delaware County South East Region Client: View Client List	Active	• LAND RECYCLING & WASTE MANAGEMENT	• View Inspections • View Permits

Search Again

Print Page | Close Page

Permit List for NEWTOWN SQUARE AMOCO - 573044

Search Results

Facility Permits

Permit Details	Sub Facilities
Authorization Id: **487037** Permit Number: 23-09154 Authorization Type: Storage Tank Registration/Permitting Application Type: New Date Received: 12/16/2002 Status: Issued on 12/23/2002.	• Storage Tank - 001 (Sub Facility ID: 637989) • Storage Tank - 002 (Sub Facility ID: 637990) • Storage Tank - 003 (Sub Facility ID: 637991) • Storage Tank - 004 (Sub Facility ID: 637992)
Authorization Id: **420061** Permit Number: 23-09154 Authorization Type: Storage Tank Registration/Permitting Application Type: New Date Received: 9/1/1994 Status: Issued on 9/1/1994.	• Storage Tank - 001 (Sub Facility ID: 637989) • Storage Tank - 002 (Sub Facility ID: 637990) • Storage Tank - 003 (Sub Facility ID: 637991) • Storage Tank - 004 (Sub Facility ID: 637992)

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Pennsylvania's Environment Facility Application Compliance Tracking System

Inspection List for NEWTOWN SQUARE AMOCO - 573044

Search Results

Facility Inspections

NEWTOWN SQUARE AMOCO (Facility ID: 590860)
Program: Land Recycling & Waste Management

Inspection Date	Inspection ID	Inspection Type	Inspection Result
8/10/2006	1555923	Stage II Gasoline Vapor Recovery Equip	No Violation
7/21/2006	1551419	Stage II Gasoline Vapor Recovery Equip	Violation
7/7/2006	1548019	Stage II Gasoline Vapor Recovery Equip	Violation
3/20/2006	1534389	Facility Operations Inspection	Violation
11/17/2004	1395603	Follow-up Inspection	No Violation
3/29/2004	1322138	Follow-up Inspection	Violation
3/25/2004	1328908	Facility Operations Inspection	Violation
3/24/2004	1321026	Compliance Evaluation	Violation
10/15/2003	1278190	Stage II Gasoline Vapor Recovery Equip	No Violation
9/10/2003	1278184	Stage II Gasoline Vapor Recovery Equip	Violation
11/21/2000	1135065	Facility Operations Inspection	No Violation
11/9/1996	1135064	Facility Operations Inspection	No Violation

View Printer Friendly Version

Date Last Updated: 11/16/2007

Violation Details for Inspection Id: 1551419

Search Results

Facility: NEWTOWN SQUARE AMOCO
Program: WM Storage Tanks

Violation Id	Date	Violation Description
493908	7/21/2006	Standards for Sources, Mobile Sources, Control of VOCs from gasoline dispensing facilities (Stage II). Failure to comply with the requirements for properly transferring gasoline from storage tanks into motor vehicle fuel tanks in specific counties.
		Resolution: Corrected/Abated on Thursday, August 10, 2006.
		PA Code Legal Citation: 25 Pa Code 129.82 : PA Code Website
		Violation Type: N/A
		Related Enforcements
		Enforcement Id: 210523 Enforcement Type: Notice of Violation Date Executed: 7/26/2006 Taken Against: ALLIED PETRO VENTURES INC On Appeal? N Enforcement Status: Penalty Final Date: Penalty Amount Assessed: Total Amount Due: Total Amount Collected: Penalty Status: Other Violation Ids Addressed by this enforcement and penalty action: 493021 , 493908

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Violation Details for Inspection Id: 1548019

Search Results

Facility: NEWTOWN SQUARE AMOCO
Program: WM Storage Tanks

Violation Id	Date	Violation Description
493021	7/7/2006	Standards for Sources, Mobile Sources, Control of VOCs from gasoline dispensing facilities (Stage II). Failure to comply with the requirements for properly transferring gasoline from storage tanks into motor vehicle fuel tanks in specific counties.
		Resolution: Corrected/Abated on Thursday, August 10, 2006.
		PA Code Legal Citation: 25 Pa Code 129.82 : PA Code Website
		Violation Type: N/A
		Related Enforcements
		Enforcement Id: 210523 Enforcement Type: Notice of Violation Date Executed: 7/26/2006 Taken Against: ALLIED PETRO VENTURES INC On Appeal? N Enforcement Status: Penalty Final Date: Penalty Amount Assessed: Total Amount Due: Total Amount Collected: Penalty Status: Other Violation Ids Addressed by this enforcement and penalty action: 493021 , 493908

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Violation Details for Inspection Id: 1534389

Search Results

Facility: NEWTOWN SQUARE AMOCO
Program: WM Storage Tanks

Violation Id	Date	Violation Description
489001	3/20/2006	Failure to comply with underground storage tank system release detection requirements
		Resolution: Corrected/Abated on Thursday, July 27, 2006.
		PA Code Legal Citation: 25 Pa. Code 245.441, 245.442, 245.443, 245.444, 245.445, 245.446 : PA Code Website
		Violation Type: N/A
		Related Enforcements
		Enforcement Id: 208546 Enforcement Type: Notice of Violation Date Executed: 5/31/2006 Taken Against: ALLIED PETRO VENTURES INC On Appeal? N Enforcement Status: Penalty Final Date: Penalty Amount Assessed: Total Amount Due: Total Amount Collected: Penalty Status: Other Violation Ids Addressed by this enforcement and penalty action: 489001
		Enforcement Id: 210665 Enforcement Type: Notice of Violation Date Executed: 7/28/2006 Taken Against: ALLIED PETRO VENTURES INC On Appeal? N Enforcement Status: Penalty Final Date: Penalty Amount Assessed: Total Amount Due: Total Amount Collected: Penalty Status: Other Violation Ids Addressed by this enforcement and penalty action: 488999 , 489000 , 489001

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Violation Details for Inspection Id: 1322138

Search Results

Facility: NEWTOWN SQUARE AMOCO
Program: WM Storage Tanks

Violation Id	Date	Violation Description
388530	3/29/2004	Failure to comply with underground storage tank system release detection requirements
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.441, 245.442, 245.443, 245.444, 245.445, 245.446 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388532	3/29/2004	Failure to comply with underground storage tank system reporting and record keeping requirements
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.435 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data

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Violation Details for Inspection Id: 1328908

Search Results

Facility: NEWTOWN SQUARE AMOCO
Program: WM Storage Tanks

Violation Id	Date	Violation Description
392098	3/25/2004	Failure to comply with underground storage tank system reporting and record keeping requirements
		Resolution: Corrected/Abated on Wednesday, November 17, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.435 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
392099	3/25/2004	Failure to comply with underground storage tank system reporting and record keeping requirements
		Resolution: Corrected/Abated on Wednesday, November 17, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.435 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
392100	3/25/2004	Failure to comply with underground storage tank system reporting and record keeping requirements
		Resolution: Corrected/Abated on Wednesday, November 17, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.435 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
392101	3/25/2004	Failure to comply with underground storage tank system reporting and record keeping requirements
		Resolution: Corrected/Abated on Wednesday, November 17, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.435 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
392102	3/25/2004	Failure to comply with underground storage tank system release detection requirements
		Resolution: Corrected/Abated on Wednesday, November 17, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.441, 245.442, 245.443, 245.444, 245.445, 245.446 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**

392103	3/25/2004	Failure to comply with underground storage tank system release detection requirements
		Resolution: Corrected/Abated on Wednesday, November 17, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.441, 245.442, 245.443, 245.444, 245.445, 245.446 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
392104	3/25/2004	Failure to comply with underground storage tank system release detection requirements
		Resolution: Corrected/Abated on Wednesday, November 17, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.441, 245.442, 245.443, 245.444, 245.445, 245.446 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
392105	3/25/2004	Failure to comply with underground storage tank system release detection requirements
		Resolution: Corrected/Abated on Wednesday, November 17, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.441, 245.442, 245.443, 245.444, 245.445, 245.446 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data

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Violation Details for Inspection Id: 1321026

Search Results

Facility: NEWTOWN SQUARE AMOCO
Program: WM Storage Tanks

Violation Id	Date	Violation Description
388001	3/24/2004	UST Registration Violation(s)
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 35 PS 6021.503, 25 Pa. Code 245.423, 245.452(e) : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388002	3/24/2004	UST Registration Violation(s)
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 35 PS 6021.503, 25 Pa. Code 245.423, 245.452(e) : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388003	3/24/2004	UST Registration Violation(s)
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 35 PS 6021.503, 25 Pa. Code 245.423, 245.452(e) : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388004	3/24/2004	UST Registration Violation(s)
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 35 PS 6021.503, 25 Pa. Code 245.423, 245.452(e) : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388005	3/24/2004	Failure to conduct required inspection
		Resolution: Corrected/Abated on Wednesday, March 24, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.21, 245.411 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388006	3/24/2004	Failure to conduct required inspection

		Resolution: Corrected/Abated on Wednesday, March 24, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.21, 245.411 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388007	3/24/2004	Failure to conduct required inspection
		Resolution: Corrected/Abated on Wednesday, March 24, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.21, 245.411 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388008	3/24/2004	Failure to conduct required inspection
		Resolution: Corrected/Abated on Wednesday, March 24, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.21, 245.411 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388009	3/24/2004	Failure to comply with underground storage tank system release detection requirements
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.441, 245.442, 245.443, 245.444, 245.445, 245.446 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388010	3/24/2004	Failure to comply with underground storage tank system release detection requirements
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.441, 245.442, 245.443, 245.444, 245.445, 245.446 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388011	3/24/2004	Failure to comply with underground storage tank system release detection requirements
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.441, 245.442, 245.443, 245.444, 245.445, 245.446 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388012	3/24/2004	Failure to comply with underground storage tank system release detection requirements

		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.441, 245.442, 245.443, 245.444, 245.445, 245.446 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388013	3/24/2004	Failure to comply with underground storage tank system reporting and record keeping requirements
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.435 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388014	3/24/2004	Failure to comply with underground storage tank system reporting and record keeping requirements
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.435 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388015	3/24/2004	Failure to comply with underground storage tank system reporting and record keeping requirements
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.435 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data
Violation Id	**Date**	**Violation Description**
388016	3/24/2004	Failure to comply with underground storage tank system reporting and record keeping requirements
		Resolution: Corrected/Abated on Wednesday, March 31, 2004.
		PA Code Legal Citation: 25 Pa. Code 245.435 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data

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Violation Details for Inspection Id: 1278184

Search Results

Facility: NEWTOWN SQUARE AMOCO

Program: WM Storage Tanks

Violation Id	Date	Violation Description
368735	9/10/2003	Standards for Sources, Mobile Sources, Control of VOCs from gasoline dispensing facilities (Stage II). Failure to comply with the requirements for properly transferring gasoline from storage tanks into motor vehicle fuel tanks in specific counties.
		Resolution: Corrected/Abated on Wednesday, October 15, 2003.
		PA Code Legal Citation: 25 Pa Code 129.82 : PA Code Website
		Violation Type: N/A
		Enforcement Type: No Enforcement Data

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KEATING Environmental Management, Inc.

APPENDIX F

EDR Radius Map Report

The EDR Radius Map
with GeoCheck®

3608 West Chester Pike
3608 West Chester Pike
Newtown Square, PA 19073

Inquiry Number: 2073134.2s

November 08, 2007

EDR® Environmental Data Resources Inc

The Standard in Environmental Risk Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

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GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

3608 WEST CHESTER PIKE
NEWTOWN SQUARE, PA 19073

COORDINATES

Latitude (North):	39.986510 - 39° 59' 11.4"
Longitude (West):	75.398990 - 75° 23' 56.4"
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	465934.7
UTM Y (Meters):	4426126.0
Elevation:	400 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	39075-H4 MEDIA, PA
Most Recent Revision:	1995
North Map:	40075-A4 VALLEY FORGE, PA
Most Recent Revision:	1995

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 6 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
NEWTOWN SQUARE AMOCO 3608 WEST CHESTER PIKE NEWTOWN SQUARE, PA 19073	LUST Facility Status: Cleanup Completed UST	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

FEDERAL RECORDS

NPL..... National Priority List

EXECUTIVE SUMMARY

Proposed NPL	Proposed National Priority List Sites
Delisted NPL	National Priority List Deletions
NPL LIENS	Federal Superfund Liens
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP	CERCLIS No Further Remedial Action Planned
RCRA-TSDF	Resource Conservation and Recovery Act Information
RCRA-LQG	Resource Conservation and Recovery Act Information
ERNS	Emergency Response Notification System
HMIRS	Hazardous Materials Information Reporting System
US ENG CONTROLS	Engineering Controls Sites List
US INST CONTROL	Sites with Institutional Controls
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
US BROWNFIELDS	A Listing of Brownfields Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
ODI	Open Dump Inventory
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
SSTS	Section 7 Tracking Systems
LUCIS	Land Use Control Information System
DOT OPS	Incident and Accident Data
ICIS	Integrated Compliance Information System
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
US CDL	Clandestine Drug Labs
RADINFO	Radiation Information Database
LIENS 2	CERCLA Lien Information
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
MINES	Mines Master Index File
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System

STATE AND LOCAL RECORDS

SHWS	Hazardous Sites Cleanup Act Site List
HSCA	HSCA Remedial Sites Listing
SWF/LF	Operating Facilities
HIST LF	Abandoned Landfill Inventory
LAST	Storage Tank Release Sites
AST	Listing of Pennsylvania Regulated Aboveground Storage Tanks
ARCHIVE AST	Archived Aboveground Storage Tank Sites
ACT 2-DEED	Act 2-Deed Acknowledgment Sites
ENG CONTROLS	Engineering Controls Site Listing
INST CONTROL	Institutional Controls Site Listing
BROWNFIELDS	Brownfields Sites
AIRS	Permit and Emissions Inventory Data

TRIBAL RECORDS

INDIAN RESERV	Indian Reservations

EXECUTIVE SUMMARY

INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
INDIAN UST..... Underground Storage Tanks on Indian Land

EDR PROPRIETARY RECORDS

Manufactured Gas Plants... EDR Proprietary Manufactured Gas Plants
EDR Historical Auto Stations EDR Proprietary Historic Gas Stations
EDR Historical Cleaners.... EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

FEDERAL RECORDS

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 06/26/2007 has revealed that there is 1 CORRACTS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
LYONDELL CHEMICAL CO	***3801 W CHESTER PIKE***	***1/2 - 1 W***	***25***	***36***

RCRAInfo: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System(RCRIS). The database includes selective information on sites which generate, transport, store , treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month Large quantity generators generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-SQG list, as provided by EDR, and dated 06/13/2006 has revealed that there are 9 RCRA-SQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
SUNOCO SERVICE STATION-NEWTOWN	***3601 WEST CHESTER PIKE***	***0 - 1/8 N***	***A2***	***7***

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
VIDEON CHEVEROLET	*3599 WESTCHESTER PIKE*	*0 - 1/8 N*	*A3*	*8*
SOOK, ROBERT J CO	*7 ST ALBANS CIRCLE*	*0 - 1/8 N*	*B4*	*11*
D & B TAILORS	*3620 CHAPEL ROAD*	*0 - 1/8 NNW*	*C7*	*12*
MOBIL OIL CORP SS# LRY	*3592 W CHESTER PIKE*	*1/8 - 1/4 ESE*	*D11*	*27*
ORIGINAL WAGNERS THE	*3584 W CHESTER PIKE*	*1/8 - 1/4 ESE*	*D12*	*27*
NEWTOWN SQUARE LAUNDRY & DRY C	*11 CLYDE LANE*	*1/8 - 1/4 WNW*	*E19*	*30*
FRANK C VIDEON CHRYSLER PLYMOU	*3737 WEST CHESTER PK*	*1/8 - 1/4 W*	*F20*	*33*

Lower Elevation	Address	Dist / Dir	Map ID	Page
FRITSCHS EXXON	*99 S NEWTOWN ST RD*	*1/8 - 1/4 S*	*13*	*28*

STATE AND LOCAL RECORDS

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Environmental Resources' List of Confirmed Releases.

A review of the LUST list, as provided by EDR, and dated 07/02/2007 has revealed that there are 7 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
SUNOCO SERVICE STATION-NEWTOWN	*3601 WEST CHESTER PIKE*	*0 - 1/8 N*	*A2*	*7*
Facility Status: Cleanup Completed				
DON KELLEYS MOBIL	*3592 WEST CHESTER PIKE*	*1/8 - 1/4 ESE*	*D10*	*25*
Facility Status: Interim Remedial Actions Initiated or Completed				
NEWTOWN SQUARE USPS	20 N NEWTOWN STREET RD	1/8 - 1/4 NW	15	29
Facility Status: Cleanup Completed				
FRANK C VIDEON INC	3737 WEST CHESTER PIKE	1/8 - 1/4 W	F21	34
Facility Status: Cleanup Completed				

Lower Elevation	Address	Dist / Dir	Map ID	Page
SUNOCO 0363 4334	*3607 WEST CHESTER PIKE*	*0 - 1/8 E*	*8*	*22*
Facility Status: Interim Remedial Actions Initiated or Completed				
Facility Status: Interim Remedial Actions Initiated or Completed				
FRITSCHS EXXON	*99 S NEWTOWN RD*	*1/4 - 1/2 SSE*	*23*	*34*
Facility Status: Interim Remedial Actions Initiated or Completed				
Facility Status: Cleanup Completed				
DUNWOODY HOME	3500 WEST CHESTER PIKE	1/4 - 1/2 ESE	24	36
Facility Status: Cleanup Completed				

UNREG LTANKS: Leaking storage tank cases from unregulated storage tanks.

A review of the UNREG LTANKS list, as provided by EDR, and dated 04/12/2002 has revealed that there is 1 UNREG LTANKS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
CARRIAGE HOUSE APT Closed: 6/10/1996	20 BISHOP HOLLOW RD	1/8 - 1/4 WSW	14	28

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Resources' Regulated Underground Storage Tank Listing.

A review of the UST list, as provided by EDR, and dated 04/02/2007 has revealed that there are 3 UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
GETTY 67602	3710 W CHESTER PIKE	1/8 - 1/4 W	9	24
DON KELLEYS MOBIL	***3592 WEST CHESTER PIKE***	***1/8 - 1/4 ESE***	***D10***	***25***
Lower Elevation	**Address**	**Dist / Dir**	**Map ID**	**Page**
DELMONT UTILITIES	3565 WINDING WAY	1/8 - 1/4 NNW	22	34

ARCHIVE UST: The list includes tanks storing highly hazardous substances that were removed from the DEP's Storage Tank Information database because of the Department's policy on sensitive information. The list also may include tanks that are removed or permanently closed.

A review of the ARCHIVE UST list, as provided by EDR, and dated 04/02/2007 has revealed that there is 1 ARCHIVE UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
SUNOCO 0363 4334	***3607 WEST CHESTER PIKE***	***0 - 1/8 E***	***8***	***22***

MANIFEST: Hazardous waste manifest information.

A review of the PA MANIFEST list, as provided by EDR, and dated 12/31/2006 has revealed that there are 3 PA MANIFEST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
VIDEON CHEVEROLET	***3599 WESTCHESTER PIKE***	***0 - 1/8 N***	***A3***	***8***
D & B TAILORS	***3620 CHAPEL ROAD***	***0 - 1/8 NNW***	***C7***	***12***
NEWTOWN SQUARE LAUNDRY & DRY C	***11 CLYDE LANE***	***1/8 - 1/4 WNW***	***E19***	***30***

VCP: Voluntary Cleanup Program Sites List.

A review of the VCP list, as provided by EDR, and dated 08/17/2007 has revealed that there is 1 VCP site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
ST ALBANS CIR PROJ	11 ST ALBANS CIR	0 - 1/8 N	B5	12

DRYCLEANERS: A listing of drycleaning facilities.

A review of the DRYCLEANERS list, as provided by EDR, and dated 08/03/2007 has revealed that there are 3 DRYCLEANERS sites within approximately 0.25 miles of the target property.

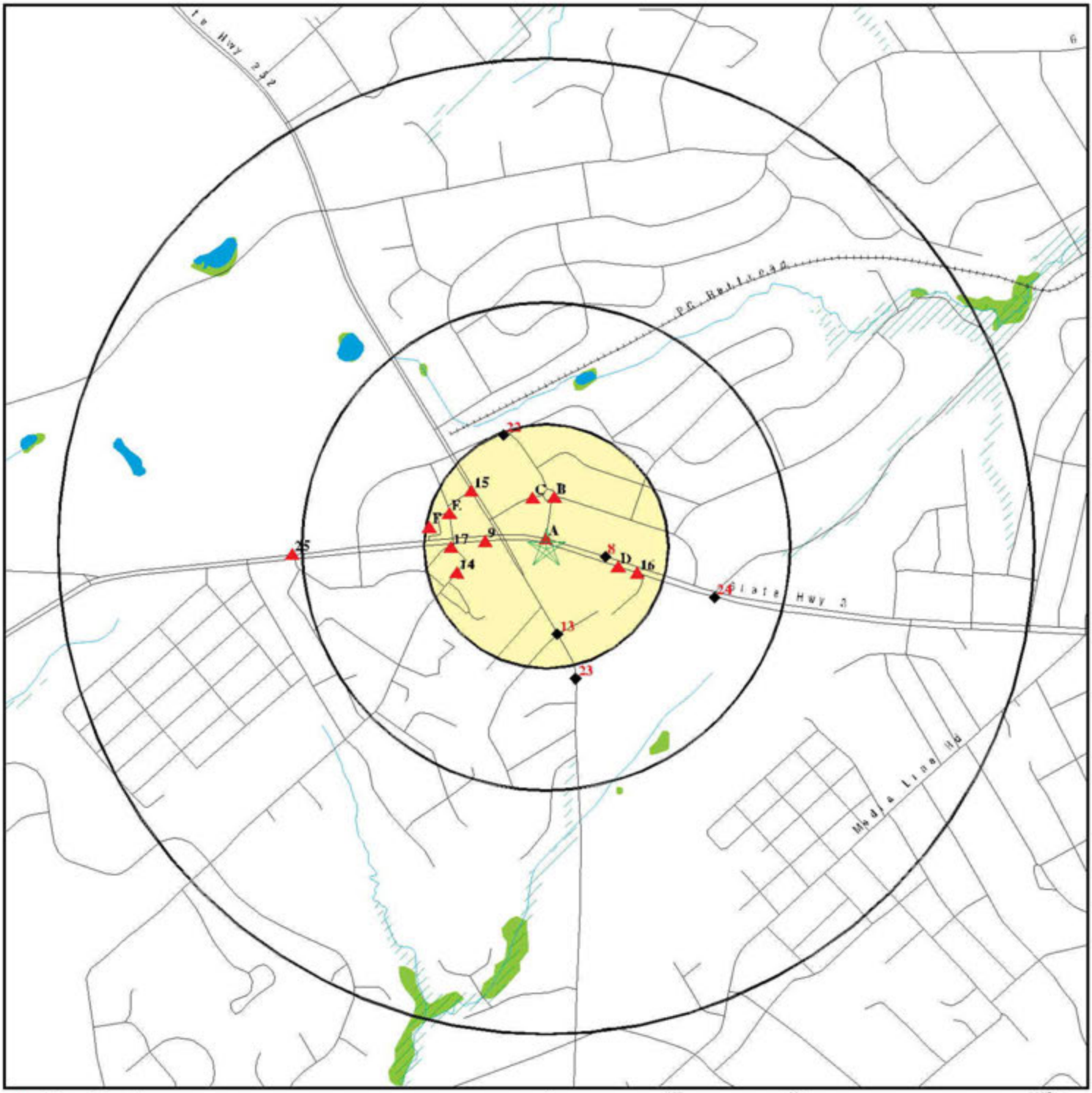
Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
D & B TAILORS INC/NEWTOWN SQUA	3620 CHAPEL RD	0 - 1/8 NNW	C6	12
JEANS CUSTOM CLNR	3572 W CHESTER PIKE	1/8 - 1/4 ESE	16	29
NEWTOWN SQUARE LAUNDRY & DRY C	11 CLYDE LN	1/8 - 1/4 WNW	E18	30

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
SUNOCO SVC STA	RCRA-SQG, FINDS, LUST
SUN REFINING AND MARKETING (PETS)	RCRA-SQG, FINDS
SUNOCO SVC STA	RCRA-SQG
3400 WESTCHESTER PIKE	ERNS

OVERVIEW MAP - 2073134.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	3608 West Chester Pike	CLIENT:	Keating Environmental Mgmt.
ADDRESS:	3608 West Chester Pike Newtown Square PA 19073	CONTACT:	Paul M. Davis
		INQUIRY #:	2073134.2s
LAT/LONG:	39.9865 / 75.3990	DATE:	November 08, 2007 9:55 am

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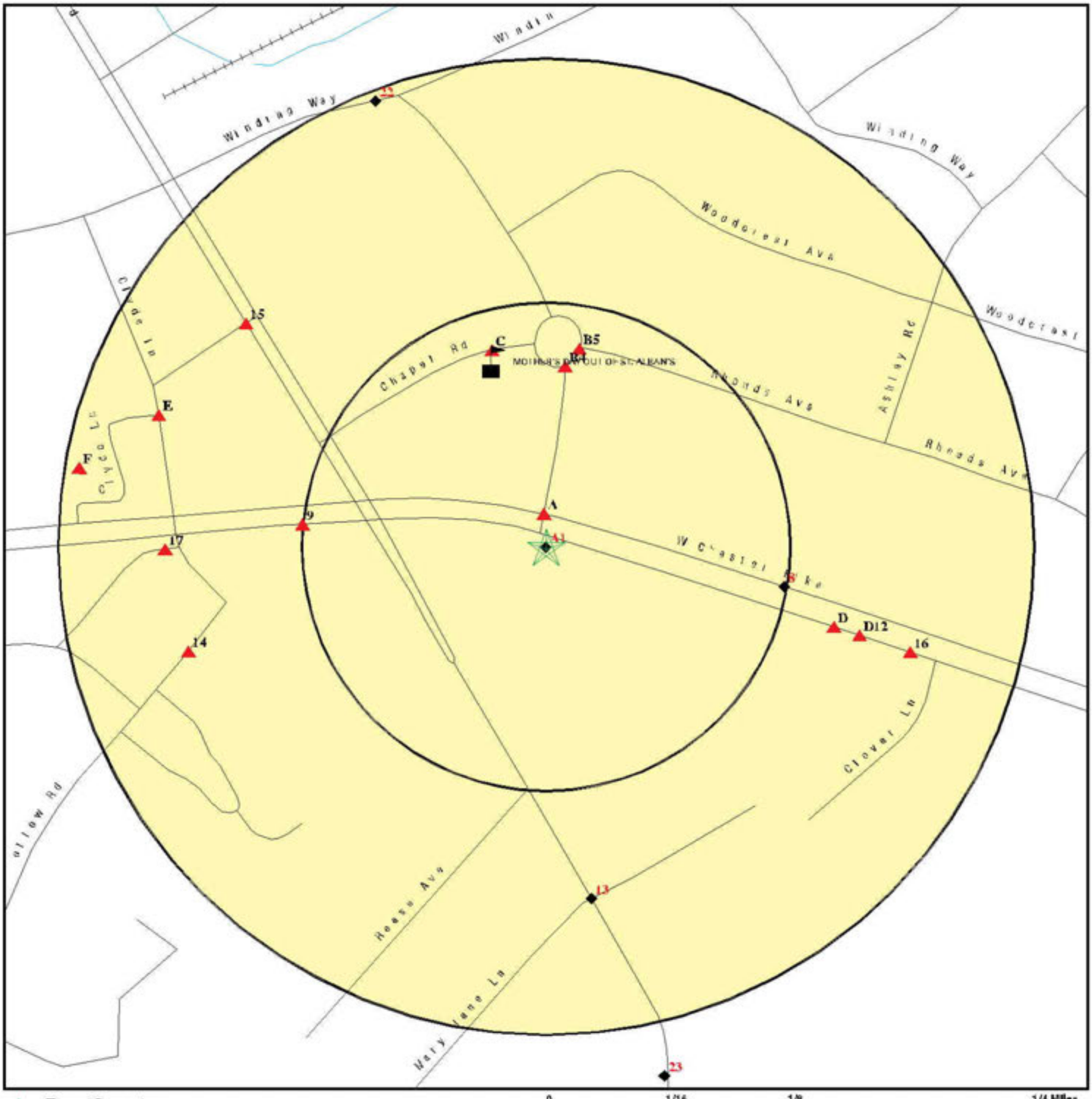
DETAIL MAP - 2073134.2s



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 3608 West Chester Pike	CLIENT: Keating Environmental Mgmt.
ADDRESS: 3608 West Chester Pike Newtown Square PA 19073	CONTACT: Paul M. Davis
LAT/LONG: 39.9865 / 75.3990	INQUIRY #: 2073134.2s DATE: November 08, 2007 9:56 am

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL RECORDS								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
NPL LIENS		TP	NR	NR	NR	NR	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.500	0	0	0	NR	NR	0
CORRACTS		1.000	0	0	0	1	NR	1
RCRA TSD		0.500	0	0	0	NR	NR	0
RCRA Lg. Quan. Gen.		0.250	0	0	NR	NR	NR	0
RCRA Sm. Quan. Gen.		0.250	4	5	NR	NR	NR	9
ERNS		TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
FUDS		1.000	0	0	0	0	NR	0
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
LUCIS		0.500	0	0	0	NR	NR	0
DOT OPS		TP	NR	NR	NR	NR	NR	0
ICIS		TP	NR	NR	NR	NR	NR	0
DEBRIS REGION 9		0.500	0	0	0	NR	NR	0
HIST FTTS		TP	NR	NR	NR	NR	NR	0
CDL		TP	NR	NR	NR	NR	NR	0
RADINFO		TP	NR	NR	NR	NR	NR	0
LIENS 2		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
STATE AND LOCAL RECORDS								
State Haz. Waste		1.000	0	0	0	0	NR	0
HSCA		1.000	0	0	0	0	NR	0
SWF/LF		0.500	0	0	0	NR	NR	0
HIST LF		0.500	0	0	0	NR	NR	0
LUST	X	0.500	2	3	2	NR	NR	7
UNREG LTANKS		0.500	0	1	0	NR	NR	1
UST	X	0.250	0	4	NR	NR	NR	4

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
ARCHIVE UST		0.250	1	0	NR	NR	NR	1
LAST		0.500	0	0	0	NR	NR	0
AST		0.250	0	0	NR	NR	NR	0
ARCHIVE AST		TP	NR	NR	NR	NR	NR	0
MANIFEST		0.250	2	1	NR	NR	NR	3
ACT 2-DEED		0.500	0	0	0	NR	NR	0
ENG CONTROLS		0.500	0	0	0	NR	NR	0
INST CONTROL		0.500	0	0	0	NR	NR	0
VCP		0.500	1	0	0	NR	NR	1
DRYCLEANERS		0.250	1	2	NR	NR	NR	3
BROWNFIELDS		0.500	0	0	0	NR	NR	0
AIRS		TP	NR	NR	NR	NR	NR	0
TRIBAL RECORDS								
INDIAN RESERV		1.000	0	0	0	0	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
Manufactured Gas Plants		1.000	0	0	0	0	NR	0
EDR Historical Auto Stations		0.250	0	0	NR	NR	NR	0
EDR Historical Cleaners		0.250	0	0	NR	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1
Target
Property

NEWTOWN SQUARE AMOCO
3608 WEST CHESTER PIKE
NEWTOWN SQUARE, PA 19073

LUST **U002318747**
UST **N/A**

Site 1 of 3 in cluster A

Actual:
399 ft.

LUST:
Facility Address2: Not reported
Facility Id: 23-09154
Facility Type: Undergroung Storage Tank Containing Petroleum
Facility Status: Cleanup Completed
Status Date: 1996-06-10 00:00:00
Release Date: 1989-08-05 00:00:00
Region: 4100

UST:
Municipality Name: Newtown
Client Id Number: 205069
Mailing Name: ALLIED PETRO VENTURES INC
Mailing Address: 3608 WEST CHESTER PIKE
Mailing Address 2: Not reported
Mailing City,St,Zip: NEWTOWN SQUARE, PA 19073
Site ID: 573044
Other Id: 23-09154
2nd Facility Addr: Not reported
Region Code: EP SE Rgnl Off
Regulated Expiration: 2008-02-04 00:00:00
Tank Seq No: 001
Tank Code: UST
Date Installed: 1974-06-01
Capacity: 10000
Substance: Gasoline
Tank Status: Currently In Use
Inspection Code: FOI
Tank Last Dt Inspected: Not reported
Region Code: 4100

Municipality Name: Newtown
Client Id Number: 205069
Mailing Name: ALLIED PETRO VENTURES INC
Mailing Address: 3608 WEST CHESTER PIKE
Mailing Address 2: Not reported
Mailing City,St,Zip: NEWTOWN SQUARE, PA 19073
Site ID: 573044
Other Id: 23-09154
2nd Facility Addr: Not reported
Region Code: EP SE Rgnl Off
Regulated Expiration: 2008-02-04 00:00:00
Tank Seq No: 003
Tank Code: UST
Date Installed: 1974-06-01
Capacity: 10000
Substance: Gasoline
Tank Status: Currently In Use
Inspection Code: FOI
Tank Last Dt Inspected: Not reported
Region Code: 4100

Municipality Name: Newtown

NEWTOWN SQUARE AMOCO (Continued) **U002318747**

Client Id Number:	205069
Mailing Name:	ALLIED PETRO VENTURES INC
Mailing Address:	3608 WEST CHESTER PIKE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Site ID:	573044
Other Id:	23-09154
2nd Facility Addr:	Not reported
Region Code:	EP SE Rgnl Off
Regulated Expiration:	2008-02-04 00:00:00
Tank Seq No:	002
Tank Code:	UST
Date Installed:	1974-06-01
Capacity:	10000
Substance:	Gasoline
Tank Status:	**Currently In Use**
Inspection Code:	FOI
Tank Last Dt Inspected:	Not reported
Region Code:	4100

Municipality Name:	Newtown
Client Id Number:	205069
Mailing Name:	ALLIED PETRO VENTURES INC
Mailing Address:	3608 WEST CHESTER PIKE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Site ID:	573044
Other Id:	23-09154
2nd Facility Addr:	Not reported
Region Code:	EP SE Rgnl Off
Regulated Expiration:	2008-02-04 00:00:00
Tank Seq No:	004
Tank Code:	UST
Date Installed:	1981-04-01
Capacity:	10000
Substance:	Diesel Fuel
Tank Status:	**Currently In Use**
Inspection Code:	FOI
Tank Last Dt Inspected:	Not reported
Region Code:	4100

A2
North
< 1/8
89 ft.

Relative:
Higher

Actual:
401 ft.

SUNOCO SERVICE STATION-NEWTOWN SQUARE **RCRA-SQG** **1000329473**
3601 WEST CHESTER PIKE **FINDS** **PAD000755256**
NEWTOWN SQUARE, PA 19073 **LUST**

Site 2 of 3 in cluster A

SUNOCO SERVICE STATION-NEWTOWN SQUARE (Continued) **1000329473**

RCRAInfo:
Owner: SUN OIL COMPANY OF PENNSYLVANIA
(215) 555-1212
EPA ID: PAD000755256
Contact: HOWARD ALGEO
(215) 688-8200
Classification: Small Quantity Generator
TSDF Activities: Not reported
Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

LUST:
Facility Address2: Not reported
Facility Id: 23-32486
Facility Type: Undergroung Storage Tank Containing Petroleum
Facility Status: Cleanup Completed
Status Date: 2001-07-30 00:00:00
Release Date: 1997-12-01 00:00:00
Region: 4100

A3
North
< 1/8
89 ft.

Relative:
Higher

Actual:
401 ft.

VIDEON CHEVEROLET **RCRA-SQG** **1000209211**
3599 WESTCHESTER PIKE **FINDS** **PAD981036379**
NEWTOWN SQUARE, PA 19073 **PA MANIFEST**
NJ MANIFEST

Site 3 of 3 in cluster A

RCRAInfo:
Owner: VIDEON,JR C. FRANK
(215) 555-1212
EPA ID: PAD981036379
Contact: ANDY AMMAZZORSI
(215) 356-1300
Classification: Small Quantity Generator
TSDF Activities: Not reported

VIDEON CHEVERLOLET (Continued) **1000209211**

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

PA-EFACTS (Pennsylvania - Environmental Facility Application Compliance Tracking System) is a Department-wide database that provides a holistic view of clients and sites (including facilities) that DEP regulates.

PA MANIFEST:

Manifest Number:	NJA5203872
Manifest Type:	T
Generator Epa Id:	PAD981036379
Generator Date:	04/14/2005
Mailing Address:	3599 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	FRANK C VIDEON
Contact Phone:	215-356-1300
TSD Epa Id:	NJD002454544
TSD Date:	04/19/2005
TSD Facility Name:	MARISOL INC
TSD Facility Address:	125 FACTORY LN
TSD Facility City:	MIDDLESEX
TSD Facility State:	NJ
Page Number:	1.00000
Line Number:	1.00000
Waste Number:	D001
Container Number:	1.00000
Container Type:	DM
Waste Quantity:	400.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	NJD080631369
Date Tsp Sig:	04/14/2005

Manifest Number:	NJA5203872
Manifest Type:	T
Generator Epa Id:	PAD981036379
Generator Date:	04/14/2005
Mailing Address:	3599 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	FRANK C VIDEON
Contact Phone:	215-356-1300
TSD Epa Id:	NJD002454544
TSD Date:	04/19/2005
TSD Facility Name:	MARISOL INC
TSD Facility Address:	125 FACTORY LN

VIDEON CHEVERLET (Continued) **1000209211**

TSD Facility City: MIDDLESEX
TSD Facility State: NJ
Page Number: 1.00000
Line Number: 1.00000
Waste Number: F003
Container Number: 1.00000
Container Type: DM
Waste Quantity: 400.00000
Unit: P
Handling Code: Not reported
Tsp Epa Id: NJD080631369
Date Tsp Sig: 04/14/2005

NJ MANIFEST:
Manifest Code: NJA5203872
EPA ID: PAD981036379
Date Shipped: 20050414
TSDF EPA ID: NJD002454544
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: Not reported
Date Trans1 Transported Waste: 050414
Date Trans2 Transported Waste: 000000
Date TSDF Received Waste: 050419
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 05270521
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: Not reported
Quantity: Not reported
Unit: Not reported
Hand Code: Not reported

Manifest Code: NJA5269099
EPA ID: PAD981036379
Date Shipped: 20051024
TSDF EPA ID: NJD002454544
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 051024
Date Trans2 Transported Waste: 051031
Date TSDF Received Waste: 051031
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 01100621
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: Not reported
Quantity: Not reported
Unit: Not reported
Hand Code: Not reported

VIDEON CHEVERLOLET (Continued) **1000209211**

Manifest Code:	NJA4132013
EPA ID:	PAD981036379
Date Shipped:	20040914
TSDF EPA ID:	NJD002454544
Transporter EPA ID:	NJD080631369
Transporter 2 EPA ID:	Not reported
Date Trans1 Transported Waste:	040914
Date Trans2 Transported Waste:	000000
Date TSDF Received Waste:	040920
Tranporter 1 Decal:	Not reported
Tranporter 2 Decal:	Not reported
Data Entry Number:	10180422
Reference Manifest Number:	Not reported
Was Load Rejected (Y/N):	No
Reason Load Was Rejected:	Not reported
Waste Code:	Not reported
Quantity:	Not reported
Unit:	Not reported
Hand Code:	Not reported

B4
North
< 1/8
491 ft.

Relative:
Higher

Actual:
413 ft.

SOOK, ROBERT J CO **RCRA-SQG** **1000267614**
7 ST ALBANS CIRCLE **FINDS** **PAD002310704**
NEWTOWN SQUARE, PA 19073

Site 1 of 2 in cluster B

RCRAInfo:

Owner:	Not reported
EPA ID:	PAD002310704
Contact:	ENVIRONMENTAL COORDINATOR (215) 555-1212
Classification:	Small Quantity Generator
TSDF Activities:	Not reported

Violation Status: No violations found

FINDS:

Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

B5 **ST ALBANS CIR PROJ** **VCP** **S105816078**
North **11 ST ALBANS CIR** **N/A**
< 1/8 **NEWTOWN SQUARE, PA**
544 ft.

Site 2 of 2 in cluster B

Relative:
Higher

VCP:

Rec ID:	475
Activity ID:	Not reported
Municipality:	Newtown
Region:	4100
Site Size:	Not reported
Cleanup:	Statewide Health
Cleanup Indicator:	Not reported
Response Date:	9/11/2000
Category Desc:	Not reported
Land Designation:	Not reported

Actual:
415 ft.

C6 **D & B TAILORS INC/NEWTOWN SQUARE** **DRYCLEANERS** **S106935370**
NNW **3620 CHAPEL RD** **N/A**
< 1/8 **NEWTOWN SQUARE, PA 19073**
552 ft.

Site 1 of 2 in cluster C

Relative:
Higher

DRYCLEANERS:

Regional Office:	1
District Office:	12
County #:	23
PF ID:	639069
Facility Address2:	NULL
EPA Compliance Data System #:	4204595042
Pf Status:	Active Facility
Epa Class:	State Only General Permit
Get Sic:	7216
Naics Number:	812320
Add Type Code:	LOCAD
PF Other Id:	00-1200091-1
Municipality Name:	Newtown
PA Class:	C
Max Achievable Control Tech Standards:	Y
Natl Emissions Stds/Haz Air Pollutants:	NULL
Prevention of Signif Deterioration:	NULL
Title V:	NULL

Actual:
417 ft.

C7 **D & B TAILORS** **RCRA-SQG** **1000103818**
NNW **3620 CHAPEL ROAD** **FINDS** **PAD043569797**
< 1/8 **NEWTOWN SQUARE, PA 19073** **PA MANIFEST**
552 ft.

Site 2 of 2 in cluster C

Relative:
Higher

Actual:
417 ft.

D & B TAILORS (Continued) **1000103818**

RCRAInfo:
Owner: BATTISTONI NICK
(215) 555-1212
EPA ID: PAD043569797
Contact: GABRIELE DANNUNZIO
(215) 356-9279
Classification: Small Quantity Generator
TSDF Activities: Not reported
Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site

AFS (Aerometric Information Retrieval System (AIRS) Facility Subsystem) replaces the former Compliance Data System (CDS), the National Emission Data System (NEDS), and the Storage and Retrieval of Aerometric Data (SAROAD). AIRS is the national repository for information concerning airborne pollution in the United States. AFS is used to track emissions and compliance data from industrial plants. AFS data are utilized by states to prepare State Implementation Plans to comply with regulatory programs and by EPA as an input for the estimation of total national emissions. AFS is undergoing a major redesign to support facility operating permits required under Title V of the Clean Air Act.

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PA-EFACTS (Pennsylvania - Environmental Facility Application Compliance Tracking System) is a Department-wide database that provides a holistic view of clients and sites (including facilities) that DEP regulates.

PA MANIFEST:
Manifest Number: PAH073979
Manifest Type: T
Generator Epa Id: PAD043569797
Generator Date: 01/09/2004
Mailing Address: 3620 CHAPEL RD
Mailing City,St,Zip: NEWTON SQUARE, PA 19073
Contact Name: GABRIELE DANNUNZIO
Contact Phone: 215-356-9279
TSD Epa Id: PAD000738849
TSD Date: 01/09/2004
TSD Facility Name: SAFETY KLEEN SYSTEMS INC 2 139 03
TSD Facility Address: 1140 - 1142 GREEN HILL RD
TSD Facility City: WEST CHESTER
TSD Facility State: PA
Page Number: 1.00000

D & B TAILORS (Continued) **1000103818**

Line Number:	1.00000
Waste Number:	D007
Container Number:	1.00000
Container Type:	DF
Waste Quantity:	160.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	TXR000050930
Date Tsp Sig:	01/09/2004
Manifest Number:	PAH073979
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	01/09/2004
Mailing Address:	3620 CHAPEL RD
Mailing City,St,Zip:	NEWTON SQUARE, PA 19073
Contact Name:	GABRIELE DANNUNZIO
Contact Phone:	215-356-9279
TSD Epa Id:	PAD000738849
TSD Date:	01/09/2004
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC 2 139 03
TSD Facility Address:	1140 - 1142 GREEN HILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1.00000
Line Number:	1.00000
Waste Number:	D039
Container Number:	1.00000
Container Type:	DF
Waste Quantity:	160.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	TXR000050930
Date Tsp Sig:	01/09/2004
Manifest Number:	PAH073979
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	01/09/2004
Mailing Address:	3620 CHAPEL RD
Mailing City,St,Zip:	NEWTON SQUARE, PA 19073
Contact Name:	GABRIELE DANNUNZIO
Contact Phone:	215-356-9279
TSD Epa Id:	PAD000738849
TSD Date:	01/09/2004
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC 2 139 03
TSD Facility Address:	1140 - 1142 GREEN HILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1.00000
Line Number:	1.00000
Waste Number:	F002
Container Number:	1.00000
Container Type:	DF
Waste Quantity:	160.00000
Unit:	P
Handling Code:	Not reported

D & B TAILORS (Continued) **1000103818**

Tsp Epa Id: TXR000050930
Date Tsp Sig: 01/09/2004

Manifest Number: PAH073979
Manifest Type: T
Generator Epa Id: PAD043569797
Generator Date: 01/09/2004
Mailing Address: 3620 CHAPEL RD
Mailing City,St,Zip: NEWTON SQUARE, PA 19073
Contact Name: GABRIELE DANNUNZIO
Contact Phone: 215-356-9279
TSD Epa Id: PAD000738849
TSD Date: 01/09/2004
TSD Facility Name: SAFETY KLEEN SYSTEMS INC 2 139 03
TSD Facility Address: 1140 - 1142 GREEN HILL RD
TSD Facility City: WEST CHESTER
TSD Facility State: PA
Page Number: 1.00000
Line Number: 2.00000
Waste Number: D007
Container Number: 1.00000
Container Type: DF
Waste Quantity: 60.00000
Unit: P
Handling Code: Not reported
Tsp Epa Id: TXR000050930
Date Tsp Sig: 01/09/2004

Manifest Number: PAH073979
Manifest Type: T
Generator Epa Id: PAD043569797
Generator Date: 01/09/2004
Mailing Address: 3620 CHAPEL RD
Mailing City,St,Zip: NEWTON SQUARE, PA 19073
Contact Name: GABRIELE DANNUNZIO
Contact Phone: 215-356-9279
TSD Epa Id: PAD000738849
TSD Date: 01/09/2004
TSD Facility Name: SAFETY KLEEN SYSTEMS INC 2 139 03
TSD Facility Address: 1140 - 1142 GREEN HILL RD
TSD Facility City: WEST CHESTER
TSD Facility State: PA
Page Number: 1.00000
Line Number: 2.00000
Waste Number: D039
Container Number: 1.00000
Container Type: DF
Waste Quantity: 60.00000
Unit: P
Handling Code: Not reported
Tsp Epa Id: TXR000050930
Date Tsp Sig: 01/09/2004

Manifest Number: PAH073979
Manifest Type: T
Generator Epa Id: PAD043569797
Generator Date: 01/09/2004

D & B TAILORS (Continued) **1000103818**

Mailing Address:	3620 CHAPEL RD
Mailing City,St,Zip:	NEWTON SQUARE, PA 19073
Contact Name:	GABRIELE DANNUNZIO
Contact Phone:	215-356-9279
TSD Epa Id:	PAD000738849
TSD Date:	01/09/2004
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC 2 139 03
TSD Facility Address:	1140 - 1142 GREEN HILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1.00000
Line Number:	2.00000
Waste Number:	F002
Container Number:	1.00000
Container Type:	DF
Waste Quantity:	60.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	TXR000050930
Date Tsp Sig:	01/09/2004

Manifest Number:	000206732CEX
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	12/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	1
Waste Number:	D007
Container Number:	2
Container Type:	DF
Waste Quantity:	320
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported

Manifest Number:	000206732CEX
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	12/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC

D & B TAILORS (Continued) **1000103818**

TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	1
Waste Number:	D039
Container Number:	2
Container Type:	DF
Waste Quantity:	320
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported
Manifest Number:	000206732CEX
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	12/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	1
Waste Number:	D040
Container Number:	2
Container Type:	DF
Waste Quantity:	320
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported
Manifest Number:	000206732CEX
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	12/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	1
Waste Number:	F002
Container Number:	2

D & B TAILORS (Continued) **1000103818**

Container Type:	DF
Waste Quantity:	320
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported
Manifest Number:	000818895JJK
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	09/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	1
Waste Number:	D007
Container Number:	2
Container Type:	DF
Waste Quantity:	320
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported
Manifest Number:	000818895JJK
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	09/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	1
Waste Number:	D039
Container Number:	2
Container Type:	DF
Waste Quantity:	320
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported

D & B TAILORS (Continued) **1000103818**

Manifest Number:	000818895JJK
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	09/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	1
Waste Number:	D040
Container Number:	2
Container Type:	DF
Waste Quantity:	320
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported

Manifest Number:	000818895JJK
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	09/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	1
Waste Number:	F002
Container Number:	2
Container Type:	DF
Waste Quantity:	320
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported

Manifest Number:	000818895JJK
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	09/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported

D & B TAILORS (Continued) **1000103818**

Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	2
Waste Number:	D007
Container Number:	1
Container Type:	DF
Waste Quantity:	60
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported

Manifest Number:	000818895JJK
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	09/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	2
Waste Number:	D039
Container Number:	1
Container Type:	DF
Waste Quantity:	60
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported

Manifest Number:	000818895JJK
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	09/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA

D & B TAILORS (Continued) **1000103818**

Page Number:	1
Line Number:	2
Waste Number:	D040
Container Number:	1
Container Type:	DF
Waste Quantity:	60
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported
Manifest Number:	000818895JJK
Manifest Type:	T
Generator Epa Id:	PAD043569797
Generator Date:	09/08/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	2
Waste Number:	F002
Container Number:	1
Container Type:	DF
Waste Quantity:	60
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported
Manifest Number:	PAH236568
Manifest Type:	D
Generator Epa Id:	PAD043569797
Generator Date:	05/18/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	1
Waste Number:	D007
Container Number:	2
Container Type:	DF
Waste Quantity:	320
Unit:	P

D & B TAILORS (Continued) **1000103818**

Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported
Manifest Number:	PAH236568
Manifest Type:	D
Generator Epa Id:	PAD043569797
Generator Date:	05/18/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	PAD000738849
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN SYSTEMS INC
TSD Facility Address:	GREENHILL RD
TSD Facility City:	WEST CHESTER
TSD Facility State:	PA
Page Number:	1
Line Number:	1
Waste Number:	D039
Container Number:	2
Container Type:	DF
Waste Quantity:	320
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported

Click this hyperlink while viewing on your computer to access
4 additional PA MANIFEST: record(s) in the EDR Site Report.

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8 **SUNOCO 0363 4334** **LUST** **U003179661**
East **3607 WEST CHESTER PIKE** **ARCHIVE UST** **N/A**
< 1/8 **NEWTOWN SQUARE, PA 19073**
653 ft.

Relative:
Lower

Actual:
396 ft.

LUST:

Facility Address2:	Not reported
Facility Id:	23-30750
Facility Type:	Undergroung Storage Tank Containing Petroleum
Facility Status:	**Interim Remedial Actions Initiated or Completed**
Status Date:	Not reported
Release Date:	1996-11-19 00:00:00
Region:	4100
Facility Address2:	Not reported
Facility Id:	23-30750
Facility Type:	Undergroung Storage Tank Containing Petroleum
Facility Status:	**Interim Remedial Actions Initiated or Completed**
Status Date:	2006-09-26 00:00:00
Release Date:	2006-09-26 00:00:00
Region:	4100
Facility Address2:	Not reported
Facility Id:	23-30750
Facility Type:	Undergroung Storage Tank Containing Petroleum
Facility Status:	**Administrative Close Out (ACO)**

SUNOCO 0363 4334 (Continued) **U003179661**

Status Date: 2007-02-13 00:00:00
Release Date: 1994-06-10 00:00:00
Region: 4100

ARCHIVE UST:

Facility Id:	Not reported	Site ID:	515912
Tank Id:	Not reported	Tank Sequence #:	005
Other Id:	23-30750	Tank Code:	UST
Client Date:	83455	Municipality:	Newtown
Install Date:	1996-11-01	Status:	Currently In Use
Substance:	GAS	Capacity:	15000

Owner Id: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner Address 2: Not reported
Owner City,St,Zip: Not reported
Owner Phone: Not reported
County Code: Not reported
Resp Party Name: SUNOCO INC R & M
RP Address: 1735 MARKET ST FL 12
RP Address 2: Not reported
RP City,St,Zip: PHILADELPHIA, PA 19103-7505
Region Code: 4100
Region Code Name: EP SE Rgnl Off
Regulated Expire Date: 2007-02-04
Inspection Code: FOI
Last Inspection: 2001-05-07
Status Code End Date: Not reported
Tank Substance End Date: Not reported

Facility Id:	Not reported	Site ID:	515912
Tank Id:	Not reported	Tank Sequence #:	004
Other Id:	23-30750	Tank Code:	UST
Client Date:	83455	Municipality:	Newtown
Install Date:	1996-11-01	Status:	Currently In Use
Substance:	GAS	Capacity:	15000

Owner Id: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner Address 2: Not reported
Owner City,St,Zip: Not reported
Owner Phone: Not reported
County Code: Not reported
Resp Party Name: SUNOCO INC R & M
RP Address: 1735 MARKET ST FL 12
RP Address 2: Not reported
RP City,St,Zip: PHILADELPHIA, PA 19103-7505
Region Code: 4100
Region Code Name: EP SE Rgnl Off
Regulated Expire Date: 2007-02-04
Inspection Code: FOI
Last Inspection: 2001-05-07
Status Code End Date: Not reported
Tank Substance End Date: Not reported

Facility Id:	Not reported	Site ID:	515912
Tank Id:	Not reported	Tank Sequence #:	006

SUNOCO 0363 4334 (Continued) **U003179661**

Other Id:	23-30750	Tank Code:	UST
Client Date:	83455	Municipality:	Newtown
Install Date:	1996-11-01	Status:	Currently In Use
Substance:	DIESL	Capacity:	10000

Owner Id:	Not reported
Owner Name:	Not reported
Owner Address:	Not reported
Owner Address 2:	Not reported
Owner City,St,Zip:	Not reported
Owner Phone:	Not reported
County Code:	Not reported
Resp Party Name:	SUNOCO INC R & M
RP Address:	1735 MARKET ST FL 12
RP Address 2:	Not reported
RP City,St,Zip:	PHILADELPHIA, PA 19103-7505
Region Code:	4100
Region Code Name:	EP SE Rgnl Off
Regulated Expire Date:	2007-02-04
Inspection Code:	FOI
Last Inspection:	2001-05-07
Status Code End Date:	Not reported
Tank Substance End Date:	Not reported

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9 **GETTY 67602** **UST** **U001465708**
West **3710 W CHESTER PIKE** **N/A**
1/8-1/4 **NEWTOWN SQUARE, PA 19073**
661 ft.

Relative:
Higher

Actual:
418 ft.

UST:

Municipality Name:	Newtown
Client Id Number:	186021
Mailing Name:	GETTY PETRO MKT INC
Mailing Address:	2520 LITITZ PIKE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	NEFFSVILLE, PA 17601-3722
Site ID:	573543
Other Id:	23-43221
2nd Facility Addr:	Not reported
Region Code:	EP SE Rgnl Off
Regulated Expiration:	2008-02-04 00:00:00
Tank Seq No:	001
Tank Code:	UST
Date Installed:	1981-01-01
Capacity:	6000
Substance:	Gasoline
Tank Status:	**Currently In Use**
Inspection Code:	FOI
Tank Last Dt Inspected:	2005-06-13 00:00:00
Region Code:	4100

Municipality Name:	Newtown
Client Id Number:	186021
Mailing Name:	GETTY PETRO MKT INC
Mailing Address:	2520 LITITZ PIKE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	NEFFSVILLE, PA 17601-3722
Site ID:	573543
Other Id:	23-43221

GETTY 67602 (Continued) **U001465708**

2nd Facility Addr:	Not reported
Region Code:	EP SE Rgnl Off
Regulated Expiration:	2008-02-04 00:00:00
Tank Seq No:	002
Tank Code:	UST
Date Installed:	1981-01-01
Capacity:	6000
Substance:	Gasoline
Tank Status:	**Currently In Use**
Inspection Code:	FOI
Tank Last Dt Inspected:	2005-06-13 00:00:00
Region Code:	4100

Municipality Name:	Newtown
Client Id Number:	186021
Mailing Name:	GETTY PETRO MKT INC
Mailing Address:	2520 LITITZ PIKE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	NEFFSVILLE, PA 17601-3722
Site ID:	573543
Other Id:	23-43221
2nd Facility Addr:	Not reported
Region Code:	EP SE Rgnl Off
Regulated Expiration:	2008-02-04 00:00:00
Tank Seq No:	003
Tank Code:	UST
Date Installed:	1981-01-01
Capacity:	8000
Substance:	Gasoline
Tank Status:	**Currently In Use**
Inspection Code:	FOI
Tank Last Dt Inspected:	2005-06-13 00:00:00
Region Code:	4100

D10 **DON KELLEYS MOBIL** **LUST** **U001459562**
ESE **3592 WEST CHESTER PIKE** **UST** **N/A**
1/8-1/4 **NEWTOWN SQUARE, PA 19073**
808 ft.

Site 1 of 3 in cluster D

Relative:
Higher

Actual:
401 ft.

LUST:

Facility Address2:	Not reported
Facility Id:	23-41544
Facility Type:	Undergroung Storage Tank Containing Petroleum
Facility Status:	**Interim Remedial Actions Initiated or Completed**
Status Date:	Not reported
Release Date:	1994-05-19 00:00:00
Region:	4100

UST:

Municipality Name:	Newtown
Client Id Number:	185824
Mailing Name:	DONALD H KELLEY JR
Mailing Address:	3592 WEST CHESTER PIKE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073-4128
Site ID:	486022

DON KELLEYS MOBIL (Continued) **U001459562**

Other Id: 23-41544
2nd Facility Addr: Not reported
Region Code: EP SE Rgnl Off
Regulated Expiration: 2008-02-04 00:00:00
Tank Seq No: 008
Tank Code: UST
Date Installed: 1994-06-10
Capacity: 10000
Substance: Gasoline
Tank Status: Currently In Use
Inspection Code: FOI
Tank Last Dt Inspected: 2003-03-28 00:00:00
Region Code: 4100

Municipality Name: Newtown
Client Id Number: 185824
Mailing Name: DONALD H KELLEY JR
Mailing Address: 3592 WEST CHESTER PIKE
Mailing Address 2: Not reported
Mailing City,St,Zip: NEWTOWN SQUARE, PA 19073-4128
Site ID: 486022
Other Id: 23-41544
2nd Facility Addr: Not reported
Region Code: EP SE Rgnl Off
Regulated Expiration: 2008-02-04 00:00:00
Tank Seq No: 007
Tank Code: UST
Date Installed: 1994-06-10
Capacity: 10000
Substance: Gasoline
Tank Status: Currently In Use
Inspection Code: FOI
Tank Last Dt Inspected: 2003-03-28 00:00:00
Region Code: 4100

Municipality Name: Newtown
Client Id Number: 185824
Mailing Name: DONALD H KELLEY JR
Mailing Address: 3592 WEST CHESTER PIKE
Mailing Address 2: Not reported
Mailing City,St,Zip: NEWTOWN SQUARE, PA 19073-4128
Site ID: 486022
Other Id: 23-41544
2nd Facility Addr: Not reported
Region Code: EP SE Rgnl Off
Regulated Expiration: 2008-02-04 00:00:00
Tank Seq No: 006
Tank Code: UST
Date Installed: 1994-06-10
Capacity: 10000
Substance: Gasoline
Tank Status: Currently In Use
Inspection Code: FOI
Tank Last Dt Inspected: 2003-03-28 00:00:00
Region Code: 4100

D11
ESE
1/8-1/4
808 ft.

MOBIL OIL CORP SS# LRY
3592 W CHESTER PIKE
NEWTOWN SQUARE, PA 19073

RCRA-SQG
FINDS

1000569170
PAD987334281

Site 2 of 3 in cluster D

Relative:
Higher

Actual:
401 ft.

RCRAInfo:
Owner: MOBIL OIL CORP-MKTG-ENVIRON
(703) 849-3330
EPA ID: PAD987334281

Contact: DAN HORTON
(703) 849-3330

Classification: Small Quantity Generator
TSDF Activities: Not reported

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

D12
ESE
1/8-1/4
881 ft.

ORIGINAL WAGNERS THE
3584 W CHESTER PIKE
NEWTOWN SQUARE, PA 19073

RCRA-SQG
FINDS

1004773943
PAD982673964

Site 3 of 3 in cluster D

Relative:
Higher

Actual:
402 ft.

RCRAInfo:
Owner: OPERNAME
(215) 555-1212
EPA ID: PAD982673964

Contact: MITCHELL ABRAMS
(610) 356-8443

Classification: Conditionally Exempt Small Quantity Generator
TSDF Activities: Not reported

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site

AFS (Aerometric Information Retrieval System (AIRS) Facility Subsystem) replaces the former Compliance Data System (CDS), the National Emission Data System (NEDS), and the Storage and Retrieval of Aerometric Data (SAROAD). AIRS is the national repository for information concerning airborne pollution in the United States. AFS is used to track emissions and compliance data from industrial plants. AFS data are utilized by states to prepare State Implementation Plans to comply with regulatory programs and by EPA as an input for the estimation of total national emissions. AFS is undergoing a major redesign to support facility operating permits required under Title V

ORIGINAL WAGNERS THE (Continued) **1004773943**

of the Clean Air Act.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

13
South
1/8-1/4
958 ft.

Relative:
Lower

Actual:
396 ft.

FRITSCHS EXXON **RCRA-SQG** **1004774500**
99 S NEWTOWN ST RD **FINDS** **PAD987339835**
NEWTOWN SQUARE, PA 19073

RCRAInfo:
Owner: FRITSCH RONALD A
(215) 353-3007
EPA ID: PAD987339835
Contact: JAMES FRITSCH
(215) 353-3007
Classification: Conditionally Exempt Small Quantity Generator
TSDF Activities: Not reported

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

PA-EFACTS (Pennsylvania - Environmental Facility Application Compliance Tracking System) is a Department-wide database that provides a holistic view of clients and sites (including facilities) that DEP regulates.

14
WSW
1/8-1/4
1007 ft.

Relative:
Higher

Actual:
414 ft.

CARRIAGE HOUSE APT **UNREG LTANKS** **S105918790**
20 BISHOP HOLLOW RD **N/A**
NEWTOWN TWP., PA

UNREG LTANKS:
Region: South East
Class: Cleanup of Tanks using authorities other than Act 32
Closed: **6/10/1996**
Contaminant: Not reported

15
NW
1/8-1/4
1012 ft.

NEWTOWN SQUARE USPS
20 N NEWTOWN STREET RD
NEWTOWN SQUARE, PA

LUST

S105800260
N/A

Relative:
Higher

Actual:
406 ft.

LUST:

Facility Address2:	Not reported
Facility Id:	23-26075
Facility Type:	Undergroung Storage Tank Containing Petroleum
Facility Status:	**Cleanup Completed**
Status Date:	1990-06-04 00:00:00
Release Date:	1989-08-05 00:00:00
Region:	4100

16
ESE
1/8-1/4
1026 ft.

JEANS CUSTOM CLNR
3572 W CHESTER PIKE
NEWTOWN SQUARE, PA 19073

DRYCLEANERS

S106935438
N/A

Relative:
Higher

Actual:
402 ft.

DRYCLEANERS:

Regional Office:	1
District Office:	12
County #:	23
PF ID:	639354
Facility Address2:	NULL
EPA Compliance Data System #:	4204595060
Pf Status:	Active Facility
Epa Class:	State Only General Permit
Get Sic:	7216
Naics Number:	812320
Add Type Code:	LOCAD
PF Other Id:	00-1200122-1
Municipality Name:	Newtown
PA Class:	C
Max Achievable Control Tech Standards:	Y
Natl Emissions Stds/Haz Air Pollutants:	NULL
Prevention of Signif Deterioration:	NULL
Title V:	NULL

17
West
1/8-1/4
1030 ft.

PRINTZ PRODUCE
9 SMEDLEY DRIVE
NEWTOWN SQUARE, PA 19073

UST

U003962033
N/A

Relative:
Higher

Actual:
420 ft.

UST:

Facility ID:	3-002157
Owner Name:	Carson, Borka
Owner Address:	3020 Governor Printz Boulevard
Owner City,St,Zip:	Wilmington, DE 19802
Owner Country:	US
Tank Status:	**Removed**
Tank Substance:	Diesel
Tank Capacity:	2
Date Closed:	11/20/2001

Facility ID:	3-002157
Owner Name:	Carson, Borka
Owner Address:	3020 Governor Printz Boulevard

PRINTZ PRODUCE (Continued) **U003962033**

Owner City,St,Zip: Wilmington, DE 19802
Owner Country: US
Tank Status: Removed
Tank Substance: Heating Oil
Tank Capacity: 5
Date Closed: 11/20/2001

E18 **NEWTOWN SQUARE LAUNDRY & DRY CLNR** **DRYCLEANERS** **S106935482**
WNW **11 CLYDE LN** **N/A**
1/8-1/4 **NEWTOWN SQUARE, PA 19073**
1107 ft.

Site 1 of 2 in cluster E

Relative: Higher

Actual: 409 ft.

DRYCLEANERS:

Regional Office:	1
District Office:	12
County #:	23
PF ID:	654673
Facility Address2:	NULL
EPA Compliance Data System #:	4204595068
Pf Status:	Active Facility
Epa Class:	State Only General Permit
Get Sic:	7216
Naics Number:	812320
Add Type Code:	LOCAD
PF Other Id:	00-1200421-1
Municipality Name:	Newtown
PA Class:	C
Max Achievable Control Tech Standards:	Y
Natl Emissions Stds/Haz Air Pollutants:	NULL
Prevention of Signif Deterioration:	NULL
Title V:	NULL

E19 **NEWTOWN SQUARE LAUNDRY & DRY CLNR** **RCRA-SQG** **1000418128**
WNW **11 CLYDE LANE** **FINDS** **PAD073761322**
1/8-1/4 **NEWTOWN SQUARE, PA 19073** **PA MANIFEST**
1107 ft.

Site 2 of 2 in cluster E

Relative: Higher

Actual: 409 ft.

RCRAInfo:
Owner: FRANK VIDEON
(215) 555-1212
EPA ID: PAD073761322
Contact: LENORE PIERSON
(215) 356-1747
Classification: Small Quantity Generator
TSDF Activities: Not reported

NEWTOWN SQUARE LAUNDRY & DRY CLNR (Continued) **1000418128**

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site

AFS (Aerometric Information Retrieval System (AIRS) Facility Subsystem) replaces the former Compliance Data System (CDS), the National Emission Data System (NEDS), and the Storage and Retrieval of Aerometric Data (SAROAD). AIRS is the national repository for information concerning airborne pollution in the United States. AFS is used to track emissions and compliance data from industrial plants. AFS data are utilized by states to prepare State Implementation Plans to comply with regulatory programs and by EPA as an input for the estimation of total national emissions. AFS is undergoing a major redesign to support facility operating permits required under Title V of the Clean Air Act.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

PA-EFACTS (Pennsylvania - Environmental Facility Application Compliance Tracking System) is a Department-wide database that provides a holistic view of clients and sites (including facilities) that DEP regulates.

PA MANIFEST:

Manifest Number:	000541988JJK
Manifest Type:	T
Generator Epa Id:	PAD073761322
Generator Date:	12/06/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	OHD980587364
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN CORP
TSD Facility Address:	581 MILLIKEN DR SE
TSD Facility City:	HEBRON
TSD Facility State:	OH
Page Number:	1
Line Number:	1
Waste Number:	D007
Container Number:	10
Container Type:	DF
Waste Quantity:	800
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported

NEWTOWN SQUARE LAUNDRY & DRY CLNR (Continued) **1000418128**

Manifest Number:	000541988JJK
Manifest Type:	T
Generator Epa Id:	PAD073761322
Generator Date:	12/06/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	OHD980587364
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN CORP
TSD Facility Address:	581 MILLIKEN DR SE
TSD Facility City:	HEBRON
TSD Facility State:	OH
Page Number:	1
Line Number:	1
Waste Number:	D039
Container Number:	10
Container Type:	DF
Waste Quantity:	800
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported

Manifest Number:	000541988JJK
Manifest Type:	T
Generator Epa Id:	PAD073761322
Generator Date:	12/06/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD Epa Id:	OHD980587364
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN CORP
TSD Facility Address:	581 MILLIKEN DR SE
TSD Facility City:	HEBRON
TSD Facility State:	OH
Page Number:	1
Line Number:	1
Waste Number:	D040
Container Number:	10
Container Type:	DF
Waste Quantity:	800
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported

Manifest Number:	000541988JJK
Manifest Type:	T
Generator Epa Id:	PAD073761322
Generator Date:	12/06/06
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported

NEWTOWN SQUARE LAUNDRY & DRY CLNR (Continued) **1000418128**

Contact Phone:	Not reported
TSD Epa Id:	OHD980587364
TSD Date:	Not reported
TSD Facility Name:	SAFETY KLEEN CORP
TSD Facility Address:	581 MILLIKEN DR SE
TSD Facility City:	HEBRON
TSD Facility State:	OH
Page Number:	1
Line Number:	1
Waste Number:	F002
Container Number:	10
Container Type:	DF
Waste Quantity:	800
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	Not reported
Date Tsp Sig:	Not reported

F20
West
1/8-1/4
1280 ft.

Relative:
Higher

Actual:
421 ft.

FRANK C VIDEON CHRYSLER PLYMOUTH **RCRA-SQG** **1000209227**
3737 WEST CHESTER PK **FINDS** **PAD014875967**
NEWTOWN SQUARE, PA 19073

Site 1 of 2 in cluster F

RCRAInfo:

Owner:	VIDEON, FRANK
	(215) 555-1212
EPA ID:	PAD014875967
Contact:	FRANK_C VIDEON
	(215) 356-7000
Classification:	Small Quantity Generator
TSDF Activities:	Not reported

Violation Status: No violations found

FINDS:

Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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F21
West
1/8-1/4
1280 ft.

Relative:
Higher

Actual:
421 ft.

FRANK C VIDEON INC — **LUST** — **S105800237**
3737 WEST CHESTER PIKE — **N/A**
NEWTOWN SQUARE, PA

Site 2 of 2 in cluster F

LUST:
Facility Address2: Not reported
Facility Id: 23-40297
Facility Type: Undergroung Storage Tank Containing Petroleum
Facility Status: Cleanup Completed
Status Date: 1992-09-22 00:00:00
Release Date: 1989-08-05 00:00:00
Region: 4100

22
NNW
1/8-1/4
1291 ft.

Relative:
Lower

Actual:
373 ft.

DELMONT UTILITIES — **UST** — **U003214622**
3565 WINDING WAY — **N/A**
NEWTOWN SQUARE, PA 19073

UST:
Municipality Name: Newtown
Client Id Number: 186911
Mailing Name: DELMONT UTILITIES INC
Mailing Address: 3565 WINDING WAY
Mailing Address 2: PO BOX 374
Mailing City,St,Zip: NEWTOWN SQUARE, PA 19073-3822
Site ID: 573529
Other Id: 23-43080
2nd Facility Addr: Not reported
Region Code: EP SE Rgnl Off
Regulated Expiration: 2008-02-04 00:00:00
Tank Seq No: 001
Tank Code: UST
Date Installed: 1990-01-17
Capacity: 10000
Substance: Diesel Fuel
Tank Status: Currently In Use
Inspection Code: FOI
Tank Last Dt Inspected: 2005-03-16 00:00:00
Region Code: 4100

23
SSE
1/4-1/2
1466 ft.

Relative:
Lower

Actual:
361 ft.

FRITSCHS EXXON — **LUST** — **1000569707**
99 S NEWTOWN RD — **UST** — **N/A**
NEWTOWN SQUARE, PA 19073

LUST:
Facility Address2: Not reported
Facility Id: 23-25166
Facility Type: Undergroung Storage Tank Containing Petroleum
Facility Status: Cleanup Completed
Status Date: 1996-07-05 00:00:00
Release Date: 1989-08-05 00:00:00
Region: 4100

Facility Address2: Not reported
Facility Id: 23-25166

FRITSCHS EXXON (Continued) **1000569707**

Facility Type: Undergroung Storage Tank Containing Petroleum
Facility Status: Interim Remedial Actions Initiated or Completed
Status Date: 2003-10-18 00:00:00
Release Date: 2003-10-18 00:00:00
Region: 4100

UST:
Municipality Name: Newtown
Client Id Number: 130831
Mailing Name: FRITSCH RONALD A
Mailing Address: 99 S NEWTOWN ST RD
Mailing Address 2: Not reported
Mailing City,St,Zip: NEWTOWN SQUARE, PA 19073
Site ID: 514859
Other Id: 23-25166
2nd Facility Addr: Not reported
Region Code: EP SE Rgnl Off
Regulated Expiration: 2008-02-04 00:00:00
Tank Seq No: 008
Tank Code: UST
Date Installed: 1991-10-01
Capacity: 10000
Substance: Gasoline
Tank Status: Currently In Use
Inspection Code: FOI
Tank Last Dt Inspected: 2003-07-21 00:00:00
Region Code: 4100

Municipality Name: Newtown
Client Id Number: 130831
Mailing Name: FRITSCH RONALD A
Mailing Address: 99 S NEWTOWN ST RD
Mailing Address 2: Not reported
Mailing City,St,Zip: NEWTOWN SQUARE, PA 19073
Site ID: 514859
Other Id: 23-25166
2nd Facility Addr: Not reported
Region Code: EP SE Rgnl Off
Regulated Expiration: 2008-02-04 00:00:00
Tank Seq No: 007
Tank Code: UST
Date Installed: 1991-10-10
Capacity: 10000
Substance: Gasoline
Tank Status: Currently In Use
Inspection Code: FOI
Tank Last Dt Inspected: 2003-07-21 00:00:00
Region Code: 4100

Municipality Name: Newtown
Client Id Number: 130831
Mailing Name: FRITSCH RONALD A
Mailing Address: 99 S NEWTOWN ST RD
Mailing Address 2: Not reported
Mailing City,St,Zip: NEWTOWN SQUARE, PA 19073
Site ID: 514859
Other Id: 23-25166

FRITSCHS EXXON (Continued) **1000569707**

2nd Facility Addr:	Not reported
Region Code:	EP SE Rgnl Off
Regulated Expiration:	2008-02-04 00:00:00
Tank Seq No:	009
Tank Code:	UST
Date Installed:	1991-10-01
Capacity:	12000
Substance:	Gasoline
Tank Status:	**Currently In Use**
Inspection Code:	FOI
Tank Last Dt Inspected:	2003-07-21 00:00:00
Region Code:	4100

24
ESE
1/4-1/2
1902 ft.

Relative:
Lower

Actual:
375 ft.

DUNWOODY HOME **LUST** **S102604756**
3500 WEST CHESTER PIKE **N/A**
NEWTOWN SQUARE, PA

LUST:

Facility Address2:	Not reported
Facility Id:	23-40821
Facility Type:	Undergroung Storage Tank Containing Petroleum
Facility Status:	**Cleanup Completed**
Status Date:	1992-10-05 00:00:00
Release Date:	1989-08-05 00:00:00
Region:	4100

25
West
1/2-1
2746 ft.

Relative:
Higher

Actual:
409 ft.

LYONDELL CHEMICAL CO **FINDS** **1000324583**
3801 W CHESTER PIKE **RCRA-LQG** **PAD046538211**
NEWTOWN SQUARE, PA 19073 **UST**
CORRACTS
CERC-NFRAP
VCP
PA MANIFEST
UNREG LTANKS
ACT 2-DEED
CT MANIFEST
NJ MANIFEST
NY MANIFEST

FINDS:
Other Pertinent Environmental Activity Identified at Site

AFS (Aerometric Information Retrieval System (AIRS) Facility Subsystem) replaces the former Compliance Data System (CDS), the National Emission Data System (NEDS), and the Storage and Retrieval of Aerometric Data (SAROAD). AIRS is the national repository for information concerning airborne pollution in the United States. AFS is used to track emissions and compliance data from industrial plants. AFS data are utilized by states to prepare State Implementation Plans to comply with regulatory programs and by EPA as an input for the estimation of total national emissions. AFS is undergoing a major redesign to support facility operating permits required under Title V of the Clean Air Act.

NCDB (National Compliance Data Base) supports implementation of the

LYONDELL CHEMICAL CO (Continued) **1000324583**

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA). The system tracks inspections in regions and states with cooperative agreements, enforcement actions, and settlements.

TRIS (Toxics Release Inventory System) contains information from facilities on the amounts of over 300 listed toxic chemicals that these facilities release directly to air, water, land, or that are transported off-site.

The NEI (National Emissions Inventory) database contains information on stationary and mobile sources that emit criteria air pollutants and their precursors, as well as hazardous air pollutants (HAPs).

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ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and its Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

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RCRAInfo Corrective Action Summary:

Event: CA Prioritization, Facility or area was assigned a low corrective action priority.
Event Date: 12/01/1991

LYONDELL CHEMICAL CO (Continued) **1000324583**

RCRAInfo:
Owner: ARCO CHEMICAL CO DIV ATL RICHFIELD CO
(215) 359-2000
EPA ID: PAD046538211

Contact: OHN_C REID
(215) 353-4237

Classification: Large Quantity Generator
TSDF Activities: Not reported

BIENNIAL REPORTS:
Last Biennial Reporting Year: 2005

Waste	Quantity (Lbs)	Waste	Quantity (Lbs)
D001	107668.00	D002	5595.00
D003	4760.00	D004	4755.00
D005	4755.00	D007	4755.00
D008	4755.00	D009	4945.00
D011	4755.00	D018	4755.00
D022	15555.00	D028	10800.00
D035	15555.00	D038	15555.00
F002	15555.00	F003	90915.00
F005	20870.00	LABP	10190.00
P005	160.00	P030	160.00
U002	4755.00	U008	4755.00
U019	4755.00	U044	4755.00
U096	4755.00	U122	4755.00
U123	4755.00	U125	4755.00
U154	4755.00	U213	4755.00
U220	4755.00	U223	4755.00
U239	4755.00	U404	4755.00

Violation Status: Violations exist

Regulation Violated: 40 cfr 262.34
Area of Violation: GENERATOR-PRE-TRANSPORT REQUIREMENTS
Date Violation Determined: 09/08/1999
Actual Date Achieved Compliance: Not reported

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 10/24/2000
Penalty Type: Not reported

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 08/19/1987
Penalty Type: Not reported

Regulation Violated: 40 cfr 262.34
Area of Violation: GENERATOR-PRE-TRANSPORT REQUIREMENTS
Date Violation Determined: 09/08/1999
Actual Date Achieved Compliance: Not reported

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 10/24/2000
Penalty Type: Not reported

Regulation Violated: 40 cfr 265.173a
Area of Violation: GENERATOR-GENERAL REQUIREMENTS
Date Violation Determined: 09/08/1999
Actual Date Achieved Compliance: 09/08/1999

Regulation Violated: 262a.10

LYONDELL CHEMICAL CO (Continued) **1000324583**

Area of Violation: GENERATOR-GENERAL REQUIREMENTS
Date Violation Determined: 09/08/1999
Actual Date Achieved Compliance: 03/10/2000

Regulation Violated: 40 cfr 262.34(a)
Area of Violation: GENERATOR-PRE-TRANSPORT REQUIREMENTS
Date Violation Determined: 09/08/1999
Actual Date Achieved Compliance: Not reported

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 10/24/2000
Penalty Type: Not reported

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 01/28/1997
Penalty Type: Not reported

Regulation Violated: swma 6018.403(b)(2)
Area of Violation: GENERATOR-GENERAL REQUIREMENTS
Date Violation Determined: 09/08/1999
Actual Date Achieved Compliance: 09/08/1999

Regulation Violated: 265a.179
Area of Violation: GENERATOR-GENERAL REQUIREMENTS
Date Violation Determined: 09/08/1999
Actual Date Achieved Compliance: 03/10/2000

Regulation Violated: 262.20(g)
Area of Violation: GENERATOR-RECORDKEEPING REQUIREMENTS
Date Violation Determined: 02/06/1998
Actual Date Achieved Compliance: 02/06/1998

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 10/24/2000
Penalty Type: Not reported

Regulation Violated: 265.178
Area of Violation: GENERATOR-OTHER REQUIREMENTS
Date Violation Determined: 01/28/1997
Actual Date Achieved Compliance: 04/10/1997

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 10/24/2000
Penalty Type: Not reported

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 01/28/1997
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 08/19/1987
Actual Date Achieved Compliance: 01/13/1992

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 10/24/2000
Penalty Type: Not reported

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 08/19/1987
Penalty Type: Not reported

There are 10 violation record(s) reported at this site:

Evaluation	Area of Violation	Date of Compliance

LYONDELL CHEMICAL CO (Continued) **1000324583**

Compliance Evaluation Inspection	GENERATOR-PRE-TRANSPORT REQUIREMENTS	
	GENERATOR-PRE-TRANSPORT REQUIREMENTS	
	GENERATOR-PRE-TRANSPORT REQUIREMENTS	
Compliance Evaluation Inspection	GENERATOR-GENERAL REQUIREMENTS	19990908
	GENERATOR-GENERAL REQUIREMENTS	19990908
	GENERATOR-GENERAL REQUIREMENTS	20000310
	GENERATOR-GENERAL REQUIREMENTS	20000310
Compliance Evaluation Inspection	GENERATOR-RECORDKEEPING REQUIREMENTS	19980206
Compliance Evaluation Inspection	GENERATOR-OTHER REQUIREMENTS	19970410
Compliance Evaluation Inspection	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	19920113

UST:

Municipality Name:	Newtown
Client Id Number:	38011
Mailing Name:	LYONDELL CHEM CO
Mailing Address:	3801 WEST CHESTER PIKE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073-2387
Site ID:	253309
Other Id:	23-04044
2nd Facility Addr:	Not reported
Region Code:	EP SE Rgnl Off
Regulated Expiration:	2008-02-04 00:00:00
Tank Seq No:	011
Tank Code:	UST
Date Installed:	1993-02-09
Capacity:	500
Substance:	Other
Tank Status:	**Temporarily Out of Use**
Inspection Code:	FOI
Tank Last Dt Inspected:	2004-04-23 00:00:00
Region Code:	4100

Municipality Name:	Newtown
Client Id Number:	38011
Mailing Name:	LYONDELL CHEM CO
Mailing Address:	3801 WEST CHESTER PIKE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073-2387
Site ID:	253309
Other Id:	23-04044
2nd Facility Addr:	Not reported
Region Code:	EP SE Rgnl Off
Regulated Expiration:	2008-02-04 00:00:00
Tank Seq No:	009
Tank Code:	UST
Date Installed:	1993-02-09
Capacity:	2500
Substance:	Hazardous Substance
Tank Status:	**Temporarily Out of Use**
Inspection Code:	FOI
Tank Last Dt Inspected:	2004-04-23 00:00:00
Region Code:	4100

Municipality Name:	Newtown
Client Id Number:	38011
Mailing Name:	LYONDELL CHEM CO

LYONDELL CHEMICAL CO (Continued) **1000324583**

Mailing Address:	3801 WEST CHESTER PIKE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073-2387
Site ID:	253309
Other Id:	23-04044
2nd Facility Addr:	Not reported
Region Code:	EP SE Rgnl Off
Regulated Expiration:	2008-02-04 00:00:00
Tank Seq No:	008
Tank Code:	UST
Date Installed:	1992-12-01
Capacity:	6500
Substance:	Hazardous Substance
Tank Status:	**Temporarily Out of Use**
Inspection Code:	FOI
Tank Last Dt Inspected:	2004-04-23 00:00:00
Region Code:	4100

Municipality Name:	Newtown
Client Id Number:	38011
Mailing Name:	LYONDELL CHEM CO
Mailing Address:	3801 WEST CHESTER PIKE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073-2387
Site ID:	253309
Other Id:	23-04044
2nd Facility Addr:	Not reported
Region Code:	EP SE Rgnl Off
Regulated Expiration:	2008-02-04 00:00:00
Tank Seq No:	012
Tank Code:	UST
Date Installed:	1994-03-21
Capacity:	7500
Substance:	Hazardous Substance
Tank Status:	**Temporarily Out of Use**
Inspection Code:	FOI
Tank Last Dt Inspected:	Not reported
Region Code:	4100

CORRACTS:

EPA ID:	PAD046538211
EPA Region:	03
Area Name:	ENTIRE FACILITY
Actual Date:	12/01/1991
Action:	CA075LO - CA Prioritization, Facility or area was assigned a low corrective action priority
NAICS Code(s):	54171 Research and Development in the Physical, Engineering, and Life Sciences

CERC-NFRAP:

Site ID:	0303739
Federal Facility:	Not a Federal Facility
NPL Status:	Not on the NPL
Non NPL Status:	Deferred to RCRA

LYONDELL CHEMICAL CO (Continued) **1000324583**

CERCLIS-NFRAP Site Alias Name(s):
Alias Name: ARCO CHEMICAL CO RESEARCH & ENG CTR
Alias Address: Not reported
DELAWARE, PA
Site Description: Not reported

CERCLIS-NFRAP Assessment History:
Action: DISCOVERY
Date Started: Not reported
Date Completed: 10/03/1989
Priority Level: Not reported

Action: PRELIMINARY ASSESSMENT
Date Started: Not reported
Date Completed: 02/05/1990
Priority Level: Deferred to RCRA (Subtitle C)

Action: ARCHIVE SITE
Date Started: Not reported
Date Completed: 01/23/1996
Priority Level: Not reported

VCP:
Rec ID: 474
Activity ID: Not reported
Municipality: Newtown
Region: 4100
Site Size: Not reported
Cleanup: Statewide Health
Cleanup Indicator: Not reported
Response Date: 8/17/1998
Category Desc: Inorganics, Lead, PAH
Land Designation: Not reported

PA MANIFEST:
Manifest Number: NJA5012050
Manifest Type: T
Generator Epa Id: PAD046538211
Generator Date: 06/16/2004
Mailing Address: 3801 W CHESTER PIKE
Mailing City,St,Zip: NEWTOWN SQUARE, PA 19073
Contact Name: TOM BAKER
Contact Phone: 610-359-2910
TSD Epa Id: NJD980536593
TSD Date: 06/25/2004
TSD Facility Name: ONYX ENVIRONMENTAL SERVICE
TSD Facility Address: ONE EDEN LN
TSD Facility City: FLANDERS
TSD Facility State: NJ
Page Number: 1.00000
Line Number: 1.00000
Waste Number: D001
Container Number: 1.00000
Container Type: DF
Waste Quantity: 25.00000
Unit: P

LYONDELL CHEMICAL CO (Continued) **1000324583**

Handling Code:	Not reported
Tsp Epa Id:	NJD000692061
Date Tsp Sig:	06/25/2004
Manifest Number:	NJA5012050
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	06/16/2004
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	NJD980536593
TSD Date:	06/25/2004
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	ONE EDEN LN
TSD Facility City:	FLANDERS
TSD Facility State:	NJ
Page Number:	1.00000
Line Number:	1.00000
Waste Number:	D001
Container Number:	1.00000
Container Type:	DF
Waste Quantity:	25.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	NJD080631369
Date Tsp Sig:	06/16/2004
Manifest Number:	PAG397830
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	06/17/2004
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	06/25/2004
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	1.00000
Waste Number:	D001
Container Number:	9.00000
Container Type:	DM
Waste Quantity:	3000.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	NJD000692061
Date Tsp Sig:	06/17/2004
Manifest Number:	PAG397830
Manifest Type:	T
Generator Epa Id:	PAD046538211

LYONDELL CHEMICAL CO (Continued) **1000324583**

Generator Date:	06/17/2004
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	06/25/2004
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	1.00000
Waste Number:	D001
Container Number:	9.00000
Container Type:	DM
Waste Quantity:	3000.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	OHD009865825
Date Tsp Sig:	06/24/2004

Manifest Number:	PAG397830
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	06/17/2004
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	06/25/2004
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	1.00000
Waste Number:	F003
Container Number:	9.00000
Container Type:	DM
Waste Quantity:	3000.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	NJD000692061
Date Tsp Sig:	06/17/2004

Manifest Number:	PAG397830
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	06/17/2004
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	06/25/2004

LYONDELL CHEMICAL CO (Continued) **1000324583**

TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	1.00000
Waste Number:	F003
Container Number:	9.00000
Container Type:	DM
Waste Quantity:	3000.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	OHD009865825
Date Tsp Sig:	06/24/2004
Manifest Number:	PAG397830
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	06/17/2004
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	06/25/2004
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	2.00000
Waste Number:	D001
Container Number:	7.00000
Container Type:	DM
Waste Quantity:	2800.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	NJD000692061
Date Tsp Sig:	06/17/2004
Manifest Number:	PAG397830
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	06/17/2004
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	06/25/2004
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	2.00000
Waste Number:	D001

LYONDELL CHEMICAL CO (Continued) **1000324583**

Container Number:	7.00000
Container Type:	DM
Waste Quantity:	2800.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	OHD009865825
Date Tsp Sig:	06/24/2004
Manifest Number:	PAG397830
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	06/17/2004
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	06/25/2004
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	2.00000
Waste Number:	F003
Container Number:	7.00000
Container Type:	DM
Waste Quantity:	2800.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	NJD000692061
Date Tsp Sig:	06/17/2004
Manifest Number:	PAG397830
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	06/17/2004
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	06/25/2004
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	2.00000
Waste Number:	F003
Container Number:	7.00000
Container Type:	DM
Waste Quantity:	2800.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	OHD009865825
Date Tsp Sig:	06/24/2004

LYONDELL CHEMICAL CO (Continued) **1000324583**

Manifest Number:	PAG397830
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	06/17/2004
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	06/25/2004
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	2.00000
Waste Number:	F005
Container Number:	7.00000
Container Type:	DM
Waste Quantity:	2800.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	NJD000692061
Date Tsp Sig:	06/17/2004

Manifest Number:	PAG397830
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	06/17/2004
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	06/25/2004
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	2.00000
Waste Number:	F005
Container Number:	7.00000
Container Type:	DM
Waste Quantity:	2800.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	OHD009865825
Date Tsp Sig:	06/24/2004

Manifest Number:	PAH134866
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	01/19/2005
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER

LYONDELL CHEMICAL CO (Continued) **1000324583**

Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	01/28/2005
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	1.00000
Waste Number:	D001
Container Number:	4.00000
Container Type:	DM
Waste Quantity:	1600.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	NJD080631369
Date Tsp Sig:	01/19/2005
Manifest Number:	PAH134866
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	01/19/2005
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	01/28/2005
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	1.00000
Waste Number:	D001
Container Number:	4.00000
Container Type:	DM
Waste Quantity:	1600.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	OHD009865825
Date Tsp Sig:	01/27/2005
Manifest Number:	NJA5219305
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	01/19/2005
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	NJD980536593
TSD Date:	01/25/2005
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	ONE EDEN LN
TSD Facility City:	FLANDERS
TSD Facility State:	NJ

LYONDELL CHEMICAL CO (Continued) **1000324583**

Page Number:	1.00000
Line Number:	1.00000
Waste Number:	D001
Container Number:	1.00000
Container Type:	DF
Waste Quantity:	10.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	NJD000692061
Date Tsp Sig:	01/24/2005
Manifest Number:	NJA5219305
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	01/19/2005
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	NJD980536593
TSD Date:	01/25/2005
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	ONE EDEN LN
TSD Facility City:	FLANDERS
TSD Facility State:	NJ
Page Number:	1.00000
Line Number:	1.00000
Waste Number:	D001
Container Number:	1.00000
Container Type:	DF
Waste Quantity:	10.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	NJD080631369
Date Tsp Sig:	01/19/2005
Manifest Number:	PAH134866
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	01/19/2005
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	01/28/2005
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	2.00000
Waste Number:	D001
Container Number:	6.00000
Container Type:	DM
Waste Quantity:	2400.00000
Unit:	P

LYONDELL CHEMICAL CO (Continued) **1000324583**

Handling Code:	Not reported
Tsp Epa Id:	NJD080631369
Date Tsp Sig:	01/19/2005
Manifest Number:	PAH134866
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	01/19/2005
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	01/28/2005
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	2.00000
Waste Number:	D001
Container Number:	6.00000
Container Type:	DM
Waste Quantity:	2400.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	OHD009865825
Date Tsp Sig:	01/27/2005
Manifest Number:	PAH134866
Manifest Type:	T
Generator Epa Id:	PAD046538211
Generator Date:	01/19/2005
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	01/28/2005
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	2.00000
Waste Number:	F003
Container Number:	6.00000
Container Type:	DM
Waste Quantity:	2400.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	NJD080631369
Date Tsp Sig:	01/19/2005
Manifest Number:	PAH134866
Manifest Type:	T
Generator Epa Id:	PAD046538211

LYONDELL CHEMICAL CO (Continued) **1000324583**

Generator Date:	01/19/2005
Mailing Address:	3801 W CHESTER PIKE
Mailing City,St,Zip:	NEWTOWN SQUARE, PA 19073
Contact Name:	TOM BAKER
Contact Phone:	610-359-2910
TSD Epa Id:	OHD093945293
TSD Date:	01/28/2005
TSD Facility Name:	ONYX ENVIRONMENTAL SERVICE
TSD Facility Address:	4301 INFIRMARY RD
TSD Facility City:	WEST CARROLLTON
TSD Facility State:	OH
Page Number:	1.00000
Line Number:	2.00000
Waste Number:	F003
Container Number:	6.00000
Container Type:	DM
Waste Quantity:	2400.00000
Unit:	P
Handling Code:	Not reported
Tsp Epa Id:	OHD009865825
Date Tsp Sig:	01/27/2005

Click this hyperlink while viewing on your computer to access
91 additional PA MANIFEST: record(s) in the EDR Site Report.

UNREG LTANKS:

Region:	South East
Class:	Cleanup of Tanks using authorities other than Act 32
Closed:	**8/14/2001**
Contaminant:	FUEL OIL NO. 2

ACT 2-DEED:

Record ID:	190
Region:	4100
Site Size:	Not reported
Cleanup Standard:	Statewide Health
Cleanup Indicator:	Not reported
Response Date:	8/17/1998
Category Description:	Inorganics, Lead, PAH
Land Designation Code:	Not reported

CT MANIFEST:

Manifest No:	Not reported
Waste Occurence:	Not reported
UNNA:	Not reported
Hazard Class:	Not reported
US Dot Description:	Not reported
No of Containers:	Not reported
Container Type:	Not reported
Quantity:	Not reported
Weight/Volume:	Not reported
Additional Description:	Not reported
Handling Code:	Not reported
Date Record Was Last Modified:	Not reported
DEO Who Last Modified Record:	Not reported
Manifest No:	Not reported

LYONDELL CHEMICAL CO (Continued) **1000324583**

Waste Occurence:	Not reported
EPA Waste Code:	Not reported
Recycled Waste?:	Not reported
Date Record Was Last Modified:	Not reported
DEO Who Last Modified Record:	Not reported
Year:	1987
Manifest ID:	CTB0079047
TSDF EPA ID:	CTD072138969
TSDF Name:	ENVIRONMENTAL WASTE RESOURCES, INC.
TSDF Address:	130 FREIGHT STREET
TSDF City,St,Zip:	WATERBURY, CT 06702
TSDF Country:	USA
TSDF Telephone:	Not reported
Transport Date:	05/14/87
Transporter EPA ID:	NJD000813477
Transporter Name:	NAPPI TRUCKING CORPORATION
Transporter Country:	USA
Transporter Phone:	Not reported
Trans 2 Date:	/ /
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
Trans 2 Address:	Not reported
Trans 2 City,St,Zip:	CT
Trans 2 Country:	USA
Trans 2 Phone:	Not reported
Generator EPA ID:	PAD046538211
Gererator Phone:	2153592373
Generator Address:	Not reported
Generator City,State,Zip:	Not reported
Generator Country:	Not reported
Special Handling:	Yes
Discrepancies:	No
Date Shipped:	05/14/87
Date Received:	05/14/87
Last modified date:	04/27/04
Last modified by:	IG
Comments:	Not reported

NJ MANIFEST:

Manifest Code:	NJA5286293
EPA ID:	PAD046538211
Date Shipped:	20060118
TSDF EPA ID:	NJD980536593
Transporter EPA ID:	NJD080631369
Transporter 2 EPA ID:	NJD000692061
Date Trans1 Transported Waste:	060118
Date Trans2 Transported Waste:	060120
Date TSDF Received Waste:	060120
Tranporter 1 Decal:	Not reported
Tranporter 2 Decal:	Not reported
Data Entry Number:	02280621
Reference Manifest Number:	Not reported
Was Load Rejected (Y/N):	No
Reason Load Was Rejected:	Not reported
Waste Code:	D001
Quantity:	7
Unit:	P

LYONDELL CHEMICAL CO (Continued) **1000324583**

Hand Code: S01

Waste Code: F003
Quantity: 300
Unit: P
Hand Code: S01

Manifest Code: NJA5286483
EPA ID: PAD046538211
Date Shipped: 20060215
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 060215
Date Trans2 Transported Waste: 060217
Date TSDF Received Waste: 060217
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 04060625
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: D001
Quantity: 10
Unit: P
Hand Code: S01

Waste Code: F003
Quantity: 400
Unit: P
Hand Code: S01

Waste Code: D001
Quantity: 45
Unit: P
Hand Code: S01

Manifest Code: NJA5287659
EPA ID: PAD046538211
Date Shipped: 20060315
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 060315
Date Trans2 Transported Waste: 060317
Date TSDF Received Waste: 060317
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 04110621
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: F003

LYONDELL CHEMICAL CO (Continued) **1000324583**

Quantity: 400
Unit: P
Hand Code: S01

Manifest Code: NJA5324293
EPA ID: PAD046538211
Date Shipped: 20060419
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 060419
Date Trans2 Transported Waste: 060426
Date TSDF Received Waste: 060426
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 06210621
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: D002
Quantity: 80
Unit: P
Hand Code: S01

Waste Code: D001
Quantity: 40
Unit: P
Hand Code: S01

Waste Code: F003
Quantity: 400
Unit: P
Hand Code: S01

Waste Code: D001
Quantity: 5
Unit: P
Hand Code: S01

Manifest Code: NJA5324416
EPA ID: PAD046538211
Date Shipped: 20060517
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 060517
Date Trans2 Transported Waste: 060523
Date TSDF Received Waste: 060524
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 07120621
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No

LYONDELL CHEMICAL CO (Continued) **1000324583**

Reason Load Was Rejected: Not reported
Waste Code: U096
Quantity: 10
Unit: P
Hand Code: S01

Waste Code: D009
Quantity: 5
Unit: P
Hand Code: S01

Waste Code: D009
Quantity: 10
Unit: P
Hand Code: S01

Waste Code: D001
Quantity: 10
Unit: P
Hand Code: S01

Waste Code: F003
Quantity: 275
Unit: P
Hand Code: S01

Manifest Code: NJA5325501
EPA ID: PAD046538211
Date Shipped: 20060621
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 060621
Date Trans2 Transported Waste: 060623
Date TSDF Received Waste: 060623
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 08040622
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: D001
Quantity: 40
Unit: P
Hand Code: S01

Waste Code: F003
Quantity: 200
Unit: P
Hand Code: S01

Manifest Code: NJA5325704
EPA ID: PAD046538211

LYONDELL CHEMICAL CO (Continued) **1000324583**

Date Shipped: 20060719
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 060719
Date Trans2 Transported Waste: 060726
Date TSDF Received Waste: 060726
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 08240621
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: D002
Quantity: 40
Unit: P
Hand Code: S01

Waste Code: F003
Quantity: 150
Unit: P
Hand Code: S01

Manifest Code: NJA5325475
EPA ID: PAD046538211
Date Shipped: 20060815
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 060815
Date Trans2 Transported Waste: 060818
Date TSDF Received Waste: 060818
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 09130621
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: D001
Quantity: 7
Unit: P
Hand Code: S01

Manifest Code: NJA5323399
EPA ID: PAD046538211
Date Shipped: 20060815
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 060815
Date Trans2 Transported Waste: 060818
Date TSDF Received Waste: 060818
Tranporter 1 Decal: Not reported

LYONDELL CHEMICAL CO (Continued) **1000324583**

Tranporter 2 Decal: Not reported
Data Entry Number: 09210621
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: D001
Quantity: 50
Unit: P
Hand Code: S01

Waste Code: D001
Quantity: 8
Unit: P
Hand Code: S01

Waste Code: D001
Quantity: 20
Unit: P
Hand Code: S01

Waste Code: D001
Quantity: 6
Unit: P
Hand Code: S01

Waste Code: D001
Quantity: 10
Unit: P
Hand Code: S01

Manifest Code: NJA5334786
EPA ID: PAD046538211
Date Shipped: 20060823
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 060823
Date Trans2 Transported Waste: 060831
Date TSDF Received Waste: 060905
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 09280625
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: F003
Quantity: 350
Unit: P
Hand Code: S01

Waste Code: D001
Quantity: 5
Unit: P
Hand Code: S01

LYONDELL CHEMICAL CO (Continued) **1000324583**

Manifest Code:	NJA5219305
EPA ID:	PAD046538211
Date Shipped:	20050119
TSDF EPA ID:	NJD980536593
Transporter EPA ID:	NJD080631369
Transporter 2 EPA ID:	NJD000692061
Date Trans1 Transported Waste:	050119
Date Trans2 Transported Waste:	050124
Date TSDF Received Waste:	050125
Tranporter 1 Decal:	Not reported
Tranporter 2 Decal:	Not reported
Data Entry Number:	03040521
Reference Manifest Number:	Not reported
Was Load Rejected (Y/N):	No
Reason Load Was Rejected:	Not reported
Waste Code:	Not reported
Quantity:	Not reported
Unit:	Not reported
Hand Code:	Not reported

Manifest Code:	NJA5219304
EPA ID:	PAD046538211
Date Shipped:	20050120
TSDF EPA ID:	NJD980536593
Transporter EPA ID:	NJD080631369
Transporter 2 EPA ID:	NJD000692061
Date Trans1 Transported Waste:	050120
Date Trans2 Transported Waste:	050125
Date TSDF Received Waste:	050126
Tranporter 1 Decal:	Not reported
Tranporter 2 Decal:	Not reported
Data Entry Number:	03140521
Reference Manifest Number:	Not reported
Was Load Rejected (Y/N):	No
Reason Load Was Rejected:	Not reported
Waste Code:	Not reported
Quantity:	Not reported
Unit:	Not reported
Hand Code:	Not reported

Manifest Code:	NJA5219411
EPA ID:	PAD046538211
Date Shipped:	20050224
TSDF EPA ID:	NJD980536593
Transporter EPA ID:	NJD080631369
Transporter 2 EPA ID:	NJD000692061
Date Trans1 Transported Waste:	050224
Date Trans2 Transported Waste:	050301
Date TSDF Received Waste:	050301
Tranporter 1 Decal:	Not reported
Tranporter 2 Decal:	Not reported
Data Entry Number:	04290521
Reference Manifest Number:	Not reported

LYONDELL CHEMICAL CO (Continued) **1000324583**

Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: Not reported
Quantity: Not reported
Unit: Not reported
Hand Code: Not reported

Manifest Code: NJA5232104
EPA ID: PAD046538211
Date Shipped: 20050324
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 050324
Date Trans2 Transported Waste: 050330
Date TSDF Received Waste: 050330
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 05250522
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: Not reported
Quantity: Not reported
Unit: Not reported
Hand Code: Not reported

Manifest Code: NJA5226562
EPA ID: PAD046538211
Date Shipped: 20050420
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 050420
Date Trans2 Transported Waste: 050422
Date TSDF Received Waste: 050422
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 06160525
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: Not reported
Quantity: Not reported
Unit: Not reported
Hand Code: Not reported

Manifest Code: NJA5226324
EPA ID: PAD046538211
Date Shipped: 20050421
TSDF EPA ID: NJD980536593

LYONDELL CHEMICAL CO (Continued) **1000324583**

Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 050421
Date Trans2 Transported Waste: 050422
Date TSDF Received Waste: 050422
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 06150522
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: Not reported
Quantity: Not reported
Unit: Not reported
Hand Code: Not reported

Manifest Code: NJA5226396
EPA ID: PAD046538211
Date Shipped: 20050421
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 050421
Date Trans2 Transported Waste: 050422
Date TSDF Received Waste: 050422
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 06150522
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: Not reported
Quantity: Not reported
Unit: Not reported
Hand Code: Not reported

Manifest Code: NJA5226644
EPA ID: PAD046538211
Date Shipped: 20050519
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 050519
Date Trans2 Transported Waste: 050524
Date TSDF Received Waste: 050524
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 07120521
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: Not reported
Quantity: Not reported

LYONDELL CHEMICAL CO (Continued) **1000324583**

Unit: Not reported
Hand Code: Not reported

Manifest Code: NJA5260711
EPA ID: PAD046538211
Date Shipped: 20050615
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 050615
Date Trans2 Transported Waste: 050616
Date TSDF Received Waste: 050616
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 07200521
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: Not reported
Quantity: Not reported
Unit: Not reported
Hand Code: Not reported

Manifest Code: NJA5260712
EPA ID: PAD046538211
Date Shipped: 20050616
TSDF EPA ID: NJD980536593
Transporter EPA ID: NJD080631369
Transporter 2 EPA ID: NJD000692061
Date Trans1 Transported Waste: 050616
Date Trans2 Transported Waste: 050620
Date TSDF Received Waste: 050620
Tranporter 1 Decal: Not reported
Tranporter 2 Decal: Not reported
Data Entry Number: 07220521
Reference Manifest Number: Not reported
Was Load Rejected (Y/N): No
Reason Load Was Rejected: Not reported
Waste Code: Not reported
Quantity: Not reported
Unit: Not reported
Hand Code: Not reported

NY MANIFEST:
Document ID: NYA3513690
Manifest Status: Completed copy
Trans1 State ID: 881TZXNJ
Trans2 State ID: Not reported
Generator Ship Date: 870529
Trans1 Recv Date: 870529
Trans2 Recv Date: Not reported

LYONDELL CHEMICAL CO (Continued) **1000324583**

TSD Site Recv Date:	870602
Part A Recv Date:	870603
Part B Recv Date:	870604
Generator EPA ID:	PAD046538211
Trans1 EPA ID:	NJD054126164
Trans2 EPA ID:	Not reported
TSDF ID:	NYD000632372
Waste Code:	D002 - NON-LISTED CORROSIVE WASTES
Quantity:	00146
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	T Chemical, physical, or biological treatment.
Specific Gravity:	180
Year:	87
Manifest Tracking Num:	Not reported
Import Ind:	Not reported
Export Ind:	Not reported
Discr Quantity Ind:	Not reported
Discr Type Ind:	Not reported
Discr Residue Ind:	Not reported
Discr Partial Reject Ind:	Not reported
Discr Full Reject Ind:	Not reported
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	Not reported
EPA ID:	PAD046538211
Facility Name:	ATLANTIC RICHFIELD COMPANY(ARCO)CHEMICAL
Facility Address:	3801 WEST CHESTER PARK
Facility City:	NEWTOWN SQUARE
Facility Address 2:	Not reported
Country:	USA
County:	Not reported
Mailing Name:	ATLANTIC RICHFIELD COMPANY(ARCO)CHEMICAL
Mailing Contact:	FRANCIS GREEK
Mailing Address:	3801 WEST CHESTER PARK
Mailing Address 2:	Not reported
Mailing City:	NEWTOWN SQUARE
Mailing State:	PA
Mailing Zip:	Not reported
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	215-359-2012
Document ID:	NYA8275833
Manifest Status:	Completed copy
Trans1 State ID:	000000000
Trans2 State ID:	000000000
Generator Ship Date:	890518
Trans1 Recv Date:	890518
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	890522
Part A Recv Date:	890530
Part B Recv Date:	890525
Generator EPA ID:	PAD046538211
Trans1 EPA ID:	NCD980842132

LYONDELL CHEMICAL CO (Continued) **1000324583**

Trans2 EPA ID:	Not reported
TSDF ID:	NYD000632372
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Quantity:	00250
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	T Chemical, physical, or biological treatment.
Specific Gravity:	100
Waste Code:	Not reported
Quantity:	00250
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	T Chemical, physical, or biological treatment.
Specific Gravity:	100
Waste Code:	Not reported
Quantity:	00010
Units:	P - Pounds
Number of Containers:	001
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	T Chemical, physical, or biological treatment.
Specific Gravity:	100
Year:	89
Manifest Tracking Num:	Not reported
Import Ind:	Not reported
Export Ind:	Not reported
Discr Quantity Ind:	Not reported
Discr Type Ind:	Not reported
Discr Residue Ind:	Not reported
Discr Partial Reject Ind:	Not reported
Discr Full Reject Ind:	Not reported
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	Not reported
EPA ID:	PAD046538211
Facility Name:	ATLANTIC RICHFIELD COMPANY(ARCO)CHEMICAL
Facility Address:	3801 WEST CHESTER PARK
Facility City:	NEWTOWN SQUARE
Facility Address 2:	Not reported
Country:	USA
County:	Not reported
Mailing Name:	ATLANTIC RICHFIELD COMPANY(ARCO)CHEMICAL
Mailing Contact:	FRANCIS GREEK
Mailing Address:	3801 WEST CHESTER PARK
Mailing Address 2:	Not reported
Mailing City:	NEWTOWN SQUARE
Mailing State:	PA
Mailing Zip:	Not reported
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	215-359-2012
Document ID:	PAO6393833
Manifest Status:	Completed copy
Trans1 State ID:	AH0176

LYONDELL CHEMICAL CO (Continued) **1000324583**

Trans2 State ID:	Not reported
Generator Ship Date:	831014
Trans1 Recv Date:	831014
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	831019
Part A Recv Date:	031101
Part B Recv Date:	031101
Generator EPA ID:	PAD046538211
Trans1 EPA ID:	PAD064035819
Trans2 EPA ID:	Not reported
TSDF ID:	NYD080336241
Waste Code:	D002 - NON-LISTED CORROSIVE WASTES
Quantity:	00040
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	L Landfill.
Specific Gravity:	100
Waste Code:	Not reported
Quantity:	00830
Units:	P - Pounds
Number of Containers:	013
Container Type:	DM - Metal drums, barrels
Handling Method:	L Landfill.
Specific Gravity:	100
Year:	83
Manifest Tracking Num:	Not reported
Import Ind:	Not reported
Export Ind:	Not reported
Discr Quantity Ind:	Not reported
Discr Type Ind:	Not reported
Discr Residue Ind:	Not reported
Discr Partial Reject Ind:	Not reported
Discr Full Reject Ind:	Not reported
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	Not reported
EPA ID:	PAD046538211
Facility Name:	ATLANTIC RICHFIELD COMPANY(ARCO)CHEMICAL
Facility Address:	3801 WEST CHESTER PARK
Facility City:	NEWTOWN SQUARE
Facility Address 2:	Not reported
Country:	USA
County:	Not reported
Mailing Name:	ATLANTIC RICHFIELD COMPANY(ARCO)CHEMICAL
Mailing Contact:	FRANCIS GREEK
Mailing Address:	3801 WEST CHESTER PARK
Mailing Address 2:	Not reported
Mailing City:	NEWTOWN SQUARE
Mailing State:	PA
Mailing Zip:	Not reported
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	215-359-2012
Document ID:	PAO6393844

LYONDELL CHEMICAL CO (Continued) **1000324583**

Manifest Status:	Completed copy
Trans1 State ID:	AH0176
Trans2 State ID:	Not reported
Generator Ship Date:	831014
Trans1 Recv Date:	831014
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	831019
Part A Recv Date:	031101
Part B Recv Date:	031101
Generator EPA ID:	PAD046538211
Trans1 EPA ID:	PAD064035819
Trans2 EPA ID:	Not reported
TSDF ID:	NYD080336241
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Quantity:	01215
Units:	P - Pounds
Number of Containers:	013
Container Type:	DM - Metal drums, barrels
Handling Method:	L Landfill.
Specific Gravity:	100
Waste Code:	Not reported
Quantity:	00120
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	L Landfill.
Specific Gravity:	100
Waste Code:	Not reported
Quantity:	00221
Units:	P - Pounds
Number of Containers:	003
Container Type:	DM - Metal drums, barrels
Handling Method:	L Landfill.
Specific Gravity:	100
Waste Code:	Not reported
Quantity:	00184
Units:	P - Pounds
Number of Containers:	002
Container Type:	DM - Metal drums, barrels
Handling Method:	L Landfill.
Specific Gravity:	100
Year:	83
Manifest Tracking Num:	Not reported
Import Ind:	Not reported
Export Ind:	Not reported
Discr Quantity Ind:	Not reported
Discr Type Ind:	Not reported
Discr Residue Ind:	Not reported
Discr Partial Reject Ind:	Not reported
Discr Full Reject Ind:	Not reported
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	Not reported
EPA ID:	PAD046538211
Facility Name:	ATLANTIC RICHFIELD COMPANY(ARCO)CHEMICAL
Facility Address:	3801 WEST CHESTER PARK

LYONDELL CHEMICAL CO (Continued) **1000324583**

Facility City:	NEWTOWN SQUARE
Facility Address 2:	Not reported
Country:	USA
County:	Not reported
Mailing Name:	ATLANTIC RICHFIELD COMPANY(ARCO)CHEMICAL
Mailing Contact:	FRANCIS GREEK
Mailing Address:	3801 WEST CHESTER PARK
Mailing Address 2:	Not reported
Mailing City:	NEWTOWN SQUARE
Mailing State:	PA
Mailing Zip:	Not reported
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	215-359-2012
Document ID:	PAO6393855
Manifest Status:	Completed copy
Trans1 State ID:	AH0176
Trans2 State ID:	Not reported
Generator Ship Date:	831014
Trans1 Recv Date:	831014
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	831019
Part A Recv Date:	031101
Part B Recv Date:	031101
Generator EPA ID:	PAD046538211
Trans1 EPA ID:	PAD064035819
Trans2 EPA ID:	Not reported
TSDF ID:	NYD080336241
Waste Code:	D000 - NON-LISTED TOXIC WASTES
Quantity:	00280
Units:	P - Pounds
Number of Containers:	003
Container Type:	DM - Metal drums, barrels
Handling Method:	L Landfill.
Specific Gravity:	100
Year:	83
Manifest Tracking Num:	Not reported
Import Ind:	Not reported
Export Ind:	Not reported
Discr Quantity Ind:	Not reported
Discr Type Ind:	Not reported
Discr Residue Ind:	Not reported
Discr Partial Reject Ind:	Not reported
Discr Full Reject Ind:	Not reported
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	Not reported
EPA ID:	PAD046538211
Facility Name:	ATLANTIC RICHFIELD COMPANY(ARCO)CHEMICAL
Facility Address:	3801 WEST CHESTER PARK
Facility City:	NEWTOWN SQUARE
Facility Address 2:	Not reported
Country:	USA
County:	Not reported
Mailing Name:	ATLANTIC RICHFIELD COMPANY(ARCO)CHEMICAL

LYONDELL CHEMICAL CO (Continued) **1000324583**

Mailing Contact:	FRANCIS GREEK
Mailing Address:	3801 WEST CHESTER PARK
Mailing Address 2:	Not reported
Mailing City:	NEWTOWN SQUARE
Mailing State:	PA
Mailing Zip:	Not reported
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	215-359-2012

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
NEWTOWN SQUARE	1004773285	SUNOCO SVC STA	RT 252 & REESE ST	19073	RCRA-SQG, FINDS, LUST
NEWTOWN SQUARE	1004773307	SUN REFINING AND MARKETING (PETS)	BISHOP HOLLOW ROAD	19073	RCRA-SQG, FINDS
NEWTOWN SQUARE	1004774613	SUNOCO SVC STA	3607 W CHESTER PK & NEWTOWN RD	19073	RCRA-SQG
NEWTOWN SQUARE	2002591042	3400 WESTCHESTER PIKE	3400 WESTCHESTER PIKE	19073	ERNS

EPA Waste Codes Addendum

Code	Description
D001	IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
D002	A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
D003	A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.
D004	ARSENIC
D005	BARIUM
D007	CHROMIUM
D008	LEAD
D009	MERCURY
D011	SILVER
D018	BENZENE
D022	CHLOROFORM
D028	1,2-DICHLOROETHANE
D035	METHYL ETHYL KETONE
D038	PYRIDINE
F002	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

EPA Waste Codes Addendum

Code	Description
F003	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
F005	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
LABP	LAB PACK
P005	ALLYL ALCOHOL
P005	2-PROPEN-1-OL
P030	CYANIDES (SOLUBLE CYANIDE SALTS), NOT OTHERWISE SPECIFIED
U002	ACETONE (I)
U002	2-PROPANONE (I)
U008	ACRYLIC ACID (I)
U008	2-PROPENOIC ACID (I)
U019	BENZENE (I,T)
U044	CHLOROFORM
U044	METHANE, TRICHLORO-
U096	ALPHA,ALPHA-DIMETHYLBENZYLHYDROPEROXIDE (R)
U096	HYDROPEROXIDE, 1-METHYL-1-PHENYLETHYL- (R)
U122	FORMALDEHYDE
U123	FORMIC ACID (C,T)
U125	2-FURANCARBOXALDEHYDE (I)
U125	FURFURAL (I)
U154	METHANOL (I)

EPA Waste Codes Addendum

Code	Description
U154	METHYL ALCOHOL (I)
U213	FURAN, TETRAHYDRO-(I)
U213	TETRAHYDROFURAN (I)
U220	BENZENE, METHYL-
U220	TOLUENE
U223	BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T)
U223	TOLUENE DIISOCYANATE (R,T)
U239	BENZENE, DIMETHYL- (I,T)
U239	XYLENE (I)
U404	ETHANAMINE, N,N-DIETHYL- (OR) TRIETHYLAMINE

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

FEDERAL RECORDS

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 07/18/2007
Date Data Arrived at EDR: 08/03/2007
Date Made Active in Reports: 08/29/2007
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 07/31/2007
Next Scheduled EDR Contact: 10/29/2007
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 08/09/2007
Date Data Arrived at EDR: 09/05/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 36

Source: EPA
Telephone: N/A
Last EDR Contact: 08/31/2007
Next Scheduled EDR Contact: 10/29/2007
Data Release Frequency: Quarterly

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 08/27/2007
Date Data Arrived at EDR: 08/29/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 43

Source: EPA
Telephone: N/A
Last EDR Contact: 08/29/2007
Next Scheduled EDR Contact: 10/29/2007
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: No Update Planned

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/23/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 08/29/2007
Number of Days to Update: 70

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 09/19/2007
Next Scheduled EDR Contact: 12/17/2007
Data Release Frequency: Quarterly

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 06/21/2007
Date Data Arrived at EDR: 07/23/2007
Date Made Active in Reports: 08/29/2007
Number of Days to Update: 37

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 09/17/2007
Next Scheduled EDR Contact: 12/17/2007
Data Release Frequency: Quarterly

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/26/2007
Date Data Arrived at EDR: 08/08/2007
Date Made Active in Reports: 08/29/2007
Number of Days to Update: 21

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/04/2007
Next Scheduled EDR Contact: 12/03/2007
Data Release Frequency: Quarterly

RCRA: Resource Conservation and Recovery Act Information

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/13/2006
Date Data Arrived at EDR: 06/28/2006
Date Made Active in Reports: 08/23/2006
Number of Days to Update: 56

Source: EPA
Telephone: 800-438-2474
Last EDR Contact: 10/16/2007
Next Scheduled EDR Contact: 01/14/2008
Data Release Frequency: Quarterly

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 01/24/2007
Date Made Active in Reports: 03/12/2007
Number of Days to Update: 47

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 10/19/2007
Next Scheduled EDR Contact: 01/21/2008
Data Release Frequency: Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 07/02/2007
Date Data Arrived at EDR: 07/18/2007
Date Made Active in Reports: 09/18/2007
Number of Days to Update: 62

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 10/16/2007
Next Scheduled EDR Contact: 01/14/2008
Data Release Frequency: Annually

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 07/16/2007
Date Data Arrived at EDR: 08/03/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 69

Source: Environmental Protection Agency
Telephone: 703-603-8905
Last EDR Contact: 10/01/2007
Next Scheduled EDR Contact: 12/31/2007
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 07/16/2007
Date Data Arrived at EDR: 08/03/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 69

Source: Environmental Protection Agency
Telephone: 703-603-8905
Last EDR Contact: 10/01/2007
Next Scheduled EDR Contact: 12/31/2007
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 08/09/2007
Next Scheduled EDR Contact: 11/05/2007
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 08/31/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 41

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 10/01/2007
Next Scheduled EDR Contact: 12/31/2007
Data Release Frequency: Varies

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 06/20/2007
Date Data Arrived at EDR: 07/09/2007
Date Made Active in Reports: 08/29/2007
Number of Days to Update: 51

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/10/2007
Next Scheduled EDR Contact: 12/10/2007
Data Release Frequency: Semi-Annually

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 04/13/2007
Date Data Arrived at EDR: 07/16/2007
Date Made Active in Reports: 08/29/2007
Number of Days to Update: 44

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 09/21/2007
Next Scheduled EDR Contact: 01/21/2008
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 06/08/2007
Date Data Arrived at EDR: 07/03/2007
Date Made Active in Reports: 08/29/2007
Number of Days to Update: 57

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 11/08/2007
Next Scheduled EDR Contact: 12/31/2007
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/08/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 82

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 09/19/2007
Next Scheduled EDR Contact: 12/17/2007
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 04/27/2007
Date Made Active in Reports: 07/05/2007
Number of Days to Update: 69

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 09/18/2007
Next Scheduled EDR Contact: 12/17/2007
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/30/2006
Number of Days to Update: 46

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 10/30/2007
Next Scheduled EDR Contact: 01/14/2008
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 07/06/2007
Date Data Arrived at EDR: 07/20/2007
Date Made Active in Reports: 09/18/2007
Number of Days to Update: 60

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 09/17/2007
Next Scheduled EDR Contact: 12/17/2007
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 07/06/2007
Date Data Arrived at EDR: 07/20/2007
Date Made Active in Reports: 09/18/2007
Number of Days to Update: 60

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 09/17/2007
Next Scheduled EDR Contact: 12/17/2007
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 03/13/2007
Date Made Active in Reports: 04/27/2007
Number of Days to Update: 45

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/15/2007
Next Scheduled EDR Contact: 01/14/2008
Data Release Frequency: Annually

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 09/12/2007
Next Scheduled EDR Contact: 12/10/2007
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 08/14/2007
Date Data Arrived at EDR: 08/29/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 43

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/29/2007
Next Scheduled EDR Contact: 11/26/2007
Data Release Frequency: Varies

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/27/2007
Date Data Arrived at EDR: 08/13/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 10/15/2007
Next Scheduled EDR Contact: 01/14/2008
Data Release Frequency: Quarterly

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 07/25/2007
Date Data Arrived at EDR: 07/31/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 72

Source: EPA, Region 9
Telephone: 415-972-3336
Last EDR Contact: 09/24/2007
Next Scheduled EDR Contact: 12/24/2007
Data Release Frequency: Varies

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 09/17/2007
Next Scheduled EDR Contact: 12/17/2007
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 12/01/2006
Date Data Arrived at EDR: 01/08/2007
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 3

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 10/02/2007
Next Scheduled EDR Contact: 12/24/2007
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/31/2007
Date Data Arrived at EDR: 08/01/2007
Date Made Active in Reports: 08/29/2007
Number of Days to Update: 28

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 10/31/2007
Next Scheduled EDR Contact: 01/28/2008
Data Release Frequency: Quarterly

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 03/08/2007
Date Data Arrived at EDR: 04/12/2007
Date Made Active in Reports: 05/14/2007
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Varies

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 04/12/2007
Date Data Arrived at EDR: 06/08/2007
Date Made Active in Reports: 08/29/2007
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 08/09/2007
Next Scheduled EDR Contact: 11/05/2007
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 07/09/2007
Date Data Arrived at EDR: 07/24/2007
Date Made Active in Reports: 09/18/2007
Number of Days to Update: 56

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/01/2007
Next Scheduled EDR Contact: 12/31/2007
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 05/09/2007
Date Data Arrived at EDR: 06/28/2007
Date Made Active in Reports: 08/29/2007
Number of Days to Update: 62

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/26/2007
Next Scheduled EDR Contact: 12/24/2007
Data Release Frequency: Semi-Annually

FINDS: Facility Index System/Facility Registry System
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 07/19/2007
Date Data Arrived at EDR: 07/25/2007
Date Made Active in Reports: 09/18/2007
Number of Days to Update: 55

Source: EPA
Telephone: (215) 814-5000
Last EDR Contact: 10/01/2007
Next Scheduled EDR Contact: 12/31/2007
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 08/31/2007
Next Scheduled EDR Contact: 12/03/2007
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 03/06/2007
Date Made Active in Reports: 04/13/2007
Number of Days to Update: 38

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 09/12/2007
Next Scheduled EDR Contact: 12/10/2007
Data Release Frequency: Biennially

PWS: Public Water System Data
This Safe Drinking Water Information System (SDWIS) file contains public water systems name and address, population served and the primary source of water

Date of Government Version: 02/24/2000
Date Data Arrived at EDR: 04/27/2005
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: EPA
Telephone: N/A
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: N/A

USGS WATER WELLS: National Water Information System (NWIS)
This database consists of well records in the United States. Available site descriptive information includes well location information (latitude and longitude, well depth, site use, water use, and aquifer).

Date of Government Version: 03/25/2005
Date Data Arrived at EDR: 03/25/2005
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: USGS
Telephone: N/A
Last EDR Contact: 03/25/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: N/A

STATE AND LOCAL RECORDS

SHWS: Hazardous Sites Cleanup Act Site List

The Hazardous Sites Cleanup Act Site List includes sites listed on PA Priority List, sites delisted from PA Priority List, Interim Response Completed sites, and Sites Being Studied or Response Being Planned.

Date of Government Version: 07/02/2007
Date Data Arrived at EDR: 08/15/2007
Date Made Active in Reports: 09/27/2007
Number of Days to Update: 43

Source: Department Environmental Protection
Telephone: 717-783-7816
Last EDR Contact: 08/15/2007
Next Scheduled EDR Contact: 11/12/2007
Data Release Frequency: Semi-Annually

HSCA: HSCA Remedial Sites Listing

A list of remedial sites on the PA Priority List. This is the PA state equivalent of the federal NPL superfund list.

Date of Government Version: 05/05/2004
Date Data Arrived at EDR: 05/26/2004
Date Made Active in Reports: 06/24/2004
Number of Days to Update: 29

Source: Department of Environmental Protection
Telephone: 717-783-7816
Last EDR Contact: 08/15/2007
Next Scheduled EDR Contact: 11/12/2007
Data Release Frequency: Varies

SWF/LF: Operating Facilities

The listing includes Municipal Waste Landfills, Construction/Demolition Waste Landfills and Waste-to-Energy Facilities.

Date of Government Version: 08/10/2006
Date Data Arrived at EDR: 10/09/2006
Date Made Active in Reports: 11/08/2006
Number of Days to Update: 30

Source: Department of Environmental Protection
Telephone: 717-787-7564
Last EDR Contact: 09/20/2007
Next Scheduled EDR Contact: 12/17/2007
Data Release Frequency: Semi-Annually

HIST LF INACTIVE: Inactive Facilities List

A listing of inactive non-hazardous facilities (10000 & 300000 series). This listing is no longer updated or maintained by the Department of Environmental Protection. At the time the listing was available, the DEP?s name was the Department of Environmental Resources.

Date of Government Version: 12/20/1994
Date Data Arrived at EDR: 07/12/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 30

Source: Department of Environmental Protection
Telephone: 717-787-7381
Last EDR Contact: 06/21/2005
Next Scheduled EDR Contact: 12/19/2005
Data Release Frequency: No Update Planned

HIST LF INVENTORY: Facility Inventory

A listing of solid waste facilities. This listing is no longer updated or maintained by the Department of Environmental Protection. At the time the listing was available, the DEP?s name was the Department of Environmental Resources.

Date of Government Version: 06/02/1999
Date Data Arrived at EDR: 07/12/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 30

Source: Department of Environmental Protection
Telephone: 717-787-7381
Last EDR Contact: 09/19/2005
Next Scheduled EDR Contact: 12/19/2005
Data Release Frequency: No Update Planned

HIST LF: Abandoned Landfill Inventory

The report provides facility information recorded in the Pennsylvania Department of Environmental Protection ALI database. Some of this information has been abstracted from old records and may not accurately reflect the current conditions and status at these facilities

Date of Government Version: 01/04/2005
Date Data Arrived at EDR: 01/04/2005
Date Made Active in Reports: 02/04/2005
Number of Days to Update: 31

Source: Department of Environmental Protection
Telephone: 717-787-7564
Last EDR Contact: 09/17/2007
Next Scheduled EDR Contact: 12/17/2007
Data Release Frequency: Varies

LUST: Storage Tank Release Sites

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 07/02/2007
Date Data Arrived at EDR: 07/13/2007
Date Made Active in Reports: 07/30/2007
Number of Days to Update: 17

Source: Department of Environmental Protection
Telephone: 717-783-7509
Last EDR Contact: 10/12/2007
Next Scheduled EDR Contact: 01/07/2008
Data Release Frequency: Semi-Annually

UNREG LTANKS: Unregulated Tank Cases

Leaking storage tank cases from unregulated storage tanks.

Date of Government Version: 04/12/2002
Date Data Arrived at EDR: 08/14/2003
Date Made Active in Reports: 08/29/2003
Number of Days to Update: 15

Source: Department of Environmental Protection
Telephone: 717-783-7509
Last EDR Contact: 08/14/2003
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST: Listing of Pennsylvania Regulated Underground Storage Tanks

Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 04/02/2007
Date Data Arrived at EDR: 04/11/2007
Date Made Active in Reports: 05/03/2007
Number of Days to Update: 22

Source: Department of Environmental Protection
Telephone: 717-772-5599
Last EDR Contact: 10/12/2007
Next Scheduled EDR Contact: 01/07/2008
Data Release Frequency: Varies

ARCHIVE UST: Archived Underground Storage Tank Sites

The list includes tanks storing highly hazardous substances that were removed from the DEP's Storage Tank Information database because of the Department's policy on sensitive information. The list also may include tanks that are removed or permanently closed.

Date of Government Version: 04/02/2007
Date Data Arrived at EDR: 04/11/2007
Date Made Active in Reports: 05/04/2007
Number of Days to Update: 23

Source: Department of Environmental Protection
Telephone: 717-772-5599
Last EDR Contact: 10/12/2007
Next Scheduled EDR Contact: 01/07/2008
Data Release Frequency: Varies

LAST: Storage Tank Release Sites

Leaking Aboveground Storage Tank Incident Reports.

Date of Government Version: 07/02/2007
Date Data Arrived at EDR: 07/13/2007
Date Made Active in Reports: 07/30/2007
Number of Days to Update: 17

Source: Department of Environmental Protection
Telephone: 717-783-7509
Last EDR Contact: 10/12/2007
Next Scheduled EDR Contact: 01/07/2008
Data Release Frequency: Semi-Annually

AST: Listing of Pennsylvania Regulated Aboveground Storage Tanks

Registered Aboveground Storage Tanks.

Date of Government Version: 04/02/2007
Date Data Arrived at EDR: 04/11/2007
Date Made Active in Reports: 05/03/2007
Number of Days to Update: 22

Source: Department of Environmental Protection
Telephone: 717-772-5599
Last EDR Contact: 10/12/2007
Next Scheduled EDR Contact: 01/07/2008
Data Release Frequency: Varies

ARCHIVE AST: Archived Aboveground Storage Tank Sites

The list includes aboveground tanks with a capacity greater than 21,000 gallons that were removed from the DEP's Storage Tank Information database because of the Department's policy on sensitive information. The list also may include tanks that are removed or permanently closed.

Date of Government Version: 04/02/2007
Date Data Arrived at EDR: 04/11/2007
Date Made Active in Reports: 05/04/2007
Number of Days to Update: 23

Source: Department of Environmental Protection
Telephone: 717-772-5599
Last EDR Contact: 10/12/2007
Next Scheduled EDR Contact: 01/07/2008
Data Release Frequency: Varies

MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 08/23/2007
Date Made Active in Reports: 09/27/2007
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 09/10/2007
Next Scheduled EDR Contact: 12/10/2007
Data Release Frequency: Annually

ACT 2-DEED: Act 2-Deed Acknowledgment Sites

This listing pertains to sites where the Department has approved a cleanup requiring a deed acknowledgment under Act 2. This list includes sites remediated to a non-residential Statewide health standard (Section 303(g)); all sites demonstrating attainment of a Site-specific standard (Section 304(m)); and sites being remediated as a special industrial area (Section 305(g)). Persons who remediated a site to a standard that requires a deed acknowledgment shall comply with the requirements of the Solid Waste Management Act or the Hazardous Sites Cleanup Act, as referenced in Act 2. These statutes require a property description section in the deed concerning the hazardous substance disposal on the site. The location of disposed hazardous substances and a description of the type of hazardous substances disposed on the site shall be included in the deed acknowledgment. A deed acknowledgment is required at the time of conveyance of the property.

Date of Government Version: 08/16/2007
Date Data Arrived at EDR: 08/17/2007
Date Made Active in Reports: 09/27/2007
Number of Days to Update: 41

Source: Department of Environmental Protection
Telephone: 717-783-9470
Last EDR Contact: 08/13/2007
Next Scheduled EDR Contact: 11/12/2007
Data Release Frequency: Varies

ENG CONTROLS: Engineering Controls Site Listing

Under the Land Recycling Act (Act 2) persons who perform a site cleanup using the site-specific standard or the special industrial area standard may use engineering or institutional controls as part of the response action. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 12/19/2006
Date Data Arrived at EDR: 12/20/2006
Date Made Active in Reports: 01/30/2007
Number of Days to Update: 41

Source: Department of Environmental Protection
Telephone: 717-783-9470
Last EDR Contact: 08/17/2007
Next Scheduled EDR Contact: 11/12/2007
Data Release Frequency: Varies

INST CONTROL: Institutional Controls Site Listing

Under the Land Recycling Act (Act 2) persons who perform a site cleanup using the site-specific standard or the special industrial area standard may use engineering or institutional controls as part of the response action. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 12/19/2006
Date Data Arrived at EDR: 12/20/2006
Date Made Active in Reports: 01/30/2007
Number of Days to Update: 41

Source: Department of Environmental Protection
Telephone: 717-783-9470
Last EDR Contact: 08/17/2007
Next Scheduled EDR Contact: 11/12/2007
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Sites
Sites involved in the Voluntary Cleanup Program

Date of Government Version: 08/17/2007
Date Data Arrived at EDR: 08/17/2007
Date Made Active in Reports: 09/27/2007
Number of Days to Update: 41

Source: Department of Environmental Protection
Telephone: 717-783-2388
Last EDR Contact: 08/13/2007
Next Scheduled EDR Contact: 11/12/2007
Data Release Frequency: Semi-Annually

DRYCLEANERS: Drycleaner Facility Locations
A listing of drycleaner facility locations.

Date of Government Version: 08/03/2007
Date Data Arrived at EDR: 08/03/2007
Date Made Active in Reports: 09/27/2007
Number of Days to Update: 55

Source: Department of Environmental Protection
Telephone: 717-787-9702
Last EDR Contact: 10/15/2007
Next Scheduled EDR Contact: 01/14/2008
Data Release Frequency: Varies

BROWNFIELDS: Brownfields Sites
Brownfields are generally defined as abandoned or underused industrial or commercial properties where redevelopment is complicated by actual or perceived environmental contamination. Brownfields vary in size, location, age and past use. They can range from a small, abandoned corner gas station to a large, multi-acre former manufacturing plant that has been closed for years.

Date of Government Version: 06/08/2007
Date Data Arrived at EDR: 06/08/2007
Date Made Active in Reports: 07/30/2007
Number of Days to Update: 52

Source: Department of Environmental Protection
Telephone: 717-783-7509
Last EDR Contact: 10/01/2007
Next Scheduled EDR Contact: 11/12/2007
Data Release Frequency: Varies

AIRS: Permit and Emissions Inventory Data
Permit and emissions inventory data.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 01/25/2007
Date Made Active in Reports: 03/12/2007
Number of Days to Update: 46

Source: Department of Environmental Protection
Telephone: 717-787-9702
Last EDR Contact: 10/22/2007
Next Scheduled EDR Contact: 01/21/2008
Data Release Frequency: Annually

TRIBAL RECORDS

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 08/09/2007
Next Scheduled EDR Contact: 11/05/2007
Data Release Frequency: Semi-Annually

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 06/01/2007
Date Data Arrived at EDR: 06/14/2007
Date Made Active in Reports: 07/05/2007
Number of Days to Update: 21

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/27/2007
Date Data Arrived at EDR: 09/07/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 34

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 01/04/2005
Date Data Arrived at EDR: 01/21/2005
Date Made Active in Reports: 02/28/2005
Number of Days to Update: 38

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/18/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/05/2007
Date Data Arrived at EDR: 10/02/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 9

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 12/01/2006
Date Data Arrived at EDR: 12/01/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 59

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 09/12/2007
Date Data Arrived at EDR: 09/14/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 27

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 09/11/2007
Date Data Arrived at EDR: 09/14/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land

Date of Government Version: 08/27/2007
Date Data Arrived at EDR: 09/07/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 34

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Quarterly

INDIAN UST R5: Underground Storage Tanks on Indian Land

Date of Government Version: 12/02/2004
Date Data Arrived at EDR: 12/29/2004
Date Made Active in Reports: 02/04/2005
Number of Days to Update: 37

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

Date of Government Version: 09/12/2007
Date Data Arrived at EDR: 09/14/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 27

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Quarterly

INDIAN UST R6: Underground Storage Tanks on Indian Land

Date of Government Version: 08/31/2007
Date Data Arrived at EDR: 08/31/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 41

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land

Date of Government Version: 06/01/2007
Date Data Arrived at EDR: 06/14/2007
Date Made Active in Reports: 07/05/2007
Number of Days to Update: 21

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

Date of Government Version: 09/05/2007
Date Data Arrived at EDR: 10/02/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 9

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Semi-Annually

INDIAN UST R9: Underground Storage Tanks on Indian Land

Date of Government Version: 09/11/2007
Date Data Arrived at EDR: 09/14/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 27

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Quarterly

INDIAN UST R1: Underground Storage Tanks on Indian Land

A listing of underground storage tank locations on Indian Land.

Date of Government Version: 12/01/2006
Date Data Arrived at EDR: 12/01/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 59

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/20/2007
Next Scheduled EDR Contact: 11/19/2007
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR PROPRIETARY RECORDS

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

FEDERAL RECORDS

COLLEGES: Integrated Postsecondary Education Data

The National Center for Education Statistics' primary database on integrated postsecondary education in the United States.

Date of Government Version: N/A
Date Data Arrived at EDR: 10/12/2005
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: National Center for Education Statistics
Telephone: 202-502-7300
Last EDR Contact: 09/22/2006
Next Scheduled EDR Contact: N/A
Data Release Frequency: N/A

PRIVATE SCHOOLS: Private Schools of the United States

The National Center for Education Statistics' primary database on private school locations in the United States.

Date of Government Version: N/A
Date Data Arrived at EDR: 10/07/2005
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: National Center for Education Statistics
Telephone: 202-502-7300
Last EDR Contact: 09/22/2006
Next Scheduled EDR Contact: N/A
Data Release Frequency: N/A

NURSING HOMES: Directory of Nursing Homes
Information on Medicare and Medicaid certified nursing homes in the United States.

Date of Government Version: N/A
Date Data Arrived at EDR: 10/11/2005
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: N/A
Telephone: 800-568-3282
Last EDR Contact: 09/22/2006
Next Scheduled EDR Contact: N/A
Data Release Frequency: N/A

PUBLIC SCHOOLS: Public Schools
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/13/2004
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: National Center for Education statistics
Telephone: 202-502-7300
Last EDR Contact: 10/10/2007
Next Scheduled EDR Contact: 01/07/2008
Data Release Frequency: N/A

HOSPITALS: AHA Hospital Guide
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Date of Government Version: N/A
Date Data Arrived at EDR: 10/19/1994
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: American Hospital Association
Telephone: 800-242-2626
Last EDR Contact: 09/22/2006
Next Scheduled EDR Contact: N/A
Data Release Frequency: N/A

MEDICAL CENTERS: Provider of Services Listing
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health & Human Services.

Date of Government Version: 06/01/1998
Date Data Arrived at EDR: 11/10/2005
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
Last EDR Contact: 01/12/2007
Next Scheduled EDR Contact: N/A
Data Release Frequency: N/A

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 06/15/2007
Date Made Active in Reports: 08/20/2007
Number of Days to Update: 66

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 09/12/2007
Next Scheduled EDR Contact: 12/10/2007
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 04/01/2007
Date Data Arrived at EDR: 04/05/2007
Date Made Active in Reports: 05/08/2007
Number of Days to Update: 33

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 11/07/2007
Next Scheduled EDR Contact: 12/31/2007
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 08/27/2007
Date Data Arrived at EDR: 08/30/2007
Date Made Active in Reports: 09/21/2007
Number of Days to Update: 22

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/30/2007
Next Scheduled EDR Contact: 11/26/2007
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 04/09/2007
Date Data Arrived at EDR: 04/12/2007
Date Made Active in Reports: 04/27/2007
Number of Days to Update: 15

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 10/16/2007
Next Scheduled EDR Contact: 12/17/2007
Data Release Frequency: Annually

VT MANIFEST: Hazardous Waste Manifest Data

Hazardous waste manifest information.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 04/03/2007
Date Made Active in Reports: 04/24/2007
Number of Days to Update: 21

Source: Department of Environmental Conservation
Telephone: 802-241-3443
Last EDR Contact: 08/13/2007
Next Scheduled EDR Contact: 11/12/2007
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 04/27/2007
Date Made Active in Reports: 06/08/2007
Number of Days to Update: 42

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 10/09/2007
Next Scheduled EDR Contact: 01/07/2008
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data

Source: PennWell Corporation
Telephone: (800) 823-6277
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Child Care Facility List
Source: Department of Public Welfare
Telephone: 717-783-3856

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

3608 WEST CHESTER PIKE
3608 WEST CHESTER PIKE
NEWTOWN SQUARE, PA 19073

TARGET PROPERTY COORDINATES

Latitude (North):	39.98651 - 39° 59' 11.4"
Longitude (West):	75.39899 - 75° 23' 56.4"
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	465934.7
UTM Y (Meters):	4426126.0
Elevation:	400 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	39075-H4 MEDIA, PA
Most Recent Revision:	1995
North Map:	40075-A4 VALLEY FORGE, PA
Most Recent Revision:	1995

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

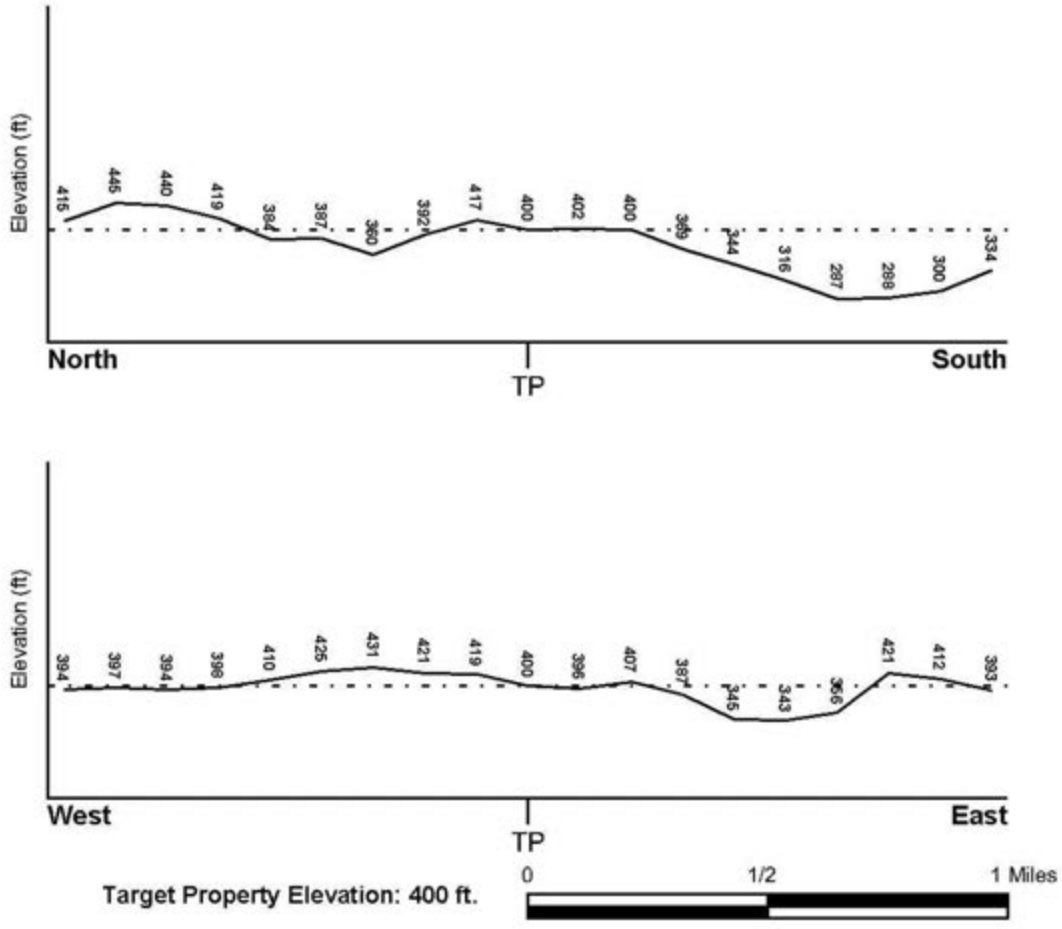
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
DELAWARE, PA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property:	42045C0013D
Additional Panels in search area:	42045C0007D 42045C0012D

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
MEDIA	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
1	0 - 1/8 Mile ESE	SE
14	1/2 - 1 Mile West	S

For additional site information, refer to Physical Setting Source Map Findings.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	Precambrian
System:	Precambrian
Series:	Orthogneiss
Code:	Ygn *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Metamorphic Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	NESHAMINY
Soil Surface Texture:	silt loam
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
Soil Drainage Class:	Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel:	MODERATE
Depth to Bedrock Min:	> 48 inches
Depth to Bedrock Max:	> 99 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	11 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 2.00 Min: 0.60	Max: 6.00 Min: 4.50
2	11 inches	54 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 0.60 Min: 0.20	Max: 6.50 Min: 5.10
3	54 inches	58 inches	weathered bedrock	Not reported	Not reported	Max: 2.00 Min: 0.20	Max: 0.00 Min: 0.00

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: extremely stony - silt loam
gravelly - silt loam
channery - silt loam

Surficial Soil Types: extremely stony - silt loam
gravelly - silt loam
channery - silt loam

Shallow Soil Types: silt loam

Deeper Soil Types: unweathered bedrock
loam
clay loam
gravelly - clay loam
silt loam
stratified
channery - fine sandy loam

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
4	USGS2150891	1/4 - 1/2 Mile ESE
B7	USGS2150940	1/2 - 1 Mile West
10	USGS2150850	1/2 - 1 Mile ENE
13	USGS2150710	1/2 - 1 Mile ENE
E15	USGS2151108	1/2 - 1 Mile SE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

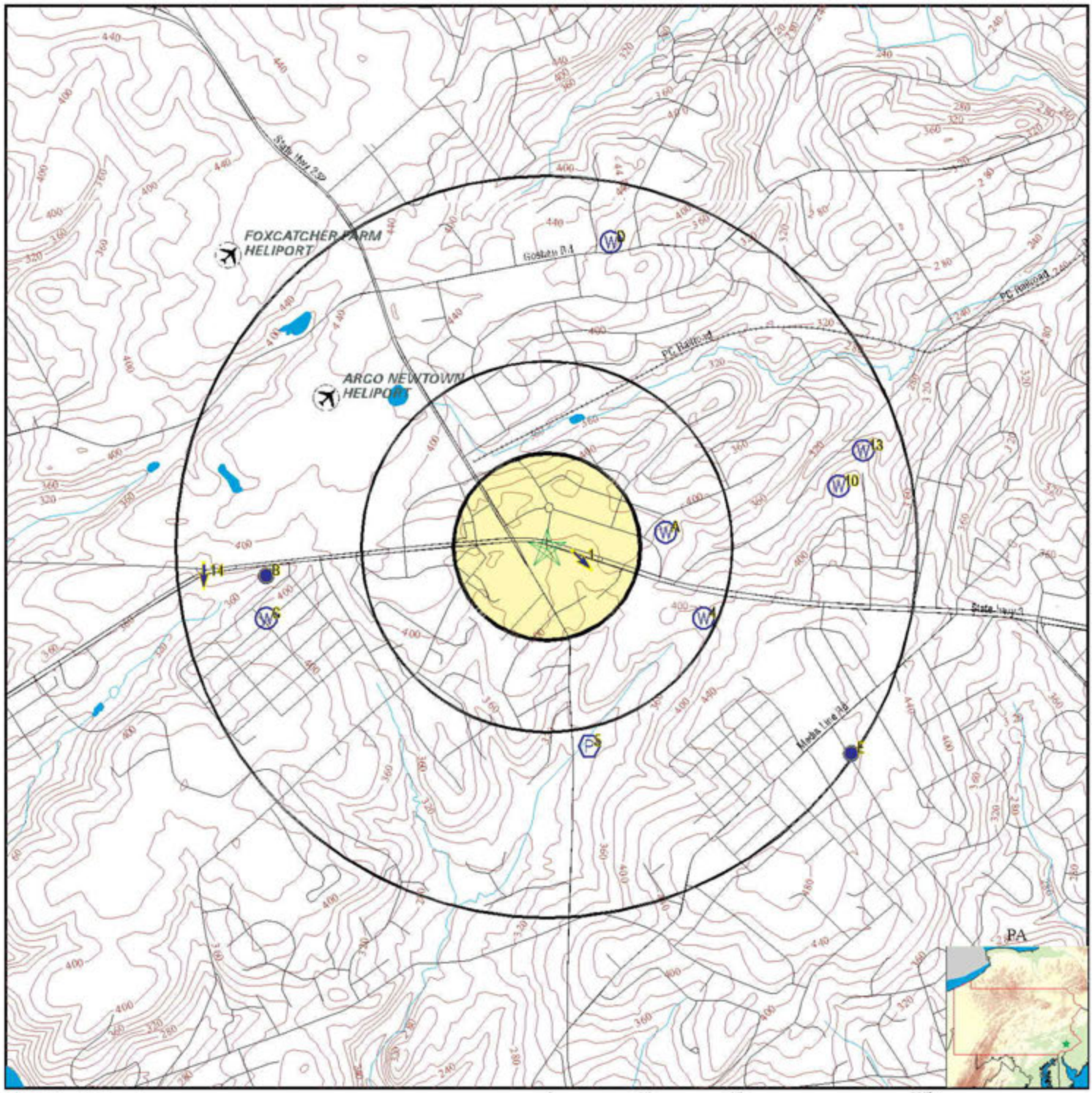
MAP ID	WELL ID	LOCATION FROM TP
5	PA1230851	1/2 - 1 Mile SSE

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	PA1000000028605	1/4 - 1/2 Mile East
A3	SPAW0051654	1/4 - 1/2 Mile East
B6	PA1000000028376	1/2 - 1 Mile West
C8	SPAW0051633	1/2 - 1 Mile WSW
C9	PA1000000028111	1/2 - 1 Mile WSW
D11	SPAW0051620	1/2 - 1 Mile NNE
D12	PA1000000030143	1/2 - 1 Mile NNE
E16	PA1000000027371	1/2 - 1 Mile SE

PHYSICAL SETTING SOURCE MAP - 2073134.2s



- County Boundary
- Major Roads
- Contour Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location

SITE NAME:	3608 West Chester Pike	CLIENT:	Keating Environmental Mgmt.
ADDRESS:	3608 West Chester Pike Newtown Square PA 19073	CONTACT:	Paul M. Davis
		INQUIRY #:	2073134.2s
LAT/LONG:	39.9865 / 75.3990	DATE:	November 08, 2007 9:56 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation			Database	EDR ID Number
1 **ESE** **0 - 1/8 Mile** **Lower**	Site ID:	23-30750	**AQUIFLOW**	**31534**
	Groundwater Flow:	SE		
	Shallowest Water Table Depth:	19.25		
	Deepest Water Table Depth:	21.02		
	Average Water Table Depth:	Not Reported		
	Date:	07/23/1997		

A2
East
1/4 - 1/2 Mile
Lower

PA WELLS **PA1000000028605**

WELLID:	Not Reported	LOCALWELLN:	X 0028
COUNTY:	DELAWARE		
AAPG:	000GRGS		
TOPOGRAPHY:	Not Reported		
WELLDEPTH:	150		
ELEVATION:	0		
ELEVMETHOD:	Not Reported		
ACCURACYOF:	Not Reported		
HYDROLOGIC:	Not Reported		
LATLONGACCURACY:	ACCURATE TO +1 MINUTE		
QUAD:	MEDIA		
TYPEOFSITE:	WELL		
DATECREATE:	Not Reported	DATEUPDATE:	Not Reported
DATARELIABILITY:	LOCATION MAY NOT BE ACCURATE (WWI paper)		
SOURCE DEPTH DATA:	DRILLER'S RECORD		
MUNICIPALITY:	NEWTOWN TWP.		
LATITUDEDD:	39.98694		
LONGITUDED:	-75.39333		
DEPTHTOBED:	60		
DATEDRILLE:	Not Reported		
PAGWIS ID:	96219		

Construction Information:

Construction Date:	01/01/1967 00:00:00		
Driller:	0248		
Source Cons Data:	DRILLER'S RECORD		
Method Cons:	Not Reported		
Finish:	OPEN HOLE		

Casing Information:

Top Of Casing:	0	Casing Wall Thickness:	Not Reported
Bottom Of Casing:	75	Casing Diameter:	6
Casing:	Not Reported		

Geohydrologic Information:

A A P G:	000GRGS		
Lithology:	O		
Contributing Unit:	PRIMARY		
Top Of Interval:	Not Reported	Bottom Of Interval:	Not Reported

Water Use Information:

Site Use:	WITHDRAWAL
Water Use:	PUBLIC SUPPLY

Owner Information:

Owner:	DANNA HOMES INC
Date Ownership:	Not Reported

A3
East
1/4 - 1/2 Mile
Lower

PA WELLS **SPAW0051654**

Well ID:	X 0028		
Owner's Name:	DANNA HOMES INC	County	DELAWARE
Latitude:	395913	Longitude:	752336
Quadrangle:	MEDIA	Lat/Long Accuracy:	ACCURATE TO +1 MINUTE
Hydrologic Unit:	Not Reported	Topographic Setting:	Not Reported
Water Usage:	PUBLIC SUPPLY	Site Usage:	WITHDRAWAL
Well Depth:	150	Finish:	OPEN HOLE
Casing 1:	75	Casing1 Diameter(inches):	6
Casing2:	Not Reported	Casing2 Diameter(inches):	Not Reported
Grouted:	Not Reported	Date Drilled:	00-00-67
Static Water Level:	5	Production WL:	Not Reported
Yield (gpm):	4	Yield Measurement Method:	1
Drawdown:	144	Test Time:	1
Bedrock:	60	Driller:	0248
Water Bearing Zone 1:	82	Water Bearing Zone 2:	Not Reported
Water Bearing Zone 3:	Not Reported	Lithology:	Not Reported
Municipality:	NEWTOWN	Remark:	1942
Aquifer:	GRANITE & GRANITE GNEISS		

4
ESE
1/4 - 1/2 Mile
Lower

FED USGS **USGS2150891**

Agency cd:	USGS	Site no:	395901075232901
Site name:	DE 263		
Latitude:	395901		
Longitude:	0752329	Dec lat:	39.98372175
Dec lon:	-75.39102713	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	42
State:	42	County:	045
Country:	US	Land net:	Not Reported
Location map:	MEDIA	Map scale:	24000
Altitude:	395		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Lower Delaware. New Jersey, Pennsylvania. Area = 1050 sq.mi.		
Topographic:	Upland draw		
Site type:	Ground-water other than Spring	Date construction:	1922
Date inventoried:	Not Reported	Mean greenwich time offset:	EST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	SERPENTINITE		
Well depth:	287	Hole depth:	Not Reported
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

5
SSE **FRDS PWS** **PA1230851**
1/2 - 1 Mile
Lower

PWS ID:	PA1230851	PWS Status:	Active
Date Initiated:	Not Reported	Date Deactivated:	Not Reported
PWS Name:	NEWTON SQUARE SWIM CLUB 201 S. NEWTOWN STREET ROAD NEWTOWN SQUARE, PA 19073		
Addressee / Facility:	Mailing NEWTON SQUARE SWIM CLUB JOSEPH ANDRAOS 201 S. NEWTOWN STREET ROAD NEWTOWN SQUARE, PA 19073		
Facility Latitude:	39 58 43	Facility Longitude:	075 23 50
City Served:	Not Reported		
Treatment Class:	Untreated	Population:	00000100

Violations information not reported.

ENFORCEMENT INFORMATION:

System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Routine Major (TCR)		
Contaminant:	COLIFORM (TCR)		
Compliance Period:	1994-07-01 - 1994-09-30		
Violation ID:	9479622		
Enforcement Date:	1994-12-30	Enf. Action:	State Compliance Achieved
System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Routine Major (TCR)		
Contaminant:	COLIFORM (TCR)		
Compliance Period:	1994-07-01 - 1994-09-30		
Violation ID:	9479622		
Enforcement Date:	1994-11-21	Enf. Action:	State Public Notif Requested
System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Routine Major (TCR)		
Contaminant:	COLIFORM (TCR)		
Compliance Period:	1994-07-01 - 1994-09-30		
Violation ID:	9479622		
Enforcement Date:	1994-11-21	Enf. Action:	State Formal NOV Issued

ENFORCEMENT INFORMATION:

System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Routine Major (TCR)		
Contaminant:	COLIFORM (TCR)		
Compliance Period:	1994-07-01 - 1994-09-30		
Violation ID:	9479622		
Enforcement Date:	1994-11-21	Enf. Action:	State Violation/Reminder Notice
System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Regular		
Contaminant:	NITRATE		
Compliance Period:	1995-01-01 - 1995-12-31		
Violation ID:	9604281		
Enforcement Date:	1996-03-21	Enf. Action:	State Formal NOV Issued
System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Regular		
Contaminant:	NITRATE		
Compliance Period:	1995-01-01 - 1995-12-31		
Violation ID:	9604281		
Enforcement Date:	1996-03-21	Enf. Action:	State Public Notif Requested
System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Regular		
Contaminant:	NITRATE		
Compliance Period:	1995-01-01 - 1995-12-31		
Violation ID:	9604281		
Enforcement Date:	1997-11-21	Enf. Action:	State Formal NOV Issued
System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Regular		
Contaminant:	NITRITE		
Compliance Period:	1995-01-01 - 1995-12-31		
Violation ID:	9604282		
Enforcement Date:	1996-03-21	Enf. Action:	State Formal NOV Issued
System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Regular		
Contaminant:	NITRITE		
Compliance Period:	1995-01-01 - 1995-12-31		
Violation ID:	9604282		
Enforcement Date:	1996-03-21	Enf. Action:	State Public Notif Requested
System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Regular		
Contaminant:	NITRITE		
Compliance Period:	1995-01-01 - 1995-12-31		
Violation ID:	9604282		
Enforcement Date:	1997-11-21	Enf. Action:	State Formal NOV Issued
System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Routine Major (TCR)		
Contaminant:	COLIFORM (TCR)		
Compliance Period:	1998-07-01 - 1998-09-30		
Violation ID:	98053041		
Enforcement Date:	1998-11-06	Enf. Action:	State Formal NOV Issued
System Name:	NEWTOWN SQUARE SWIM CLUB		
Violation Type:	Monitoring, Routine Major (TCR)		
Contaminant:	COLIFORM (TCR)		
Compliance Period:	1998-07-01 - 1998-09-30		
Violation ID:	98053041		
Enforcement Date:	Not Reported	Enf. Action:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
B6 **West** **1/2 - 1 Mile** **Lower**	**PA WELLS**	**PA1000000028376**

WELLID:	395907075244901	LOCALWELLN:	DE 725
COUNTY:	DELAWARE		
AAPG:	400FLCGH		
TOPOGRAPHY:	UPLAND DRAW		
WELLDEPTH:	161		
ELEVATION:	370		
ELEVMETHOD:	INTERPOLATED FROM TOPOGRAPHIC MAP		
ACCURACYOF:	5		
HYDROLOGIC:	02040202		
LATLONGACCURACY:	ACCURATE TO +1 SECOND		
QUAD:	MEDIA		
TYPEOFSITE:	WELL		
DATECREATE:	Not Reported	DATEUPDATE:	Not Reported
DATARELIABILITY:	FIELD CHECKED BY REPORTING AGENCY (PaDAg pest. survey)		
SOURCE DEPTH DATA:	OTHER/UNKNOWN/UNSPECIFIED		
MUNICIPALITY:	NEWTOWN TWP.		
LATITUDEDD:	39.98528		
LONGITUDED:	-75.41361		
DEPTHTOBED:	0		
DATEDRILLE:	Not Reported		
PAGWIS ID:	18371		

Agency Use Section:

Agency Use of Site:	OBSERVATION
Agency Use Date:	Not Reported

Construction Information:

Construction Date:	11/01/1977 00:00:00		
Driller:	0248		
Source Cons Data:	DRILLER'S RECORD		
Method Cons:	AIR ROTARY		
Finish:	OPEN HOLE		

Casing Information:

Top Of Casing:	0	Casing Wall Thickness:	Not Reported
Bottom Of Casing:	81	Casing Diameter:	6
Casing:	UNKNOWN		

Hole Information:

Top Of Hole:	0		
Bottom Of Hole:	161	Hole Diameter:	0

Geohydrologic Information:

A A P G:	400FLCGH		
Lithology:	GNEISS		
Contributing Unit:	PRIMARY		
Top Of Interval:	70	Bottom Of Interval:	Not Reported

Water Use Information:

Site Use:	WITHDRAWAL
Water Use:	DOMESTIC

Owner Information:

Owner:	WRIGHT CLARK
Date Ownership:	01/11/1983 00:00:00

B7
West
1/2 - 1 Mile
Lower

FED USGS **USGS2150940**

Agency cd:	USGS	Site no:	395907075244901
Site name:	DE 725		
Latitude:	395907		
Longitude:	0752449	Dec lat:	39.98538807
Dec lon:	-75.41325126	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	42
State:	42	County:	045
Country:	US	Land net:	Not Reported
Location map:	MEDIA	Map scale:	24000
Altitude:	370.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Lower Delaware. New Jersey, Pennsylvania. Area = 1050 sq.mi.		
Topographic:	Upland draw		
Site type:	Ground-water other than Spring	Date construction:	19771101
Date inventoried:	Not Reported	Mean greenwich time offset:	EST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	161	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	444213000		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1983-01-11	Ground water data end date:	1983-01-11
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1983-01-11	19.64	

C8
WSW
1/2 - 1 Mile
Higher

PA WELLS **SPAW0051633**

Well ID:	0310N		
Owner's Name:	ODYSSEY SKATEBD	County	DELAWARE
Latitude:	395901	Longitude:	752449
Quadrangle:	MEDIA	Lat/Long Accuracy:	ACCURATE TO +1 SECOND
Hydrologic Unit:	02040202	Topographic Setting:	HILLSIDE
Water Usage:	PUBLIC SUPPLY	Site Usage:	WITHDRAWAL
Well Depth:	161	Finish:	OPEN HOLE
Casing 1:	81	Casing1 Diameter(inches):	6
Casing2:	Not Reported	Casing2 Diameter(inches):	Not Reported
Grouted:	Not Reported	Date Drilled:	11-77
Static Water Level:	60	Production WL:	151
Yield (gpm):	20	Yield Measurement Method:	V
Drawdown:	101	Test Time:	1
Bedrock:	Not Reported	Driller:	248
Water Bearing Zone 1:	106	Water Bearing Zone 2:	148
Water Bearing Zone 3:	161	Lithology:	OTHER
Municipality:	NEWTOWN	Remark:	ROCK TYPE = GABBRO QUARTZ
Aquifer:	Not Reported		

C9
WSW
1/2 - 1 Mile
Higher

PA WELLS **PA1000000028111**

WELLID:	Not Reported	LOCALWELLN:	0310N
COUNTY:	DELAWARE		
AAPG:	400FLGCH		
TOPOGRAPHY:	HILLSIDE		
WELLDEPTH:	161		
ELEVATION:	0		
ELEVMETHOD:	Not Reported		
ACCURACYOF:	Not Reported		
HYDROLOGIC:	02040202		
LATLONGACCURACY:	ACCURATE TO +1 SECOND		
QUAD:	MEDIA		
TYPEOFSITE:	WELL		
DATECREATE:	Not Reported	DATEUPDATE:	Not Reported
DATARELIABILITY:	LOCATION MAY NOT BE ACCURATE (WWI paper)		
SOURCE DEPTH DATA:	DRILLER'S RECORD		
MUNICIPALITY:	NEWTOWN TWP.		
LATITUDEDD:	39.98361		
LONGITUDED:	-75.41361		
DEPTHTOBED:	0		
DATEDRILLE:	Not Reported		
PAGWIS ID:	96198		

Construction Information:

Construction Date:	11/01/1977 00:00:00
Driller:	248
Source Cons Data:	DRILLER'S RECORD
Method Cons:	Not Reported
Finish:	OPEN HOLE

Casing Information:

Top Of Casing:	0	Casing Wall Thickness:	Not Reported
Bottom Of Casing:	81	Casing Diameter:	6
Casing:	Not Reported		

Geohydrologic Information:

A A P G:	400FLGCH		
Lithology:	O		
Contributing Unit:	PRIMARY		
Top Of Interval:	Not Reported	Bottom Of Interval:	Not Reported

Water Use Information:

Site Use:	WITHDRAWAL
Water Use:	PUBLIC SUPPLY

Owner Information:

Owner:	ODYSSEY SKATEBD PARK
Date Ownership:	Not Reported

Remarks Information:

Remark:	ROCK TYPE = GABBRO QUARTZ
Remark Date:	Not Reported

10
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS2150850**

Agency cd:	USGS	Site no:	395920075230301
Site name:	DE 862		
Latitude:	395920.0		
Longitude:	0752303.0	Dec lat:	39.98888889
Dec lon:	-75.38416667	Coor meth:	G
Coor accr:	S	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	42
State:	42	County:	045
Country:	US	Land net:	Not Reported
Location map:	MEDIA	Map scale:	24000
Altitude:	330		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Lower Delaware. New Jersey, Pennsylvania. Area = 1050 sq.mi.		
Topographic:	Hillside (slope)		
Site type:	Ground-water other than Spring	Date construction:	1949
Date inventoried:	20010920	Mean greenwich time offset:	EST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	SERPENTINITE		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	444233300		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data end date: 2001-09-20
Ground water data begin date: 2001-09-20
Ground water data count: 1
Water quality data begin date: 2001-09-20
Water quality data count: 1
Ground water data end date: 2001-09-20

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
2001-09-20	29.14	

Note: The site had been pumped recently.

D11
NNE
1/2 - 1 Mile
Higher

PA WELLS **SPAW0051620**

Well ID:	0510N		
Owner's Name:	PICCONE D	County	DELAWARE
Latitude:	395954	Longitude:	752346
Quadrangle:	MEDIA	Lat/Long Accuracy:	ACCURATE TO +1 MINUTE
Hydrologic Unit:	Not Reported	Topographic Setting:	HILLTOP
Water Usage:	DOMESTIC	Site Usage:	WITHDRAWAL
Well Depth:	283	Finish:	OPEN HOLE
Casing 1:	60	Casing1 Diameter(inches):	6
Casing2:	Not Reported	Casing2 Diameter(inches):	Not Reported
Grouted:	Yes	Date Drilled:	02-00-88
Static Water Level:	40	Production WL:	Not Reported
Yield (gpm):	8	Yield Measurement Method:	E
Drawdown:	Not Reported	Test Time:	2
Bedrock:	50	Driller:	248
Water Bearing Zone 1:	85	Water Bearing Zone 2:	215
Water Bearing Zone 3:	Not Reported	Lithology:	OTHER
Municipality:	NEWTOWN	Remark:	RT=GNEISS
Aquifer:	FELSIC GNEISS, PYROXENE-BEARING, PRECAMBRIAN		

D12
NNE
1/2 - 1 Mile
Higher

PA WELLS **PA1000000030143**

WELLID:	Not Reported	LOCALWELLN:	0510N
COUNTY:	DELAWARE		
AAPG:	400FLCGP		
TOPOGRAPHY:	HILLTOP		
WELLDEPTH:	283		
ELEVATION:	0		
ELEVMETHOD:	Not Reported		
ACCURACYOF:	Not Reported		
HYDROLOGIC:	Not Reported		
LATLONGACCURACY:	ACCURATE TO +1 MINUTE		
QUAD:	MEDIA		
TYPEOFSITE:	WELL		
DATECREATE:	Not Reported	DATEUPDATE:	Not Reported
DATARELIABILITY:	LOCATION MAY NOT BE ACCURATE (WWI paper)		
SOURCE DEPTH DATA:	DRILLER'S RECORD		
MUNICIPALITY:	NEWTOWN TWP.		
LATITUDEDD:	39.99833		
LONGITUDED:	-75.39611		

DEPTHTOBED:	50
DATEDRILLE:	Not Reported
PAGWIS ID:	96185

Construction Information:

Construction Date:	02/01/1988 00:00:00
Driller:	248
Source Cons Data:	DRILLER'S RECORD
Method Cons:	Not Reported
Finish:	OPEN HOLE

Casing Information:

Top Of Casing:	0	Casing Wall Thickness:	Not Reported
Bottom Of Casing:	60	Casing Diameter:	6
Casing:	Not Reported		

Geohydrologic Information:

A A P G:	400FLCGP		
Lithology:	O		
Contributing Unit:	PRIMARY		
Top Of Interval:	Not Reported	Bottom Of Interval:	Not Reported

Water Use Information:

Site Use:	WITHDRAWAL
Water Use:	DOMESTIC

Owner Information:

Owner:	PICCONE D
Date Ownership:	Not Reported

Remarks Information:

Remark:	RT=GNEISS
Remark Date:	Not Reported

13
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS2150710**

Agency cd:	USGS	Site no:	395925075225801
Site name:	DE 791		
Latitude:	395925.0		
Longitude:	0752258.5	Dec lat:	39.99027778
Dec lon:	-75.38291667	Coor meth:	G
Coor accr:	5	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	42
State:	42	County:	045
Country:	US	Land net:	Not Reported
Location map:	MEDIA	Map scale:	24000
Altitude:	320		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Lower Delaware. New Jersey, Pennsylvania. Area = 1050 sq.mi.		
Topographic:	Hillside (slope)		
Site type:	Ground-water other than Spring	Date construction:	1963
Date inventoried:	20010920	Mean greenwich time offset:	EST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	SERPENTINITE		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	444233300		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	2001-09-20
Water quality data end date:	2001-09-20	Water quality data count:	1
Ground water data begin date:	2001-09-20	Ground water data end date:	2001-09-20
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
2001-09-20	41.07	

Note: The site had been pumped recently.

14
West
1/2 - 1 Mile
Lower

AQUIFLOW **31568**

Site ID:	23-46264
Groundwater Flow:	S
Shallowest Water Table Depth:	7
Deepest Water Table Depth:	Not Reported
Average Water Table Depth:	Not Reported
Date:	08/05/1998

E15
SE
1/2 - 1 Mile
Higher

FED USGS **USGS2151108**

Agency cd:	USGS	Site no:	395842075230201
Site name:	DE 720		
Latitude:	395842		
Longitude:	0752302	Dec lat:	39.97844415
Dec lon:	-75.38352645	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	42
State:	42	County:	045
Country:	US	Land net:	Not Reported
Location map:	MEDIA	Map scale:	24000
Altitude:	465.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Lower Delaware. New Jersey, Pennsylvania. Area = 1050 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19810301
Date inventoried:	Not Reported	Mean greenwich time offset:	EST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	SERPENTINITE		
Well depth:	220	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	444213000		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 1983-12-08
Water quality data end date: 1983-12-08
Water quality data count: 1
Ground water data begin date: 1981-03-01
Ground water data end date: 1981-03-01
Ground water data count: 1

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1981-03-01	30.00	

E16
SE
1/2 - 1 Mile
Higher

PA WELLS **PA1000000027371**

WELLID:	395842075230201	LOCALWELLN:	DE 720
COUNTY:	DELAWARE		
AAPG:	000SRPN		
TOPOGRAPHY:	FLAT SURFACE		
WELLDEPTH:	220		
ELEVATION:	465		
ELEVMETHOD:	INTERPOLATED FROM TOPOGRAPHIC MAP		
ACCURACYOF:	5		
HYDROLOGIC:	02040202		
LATLONGACCURACY:	ACCURATE TO +1 SECOND		
QUAD:	MEDIA		
TYPEOFSITE:	WELL		
DATECREATE:	Not Reported	DATEUPDATE:	Not Reported
DATARELIABILITY:	FIELD CHECKED BY REPORTING AGENCY (PaDAg pest. survey)		
SOURCE DEPTH DATA:	OTHER/UNKNOWN/UNSPECIFIED		
MUNICIPALITY:	MARPLE TWP.		
LATITUDEDD:	39.97833		
LONGITUDED:	-75.38389		
DEPTHTOBED:	0		
DATEDRILLE:	Not Reported		
PAGWIS ID:	18463		

Agency Use Section:

Agency Use of Site:	OBSERVATION
Agency Use Date:	Not Reported

Construction Information:

Construction Date:	03/01/1981 00:00:00
Driller:	0308
Source Cons Data:	DRILLER'S RECORD
Method Cons:	AIR ROTARY
Finish:	OPEN HOLE

Casing Information:

Top Of Casing:	0	Casing Wall Thickness:	Not Reported
Bottom Of Casing:	63	Casing Diameter:	6
Casing:	UNKNOWN		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Hole Information:

Top Of Hole:	0		
Bottom Of Hole:	220	Hole Diameter:	0

Geohydrologic Information:

A A P G:	000SRPN		
Lithology:	SERPENTINE		
Contributing Unit:	PRIMARY		
Top Of Interval:	Not Reported	Bottom Of Interval:	Not Reported

Water Use Information:

Site Use:	WITHDRAWAL
Water Use:	DOMESTIC

Owner Information:

Owner:	KLAVA A
Date Ownership:	03/01/1981 00:00:00

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: PA Radon

Test Result Statistics

Zip	Total Sites	Min pCi/L	Max pCi/L	Avg pCi/L
19073	1076	.1	39.7	3

EPA Region 3 Statistical Summary Readings for Zip Code: 19073

Number of sites tested: 1543.

Maximum Radon Level: 103.2 pCi/L.
Minimum Radon Level: 0.1 pCi/L.

pCi/L <4	pCi/L 4-10	pCi/L 10-20	pCi/L 20-50	pCi/L 50-100	pCi/L >100
1269 (82.24%)	225 (14.58%)	35 (2.27%)	13 (0.84%)	0 (0.00%)	1 (0.06%)

Federal EPA Radon Zone for DELAWARE County: 1

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)

Source: United States Geologic Survey

EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)

Source: United States Geologic Survey

A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System

Source: EDR proprietary database of groundwater flow information

EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit

Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Services

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)

Telephone: 800-672-5559

SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Pennsylvania Public Water Supply Wells
Source: Pennsylvania Department of Environmental Resources Bureau of Water Supply
Telephone: 717-787-5017

Pennsylvania Groundwater Information System
Source: Department of Conservation and Natural Resources
Telephone: 717-702-2045

OTHER STATE DATABASE INFORMATION

RADON

State Database: PA Radon
Source: Department of Environmental Protection
Telephone: 717-783-3594
Radon Test Results Statistics by Zip Code

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

EPA Region 3 Statistical Summary Readings
Source: Region 3 EPA
Telephone: 215-814-2082
Radon readings for Delaware, D.C., Maryland, Pennsylvania, Virginia and West Virginia.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

STREET AND ADDRESS INFORMATION

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KEATING Environmental Management, Inc.

APPENDIX G

Site Photographs

KEATING ENVIRONMENTAL MANAGEMENT, INC.

Phase I Environmental Site Assessment Photographic Log

3608 West Chester Pike
Township of Newtown, Delaware County, Pennsylvania

Photo 1 (above): View facing southeast at the site building and dispensing islands.

Photo 2 (left): View facing northeast at the site building and dispensing area.

Photo 3 (right): View facing northwest at the rear side of the site building.

KEATING ENVIRONMENTAL MANAGEMENT, INC.

Phase I Environmental Site Assessment Photographic Log

3608 West Chester Pike Township of Newtown, Delaware County, Pennsylvania

Photo 4 (above): View facing south at the gasoline UST area.

Photo 5 (left): View facing north at the diesel fuel UST area.

Photo 6 (right): View facing west at the vent pipes.

Kwedder, Anita

From: Kwedder, Anita
Sent: Friday, July 29, 2016 2:49 PM
To: 'Ravi Kolaventi (kolaventi@migconsulting.net)'; 'Sam Habib (samhabib@migconsulting.net)'
Subject: Claim #2013-161 (Newtown Square Amoco)

Hi –

We just received a copy of the 04/21/16 SCR for claim #2013-161 (Newtown Square Amoco). However, we did not receive the full report. The tables, figures and appendices are missing. Could you please send a complete copy of the report?

Thank you for your time.

ANITA KWEDDER | Administrative Asst | 717-948-4854 or 800-888-7843 | Anita.Kwedder@icfi.com
ICF INTERNATIONAL | 4000 Vine Street Middletown, PA 17057 | 717-948-1767 fax
NOTICE: Please use my New Email for all PaUSTIF related correspondence Anita.Kwedder@fms.icfwebservices.com.

MIG CONSULTING, LLC
707 RARITAN AVE., SUITE 203
Highland Park, New Jersey 08904
PHONE: 732-543-1150; FACSIMILE: 732-543-1148

April 21, 2016

Mr. Jesse Jones
Pennsylvania Department of Environmental Protection
ECP Special Projects, Southeast Regional Office
2 East Main Street
Norristown, PA 19401

Re: Site Characterization Report
Newtown Square BP/Former Amoco
3608 West Chester Pike
Newtown Square, PA 19073
Facility ID #: 23-09154
Via email and Certified Mail/Return Receipt

Dear Mr. Jones:

On behalf of Newtown Square BP/Former Amoco, MIG Consulting, LLC (MIG) prepared the enclosed Site Characterization Report (SCR) for the above referenced facility. This SCR demonstrates compliance with the selected remediation standard **Site-Specific Standard** of Act 2, 35 P.S. & 6026.106(a).

This SCR was prepared in general accordance with the Storage Tank and Spill Prevention Act, Title 25 Pa. Code, Sections 245.310 and the PaDEP Notice of Violation (NOV) letter dated October 23, 2013.

We trust the enclosed information is sufficient to meet the PADEP requirements, and remain available to discuss aspects of this project at your convenience. If you have any questions regarding this submittal, please contact us.

Sincerely,
MIG Consulting, LLC.

Sam Habib, P.G.
Project Manager

Cc: Mr. Harbir Singh, Newtown Square BP.
Mr. David Beane, Esq

SITE CHARACTERIZATION REPORT

Newtown Square BP/Former Amoco
3608 West Chester Pike
Newtown Square, PA 19073
Facility ID #: 23-09154

PREPARED FOR:

Mr. Harbir Singh
3608 West Chester Pike
Newtown Square, PA 19073
Facility ID #: 23-09154

April 2016

PREPARED BY:

MIG CONSULTING, LLC
707 Raritan Avenue; Suite 203
Highland Park, NJ 08904
C/o MIG, 1624 Newport Gap Pike
Wilmington, DE 19808

Report Revised By:

_____ _____

Ravi Kumar Kolaventi
MIG Consulting, LLC

Date

Report Approved By:

_____ _____

Sam Habib, P.G.
MIG Consulting, LLC

Date

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EXECUTIVE SUMMARY

Newtown Square BP (former Amoco) retained MIG Consulting LLC (MIG) in October 2015 to conduct site characterization for their active petroleum retail facility located at 3608 West Chester Pike, Newtown Square, Delaware County, Pennsylvania (PaDEP ID#23-09154). Based on the results of the site characterization activities conducted to date, MIG has prepared this Site Characterization Report (SCR) for the PaDEP review.

Background

The site is currently owned by 3608 Newtown Square, Inc and it has been operated as a retail gasoline service station since the 1956's. The facility occupies an irregular shaped parcel that is approximately 0.4 acres, as shown in **Figure 2**.

This SCR has been prepared to document the findings of site characterization activities completed by MIG to date, in response to a confirmed gasoline release reported to the Pennsylvania Department of Environmental Protection (PaDEP) via Notification of Reportable Release (NORR) in November 12, 2013. The site characterization activities were conducted in accordance with the *Administration of the Storage Tank and Spill Prevention Program*, PA Code Title 25, Chapter 245, Section 245.309. The SCR was prepared in accordance with the Section 245.310, and the PaDEP Notice of Violation (NOV) letter dated October 23, 2013.

Reportedly, three (3) 10,000-gallon gasoline USTs (installed in 1974), located on the northwestern portion of the site and one (1) 10,000-gallon diesel UST (installed in 1981) located on the western portion of the site.

Based on the findings of the investigations, which demonstrate elimination of pathways to sensitive receptors, MIG selected **Site-Specific Standards (SSS)** for this site, in accordance with the PaDEP Title 25, chapter 250, Subchapter D, sections 250.401 through 250.411. The City of Newtown Square has a requirement that any new development (residential or commercial) must connect to the public water supply.

The following PaDEP requirements are met, allowing utilization of SSS as summarized below.

- Soil sample results did not indicate contaminant concentrations above PaDEP SHS.
- Only Benzene and MTBE are detected in groundwater at the site above the PaDEP SHS;
- Benzene was detected in only 3 wells (MW-1, MW-2 & MW-5) out of 10 wells sampled at the site at concentrations above the PaDEP SHS. Benzene concentration in these wells is generally steady although occasionally fluctuating with seasonal water table elevations at the site.

- MTBE was detected in 5 wells (MW-1, MW-6, MW-7, MW-8 & MW-10) out of 10 wells sampled at the site at concentrations above PaDEP SHS. MTBE concentration in these wells is generally fluctuating with seasonal water table elevations at the site.

- As indicated by fate and transport analyses, the modeled extend of the plume is not expected to impact sensitive receptors as contaminants will naturally attenuate and over time as the initial source of contamination is depleting and no additional source(s) is contributing to the existing contamination. Vapor screening analysis indicates that soil and ground water contaminants volatilization are not a concern for this site. Additionally, exposure pathways relevant for this site are incomplete or none existing.

- Considering the site conditions, SSS are selected as most applicable cleanup standards. Based on the determination that no known exposure pathway is of concern, a risk assessment and a numerical set of site specific standards is not warranted.

- Upon the PaDEP approval, the process checklist as indicated in Section II-C (Remediation Standards-Site Specific Standard) of the Pennsylvania's Land Recycling Program: Technical Guidance Manual will be followed.

Potential Source Area

- MIG reviewed the historic reports (KEM Reports 2007 & 2013) & RTKL records in search for source area. However, the reports did not specify the source area and emphasized only Groundwater contamination.

- MIGs recent soil sampling as shown in Table 2, also did not indicate soil contamination or source area.

- MIGs groundwater sampling indicates the most elevated concentrations are located at MW-1, which is located at immediately down-gradient of dispenser area, making it suspected source area. Additional elevated Benzene concentrations were identified near the gasoline UST field in MW-2 & MW-5, which makes the Gasoline UST field as secondary potential source area.

Recommendations

- To complete the horizontal delineation, down-gradient of MW-8 and MW-10, two (2) monitoring wells are proposed to be installed on the adjacent southern property; Neimeyer Corp. Property- as shown in **Figure 4**. Please note that B&B, a third party reviewer for USTIF, also suggested delineation on the Neimeyer Corp.

- To complete the horizontal delineation onsite, one (1) monitoring well is proposed to be installed, west of Gasoline UST field; since MW-2 & MW-5 identified Benzene concentrations above the PaDEP Standards.

- For vertical delineation within the suspected source area, in the same mobilization, MIG proposes to install one (1) deep well in the vicinity of MW-1, to approximately 45 feet (5-feet screen), within the saprolite zone (weathered bedrock) to be terminated at the top of the competent bedrock – as shown in **Figure 4.**

- The Remedial Action Plan (RAP) will be submitted to the PaDEP, along with the revised SCR within 90 days of the date of this SCR. In the RAP, to demonstrate attainment of groundwater remediation via natural attenuation and biodegradation, MIG proposes 8 rounds of quarterly groundwater sampling events. Each event will be reported to PaDEP in a Remedial Action Progress Reports (RAPR).

1.0 INTRODUCTION

On behalf of Mr. Harbir Singh, owner and responsible party of 3608 Newtown Square, Inc., MIG Consulting, LLC (MIG) has prepared this Site Characterization Report (SCR) for the active gasoline fueling service station located at 3608 West Chester Pike, Newtown Square, Pennsylvania (ID #: 23-09154). The site location is depicted on **Figures 1 and 2**.

This SCR has been prepared to document the findings of site characterization activities completed by MIG to date, in response to a confirmed gasoline release reported to the Pennsylvania Department of Environmental Protection (PaDEP) via Notification of Reportable Release (NORR) in November 12, 2013. The site characterization activities were conducted in accordance with the *Administration of the Storage Tank and Spill Prevention Program*, PA Code Title 25, Chapter 245, Section 245.309. The SCR was prepared in accordance with the Section 245.310, and the PaDEP Notice of Violation (NOV) letter dated October 23, 2013.

Analytical results for the site-specific media collected during the on-site activities have been compared to current Pennsylvania Act 2 Clean-up Standards. Specifically, analytical results have been compared to the medium specific concentrations for the Statewide Health Standards (SHS) with respect to the facility being classified as a non-residential property. Summaries of the standards chosen for comparison purposes are provided on each table containing analytical data.

All field related activities were conducted in accordance with a site specific Health and Safety Plan (HASP) prepared in compliance with applicable Occupational Safety and Health Administration (OSHA) health and safety practices, and United States Environmental Protection Agency (EPA) Standard Operating Guidelines (40CFER 1910.120). Samples of environmental media collected for laboratory analyses were managed in accordance with a standardized Sampling and Analysis Plan. Specific sample handling protocol, sampling rationale, details of waste management and disposal activities are addressed in subsequent report sections.

Reportedly, three (3) 10,000-gallon gasoline USTs (installed in 1974), located on the northwestern portion of the site and one (1) 10,000-gallon diesel UST (installed in 1981) located on the western portion of the site. The UST locations are shown on **Figures 3 and 9**.

1.1 Location

The site is located at 3608 West Chester Pike, Newtown Square, Delaware County, Pennsylvania as illustrated in **Figure 1**, a United States Geological Survey (USGS) 7.5-Minute topographic map. The site topography, which is detailed in Section 2.4, gently slopes to the south-southeast towards, the nearest water body, Hunter Run. The site is situated at an approximate elevation of 413 feet above mean sea level (msl).

As illustrated in **Figure 2**, the site is located in a mixed commercial/residential facilities, bordered to the east and the west by commercial businesses along the West Chester Pike and Newtown Street Road. The site is bordered by Benari Jewelers to the east, Niemeyer Property to the south, West Chester Pike to the north and Newtown Street Road to the west. The surrounding properties are predominantly paved and/or covered by buildings.

1.2 Facility Description

The site is currently owned by 3608 Newtown Square, Inc and it has been operated as a retail gasoline service station since the 1956's. The facility occupies an irregular shaped parcel that is approximately 0.4 acres, as shown in **Figure 2**.

The site is approximately 0.4-acres, and is currently improved with one structure, asphalt parking areas, dispenser area with two pump islands under a canopy. The structure is a one (1)-story approximately 500 square foot frame and panel building on a concrete slab, located on the eastern portion of the property. Currently, the site structure is utilized as a convenient store. Three (3) 10,000-gallon gasoline USTs (installed in 1974), located on the northwestern portion and one (1) 10,000-gallon diesel UST (installed in 1981) located on the western portion of the site. Four (4) dispensers are located under a canopy along the centerline of the site as shown in **Figure 3.**

According to a geophysical report (Ground Penetration Radar-GPR) of July 10, 2015, the USTs are located at the property boundary along Newtown Street Road and could be partially under the 4-5 feet wide sidewalk. The GPR report also indicated a sanitary sewer line that runs from the southern portion of the site building is connected to the main public sewer along Newtown Street Road. The main electric and telephone services are located overhead. Area electric consists of lighting, service station sign and dispenser electric with all the lines originating from the main building. A copy of the Geophysical report is included in **Appendix G**.

2.0 ENVIRONMENTAL SETTING

2.1 Physical Setting

2.1.1 Topography and Drainage

According to the USGS 7.5-minute topographic map (**Figure 1**), the site is located at approximately 413 feet above msl at the coordinates 39° 59' 11.10"N, 75° 23' 58.41"W. The site's topography gently slopes to the south-southeast towards the stream/water body, Hunter Run.

According to the Pennsylvania Geologic and Topographic Survey, the site is located in the Atlantic Coastal Plain Province. This section is characterized as part of the Delaware River floodplain with unconsolidated silt, sand and gravel (Trenton gravel), underlain by schist, gneiss and other metamorphic rocks.

Information obtained from the United States Department of Agriculture (USDA) website indicated that the subject property is located within Made Land, schists and gneiss materials. This type of soil has a typical profile of:

- 0 to 3-inches: silt loam, 3 to 40-inches: gravelly silt loam, 40 to 60-inches: Gravelly silt loam, which is more or less consistent with field observations as discussed below.

2.1.2 Site Geology

During the advancement of soil borings and well installations, the following lithology was encountered at the indicated approximate depths:

- 0 – 0.5': Asphalt fill, silt
- 0.5' – 4.0' till, slight brown to tan clay
- 4.0' – 12.0' slight brown to tan silty clay with white gravel
- 12.0'- 20.0' same as above, but micacious silt
- 20.0'-24.0' light brown to tan micacious clay, with little moist.
- Bedrock was not encountered.

The encountered lithology is illustrated on the soil boring and monitoring well logs in **Appendix A** and **Appendix B**, respectively, and the Geologic Cross-Sections in **Figure 6**. Monitoring well information, including total depths of the wells, depth to water table and water table elevations for all sampling events are listed in **Appendix C** presents Well Sampling Data Forms. Well construction notes, diagrams, and sampling logs compiled during the installation of the six (6) wells are included as **Appendix B**.

Regionally, as shown in the "*Geologic Map of the Pennsylvania (prepared for the Commonwealth of Pennsylvania; Department of Environmental Resources – Bureau of Topographic and Geologic Survey, 1980; Arthur A. Socolow, State Geologist)*". Soil and Ground water investigations conducted at the site indicated that the soils beneath the site generally consist of silty sand with some weathered schist to the completion depth of each boring. Evidence of water was generally encountered throughout each boring at a depth of between 18 feet to 24 feet bgs.

Reportedly bedrock at the Newtown Square area contains Felsic Gneiss Hornblende bearing geologic unit which contains light to medium gray, medium-grained gneiss; finely to coarsely layered; contains potassium feldspar, hornblende and garnet.

2.1.3 Structural Geology - Stratigraphy

Generally, rocks in the northwest Camden topographical quadrangle area near the site are characterized by shallow north dipping foliation and multiple generations of folds. Although these rocks are highly tectonized, no significant faults are present. The dominant foliation is parallel to the axial planes of isoclinal folds.

2.1.4 Hydrogeology and Ground Water Flow

According to drilling logs, groundwater was initially encountered at depths ranging from approximately 18 to 24 ft bgs onsite and offsite within the unconsolidated material (Trenton gravels). The historic and current ground water flow direction, although almost perpendicular on the apparent topographic slope, is predominantly in a southerly, southeasterly direction towards the stream/water body, Hunter Run.

The average horizontal groundwater gradient across the site and surrounding area is 0.00236 (ft/ft). Groundwater contour maps depicting ground water elevations data are presented in **Figures 7A-7B** and ground water analytical laboratory reports obtained from the groundwater sampling events are included in **CD/Appendix D**.

The ground water table elevations at the subject site ranges from approximately 393.28 above msl in MW-1 (with 20.82' depth to water) to 393.30' above msl in MW-10 (with 20.11' depth to water).

Based on the Pennsylvania Bureau of Topographic and Geologic Survey-Department of Conservation and Natural Resources (PATGS-DCNR), average rainfall in Delaware County, Pennsylvania is between 40 to 44-inches per year.

According to the Geo-hydrology of Southeastern Pennsylvania, 2002 (by Dennis J. Low, Daniel J. Hippe, and Dawna Yannacci in cooperation with the PATGS-DCNR), two types of water systems (sand & gravel and crystalline rock aquifers) are found in the region. Sand and gravel aquifers contain large quantities of water, which can be eaily withdrawn; well yields of 1,000 gallons per minute (gal/min) are common. The naural quality of the water is good to excellent. Crystalline rock aquifer has very small fractures so storage capacity and yield are relatively low. Water is generally soft. Yields are commonly 5 to 25 gal/min.

2. 2 Sensitive Receptor Evaluation

2. 2.1 Water Supply & Well Search

MIG conducted 0.5-mile radius well search using the PaDEP Conservation and Natural Resources (PaDEP CNR) and PaDEP Ground water Information System (PaGWIS) to identify potable and withdrawal wells around the site. The PaGWIS identified twenty-eight (28) well locations within 0.5-mile radius of the site. *The data collected through the system shows that the wells are either abandoned or destroyed.* A tabulated data and a map showing the well locations are presented in **Table 6** and **Figure 4**.

2.2.2 Potential Sensitive Receptors

A general receptor evaluation was conducted for the site, including a review of the National Wetlands Inventory Map, which is illustrated in **Figure 5**. Commercial properties and a large shopping center located southeast of the site are hydraulically

downgradient of the site (approximately 370 feet). There is also a school located downgradient of the site in the south-west direction at approximately 400 ft. The site is believed to be located at an elevation of about 413 ft above msl.

Down gradient monitoring well MW-10, which was installed offsite on the eastern adjacent property and onsite MW-7 indicated MTBE marginally above the most stringent PaDEP applicable standards. However, according to fate and transport calculations conducted for the site, MTBE concentration could be assumed to meet the PaDEP standard in 859 day approximately around 60 feet downgradient of MW-10 and MW-7.

The nearest water body is the Hunter Run stream, which is approximately 0.44 mile south-east (down gradient) of the site. Also, there is another water body, Foxes Run stream, which is approximately 0.43 mile north-east (up gradient) of the site. There is a small freshwater emergent wetland located 0.47 mile south-east (down gradient) of the site. No measurable vapor impacts above the background were identified within utility manholes near the site and vapor investigation did not indicate vapor contamination above PaDEP standards.

2.2.3 Potential Ecological Receptors

There are three (3) national wetlands inventory sites within the 1-mile radius of the site. One freshwater emergent wetland (PEM1C) is located 0.47 mile south-east (down gradient) of the site. Two freshwater forested/shrub wetland (PSS1/EM5A) are located approximately 0.9 mile south (down gradient) of the site.

Potential impacts to surface water are expected to be minimal, if any, based on the normal city environmental setting and the majority of ground surface is covered by buildings and pavement and based upon fate and transport study conducted for the site. Additional receptor evaluation consisting of a survey of underground utilities for petroleum vapors is discussed below. No endangered, phona or biota species were identified in this search.

Therefore, it is expected that the impacts to ecological receptors from the site to be minimal to none.

2.2.4 Potential Migration Pathways

Although the underground utilities, which are located at or immediately adjacent to the site, may serve as potential migration pathways, the average depth to ground water observed at the site to date (18-22 ft bgs) is well below the expected depth of underground utilities, which is typically at 2-7 ft bgs. As such, it is unlikely that underground utilities at the site served as conduits and contaminant migration pathways.

MIG investigated the potential for vapors migrating through subsurface preferential pathways onsite and offsite, e.g. underground utility lines, which may impact the indoor air quality of buildings near the site. Manholes and access points of the underground

utilities near the site were inspected with Photo-Ionization Detector (PID) and no volatile compound readings were recorded above the background readings. Soil vapor samples and indoor air quality samples were collected from the site for laboratory analysis as discussed in Section 5.4.1. The laboratory analytical results did not indicate exceedences of vapor contamination above the Indoor-Air Criteria for Non-Residential PaDEP MSC_{IAQ} Standards.

2.2.5 Current and Future Land Use

The facility is currently an active retail gasoline service station. There are no plans for sale or redevelopment of the site for another use at this time.

3.0 PREVIOUS SITE ACTIVITIES

The following prior reports were provided to MIG by the client. Below is the summary of prior investigations.

- According to the prior Phase I ESA performed by KEM, in November 2007, the site has been historically used as a retail gas station since 1956.

- According to the Phase I report, the previous facility that occupied the site (Newtown Square Amoco) is listed as a Leaking Underground Storage Tank (LUST) site with Cleanup completed status.

- According to the prior Phase I ESA, four (4) groundwater monitoring wells (MW-1, MW-2, MW-3 & MW-4) were present on the site.

- On September 24, 2013, four (4) groundwater samples were collected from the four (4) on-site monitoring wells for laboratory analysis by KEM.

- Reportedly, Benzene and Methylene Tert Butyl Ether (MTBE) were detected above the Statewide Health Standards (SHS) in the groundwater sample collected from MW-1.

- A Ground Water Evaluation Report was prepared by KEM, dated October 23, 2013.

- According to KEM report, MW-1 is located immediately down gradient of the UST fields. Depth to groundwater is in the range of 18-20 feet below grade surface (bgs) and groundwater flow direction is towards southeast.

- On November 12, 2013, PaDEP received notification of a reportable release of a regulated substance at the subject site. The release was confirmed on October 23, 2013. This release is violation of Section 1310 of the Pennsylvania Storage Tank and Spill Prevention Act.

The following are the correspondences received from PaDEP:

- PaDEP received a written Notice of Contamination, regarding soil contamination encountered on October 29, 1990;
- PaDEP received a verbal Notice of Notice of Violation (NOV), regarding groundwater contamination encountered on October 23, 2013;
- PaDEP letter, sent to Mr. Harbir Singh, regarding the groundwater contamination confirmed on October 23, 2013;
- A NOV, sent to Mr. Pali Singh, regarding the failure to submit a SCR within 180 days of the contamination confirmed on October 23, 2013; and
- PaDEP Administrative Order issued to Mr. Harbir Singh, dated October 27, 2015.

4.0 SITE CHARACTERIZATION ACTIVITIES

On October 2015 through February 2016, MIG conducted soil and groundwater investigation within the source area and offsite to characterize site contamination. The intent was to identify the source area on the site and delineate soil/groundwater impacts on site and off site in response to the release that was confirmed in November 2013. As such, in separate events, MIG advanced thirteen (13) soil borings, two (2) temporary well points, six (6) monitoring wells and three (3) temporary soil vapor implants were performed at the site. Soil, groundwater and vapor samples were collected throughout the characterization process for laboratory analyses and results are discussed in this SCR. A description of the sequence and methods used to complete the site characterization is described further below.

The following are the activities performed by MIG:

- October 2014- Retention of MIG on the case
- November 2014- Initial Groundwater Sampling from existing wells (MW-1 through MW-4)
- January 2015- Preparation and Submission of Initial Site Characterization Work Plan to PaDEP and USTIF/ICF
- March 2015- Preparation and Submission of Proposal to USTIF/ICF
- July 2015- Performance of Ground Penetrating Radar (GPR) survey.
- July 2015- Advancement of several soil borings/soil sampling, soil-vapor sampling and temporary groundwater sampling on and offsite via temporary well points.

- September 2015- Groundwater sampling from existing onsite wells in response to PaDEP telephonic conversation:

  On September 10, 2015, Mr. Richard Staron, of PaDEP, directed MIG to sample the existing wells (MW-1 thru MW-4), stating that township noticed gasoline odors in a manhole out front of Gentiles market on Route 252.

  Following Mr. Staron directives, on September 10, 2015, MIG sampled onsite existing wells (MW-1 through MW-4) for laboratory analyses. MW-1 (identified as source area well) showed results higher than the PaMSCs for Benzene and MTBE. MW-2 (identified as side-gradient well) showed results above the PaMSCs for only Benzene. MW-3 and MW-4 (both identified as up-gradient wells) showed results below standards.

  Please find attached **Table 2** for Summary of Groundwater Results.

- October 2015- Installation of six (6) monitoring wells onsite (MW-5 through MW-8) and offsite on Benari Jewelers property (MW-9 and MW-10), located immediately east (downgradient) of the site.

- November 2015- Well Development & Well Survey; Groundwater Sampling onsite and offsite for existing and new wells.

- October-November 2015- Response to PaDEP Administrative Order.

4.1 Soil Characterization

Soil characterization and delineation was conducted in July 2015 as summarized below.

4.1.1 Geophysical Survey

Prior to drilling onsite, a Ground-Penetrating Radar (GPR) survey was conducted to determine the location, orientation of USTs and underground utilities at the Site. On July 10, 2015, MIG contracted Enviro-probe Service, Inc. of 221 Haddon Avenue, Westmont, New Jersey to conduct a GPR to locate the underground utilities and ensure the absence of additional USTs at the site. No other USTs were identified on the site during the GPR survey.

4.1.2 Summary of Soil and Vapor Characterization

On July 12, 23 & 24, 2015, thirteen (13) soil borings (SB-1 thru SB-13) were performed on and offsite, out of which two (2) borings (SB-9 and SB-10) were performed on the adjacent Benari Jewelers Property (3606 West Chester Pike). The soil borings were advanced using Geoprobe® drill rig. The borings were advanced in accordance with the boring location map proposed by MIG and reviewed/approved by B&B Diversified Inc.

(Please see **Figure 3**) which covers the UST area, dispenser/pump islands and in the general areas of concern.

Two (2) soil samples were collected from each soil boring location at a depth ranging from 7.5 to 28 feet below ground surface, and analyzed for PA Shortlist Compounds (for Unleaded Gasoline and Diesel). As summarized in Table the compounds detected were either non-detected or detected below Pa MSCs for soil.

Please see below table showing number of soil borings, monitoring wells, year of the event, drilling and sampling methods.

Event	October 2015	Drilling Method	Sampling Method	Boring Area	Notes
Soil Borings	SB-1 to SB-13	Geoprobe	4-foot long plastic sleeve samplers.	UST locations, Dispenser Islands, Adjacent property & general areas of concern.	No PID readings were observed. No free-phase product was identified.
Temporary Well Points/Monitoring Wells	TWP-1& TWP-2 MW-6 thru MW-10	Geoprobe/Hollow Stem Auger	Hydropunch® in-situ sampling device for temp well points & Hollow Stem Auger for monitoring wells	SB-6 & SB-10. MW-6 thru MW-10	No free product identified in any of the wells.

The soil samples were also field screened using a photo-ionization detector (PID) for the presence of volatile organic compounds (VOCs). Upon completion of each soil boring, the borehole was backfilled with soil cuttings and sealed with hydrated bentonite and topped off with asphalt patches.

Based on the information recorded during the installation/sampling of soil borings, the soils beneath the site generally consist of silty clay with some weathered schist to the completion depth of each boring. Evidence of groundwater was generally encountered at a depth of between 18 feet and 24 feet bgs.

The analytical data were compared to non-residential soil-to-ground water (NRSG) and non-residential direct contact (NRDC) Medium Specific Concentrations (MSCs) developed pursuant to Pennsylvania's Land Recycling and Environmental Remediation Standards Act (Act 2).

The soil boring logs are included as **Appendix A**. Analytical Results/Lab Reports were included on a **CD/Appendix D, E & F.** The underground utilities were marked out as depicted on **Figure 3**. The geophysical investigation report is provided in **Appendix G**.

Please refer boring locations as depicted on **Figure 9**. The soil boring logs are included as **Appendix A**.

Four (4) soil vapor samples (three (3) soil vapor points and one (1) background) samples were collected and analyzed for TO-15 Analysis.

Please find attached **Tables 1, 2 & 4** for Summary of Soil, Groundwater & Vapor Results and **Appendix A** for Boring Logs.

4.1.3 Conclusion of Soil Characterization

The compounds detected in all the soil samples analyzed were either non detected or detected below the Act 2 Residential Direct Contact MSCs and/or the applicable Act 2 used aquifer residential (U/R) Soil to Groundwater MSCs. As such, the soil characterization at the site is considered complete.

4.2 Ground Water Characterization

This section summarizes monitoring well installations and construction specifications, well development and survey, and ground water sampling and analytical results.

On July 12 & 23, 2015, two (2) groundwater samples were collected from SB-6 and SB-10 locations (TWP-1 @SB-10 & TWP-2 @SB-6) via temporary well points (installed in borings SB-10 & SB-6)

Several attempts were made to obtain offsite access from the immediately adjacent property (Benari Jewelers). Finally in September 2015, MIG obtained access and in October 8, 9 & 10, 2015, 2015, six (6) monitoring wells (MW-6 through MW-10) were installed to assess the magnitude and configuration of contaminant plumes and soil impact zones. Because groundwater impacts were identified in existing wells (MW-1 through MW-4), offsite wells MW-9 & MW-10 were installed on Benari Jewelers.

The collected groundwater samples were analyzed for PA Shortlist Compounds (for Unleaded Gasoline and Diesel). See below sections for summary of groundwater analytical results.

4.2.1 Summary of Ground Water Characterization

Monitoring Well Installations (October 2015)

- In July 2015, 2015, MIG installed two (2) temporary well points (TWP) (TWP-1 & TWP-2) as shown on **Figure 10.** The purpose of the temporary well points was to characterize the ground water and properly identify permanent locations for offsite monitoring wells MW-9 and MW-10.

- On October 8, 9 & 10, 2015, four (4) onsite wells: MW-5, MW-6, MW-7 and MW-8 and two (2) offsite wells on Benari Jewelers/east of the site: MW-9 & MW-10 were installed to approximately 30 feet bgs. The monitoring well locations are illustrated in **Figure 1A**.

- The ground water monitoring wells were installed in the area of UST farm, side/downgradient (offsite) and upgradient of the source area for contaminants horizontal characterization. The monitoring well locations are presented in **Figure 1A.** A summary of ground water monitoring well installations is discussed below:

4.2.2 Monitoring Well Construction and Development

The monitoring wells construction specification and summary of wells depths and diameters are included in the well construction logs (**Appendix A & D**), respectively. The wells are surveyed by a licensed well drilling company and surveyed by Berseck & Smith Engineering, Inc of Bensalem, PA, a licensed professional surveyor (#SU060774).

Permanent groundwater monitoring wells were constructed with varying lengths of 2-inch diameter, 0.02-inch machine-slot PVC well screen set across the saturated zone to monitor the groundwater table interface. PVC riser was added to the well screen to bring the wells to ground surface. The screen annulus was filled with sand from the base of the borehole to one foot above the screen. The remaining annulus was filled to the surface with bentonite pellets and cement slurry. All groundwater-monitoring wells were finished at grade with a six-inch diameter road box manholes and locking cap secured in a concrete pad.

Subsequent to installation, the wells were developed using a decontaminated submersible pump until clear, mostly sediment-free discharge water was observed.

A description of the encountered lithology and well construction for MW-1 through MW-6 is presented in the Monitoring Well Drilling Logs provided in **Appendix B**. Well construction diagrams were additionally depicted on the Geologic Cross Sections provided in **Figure 6**.

A Pennsylvania licensed well drilling company (MIG Drilling, LLC) installed these six (6) wells. MIG possess a Water Well Drillers License (License # 2450), issued by the PA Department of Conservation and Natural Resources, Water Well Drilling Licensing Program.

4.2.3 Well Gauging, Ground Water Sampling and Analytical Results

The monitoring well network was surveyed by a PA licensed surveyor to determine spatial orientation and obtain top-of-casing (TOC) elevations relative to a USGS Datum. Monitoring well elevation data are shown in **Table 1 A.** The TOC elevations for wells installed after the licensed survey were determined using a laser level and measuring

wheel or tape. The wells were gauged with an optical oil/water interface probe to determine the depth to water and monitor for the presence of separate phase liquid hydrocarbons. The gauging data was used in conjunction with the TOC data to determine groundwater elevation at each well.

Initial TWP indicated elevated contamination. A total of six (6) wells were installed on and offsite to complete site characterization and groundwater delineation.

Well Sampling Data Forms and Laboratory QA/QC for the conducted events are included in CD with **Appendix C, D, E and F**.

Historic groundwater table summarizing all sampling events are included in **Table 2.** Historical Groundwater Concentration Trends are included in **Table 5A-5G.**

Contaminant Concentrations Map is included in **Figure 10**. Isoconcentration maps for Benzene and MTBE for November 2015 event is included in **Figure 11A-11B**.

As summarized in the historic groundwater summary table (Table 2), ground water sampling events were performed on the below dates: September 25, 2013 (by KEM), November 18, 2014 from MW-1 thru MW-4 and on November 22, 2015 and February 28, 2016 from MW-1 thru MW-10.

4.2.4 Conclusion of Ground water Investigation

In conclusion, an overall review of the historic ground water sample results (**Table 3**) indicates the following:

- No free product was identified in any of the monitoring wells.

* **Possible Source Area Well: MW-1**

a) MW-1 showed results higher than the PaMSCs for Benzene and MTBE. Benzene and MTBE has increased in the most recent sampling event of February 2016. The increase in concentrations may be the result of seasonal groundwater fluctuations, which strongly suggests residues are remaining within the m\smear zone above the water table. The concentrations of remaining compounds are either below the PaDEP standards or not detected. MIG proposes quarterly sampling from this well and other wells as discussed below.

* **Side to up-gradient Wells: MW-2, MW-3, MW-4 and MW-5**

a) The side and up-gradient wells MW-2 and MW-5 showed results above standards for Benzene only. The contaminant concentrations in MW-3 and MW-4 were either non-detected or detected below the PaDEP standards.

* **Offsite/side-downgradient Wells: MW-9 & MW-10**

a) Concentrations in MW-9 were either non detected or detected below Standards.

b) The MTBE contaminant concentrations are detected above standards in MW-10, which is located downgradient of the most impacted well MW-1 (possible source area).

* **Downgradient Wells: MW-6, MW-7 & MW-8**

a) In MW-6 and MW-8, MTBE concentrations increased, as a result of seasonal variations. The concentrations of remaining compounds are either below the PaDEP standards or not detected.

b) MTBE concentration in MW-7 decreased in February 2016 event from that of November 2015 event.

4.2.5 Soil, Ground Water and Soil Gas Sampling Methods

The following sample collection methods were utilized during the site characterization activities. Field activities were conducted in accordance with a site-specific health and safety plan.

Groundwater monitoring wells were installed via hollow stem augers. A Geoprobe® 5400 direct-push unit was utilized to advance soil borings. Soil samples were collected using 4-foot long plastic sleeves. Using the direct-push drilling method, soil samples were collected using 4-foot long acetate macro-core sleeves. Each split-spoon and direct-push sampler was retrieved and opened, and the soil core was screened with a calibrated photo-ionization detector (PID) to measure approximate volatile organic compound (VOC) (i.e., petroleum hydrocarbon) concentrations, if present.

Soil

During drilling, soil samples were collected from the interval with the highest observed PID reading and one interval below for delineation purposes. If PID readings were not observed, one sample was collected from the interval directly above the apparent soil/groundwater interface depth. Soil samples were collected from ranging from 7.5 to 28 feet below ground surface using laboratory supplied disposable encore samplers and sealed. Samples were immediately placed on ice in a cooler to maintain 4° Celsius. Chain-of-custody forms were maintained from sample collection to laboratory receipt.

Soil samples were analyzed for the revised PaDEP short list of unleaded gasoline constituents (benzene, toluene, ethylbenzene, xylenes, MTBE, naphthalene, isopropyl benzene, 1,2,4-TMB and 1,3,5-TMB, 1,2-dibromoethane and 1,2-dichloroethane) via EPA Method 8260B.

Groundwater

Groundwater samples were collected from temporary well points using a Geoprobe groundwater sampler. The sampler is used in conjunction with direct-push dual tube sampling. The sampling

device was inserted into the drill rods (dual tubes) of the direct-push rig and driven into the ground. The drilling rod was then removed to expose the screen of the sampling device. After allowing the sampler to collect water, a bailer was lowered through the rods and body of the sampler to collect the groundwater sample. Purging was not performed prior to collecting a groundwater sample.

Permanent groundwater monitoring wells were constructed with varying lengths of 2-inch diameter, 0.02-inch machine-slot PVC well screen set across the saturated zone to monitor the groundwater table interface. PVC riser was added to the well screen to bring the wells to ground surface. The screen annulus was backfilled with sand from the base of the borehole to one foot above the screen. The remaining annulus was filled to the surface with bentonite pellets. All groundwater-monitoring wells were finished at grade with a six-inch diameter road box and locking cap secured in a concrete pad. The encountered lithology is illustrated in the monitoring well logs in **Appendix B**.

Soil Vapor

For soil gas sampling, MIG installed a 2-inch diameter opening to six (6) feet deep bgs. A 3/4-inch diameter perforated plastic tubing was inserted into the entire depth of the hole with one end (top). Modelling clay was used to seal the connection to three (3) foot long, smaller diameter plastic tubing. This prevents the vapor coming from underground escaping into the air. The other end of the smaller diameter plastic tubing was directly connected (clamped) to the inlet tubing regulator of the Summa canister for a period of eight (8) hours to collect the air vapor sample. The Summa canister was sent to Phoenix Environmental Laboratories, Inc. of Manchester, CT for TO-15 analysis.

Soil and Ground Water Waste Disposal

Soil generated during drilling activities and purge ground water resulted from sampling were containerized in steel 55-gallon Department of Transportation (DOT) approved drums for disposal. Once the soil disposal profile was approved, the soil and contaminated ground water waste will be transported off-site for appropriate disposal.

4.2.6 Sampling Quality Control/Quality Assurance

Soil and ground water samples collected from the site were placed in laboratory provided sample jars and cooled to 4°C. The samples were either hand delivered or picked up by a courier from Phoenix Environmental Laboratories of Manchester, CT or Test America Laboratories, Edison, NJ.

After extracting three well volumes, ground water samples were collected with dedicated disposable polyethylene bailers and transferred to laboratory provided sample jars. Collected ground water samples were analyzed in accordance with the PaDEP Unleaded gasoline parameters. Both soil and groundwater samples were documented on a laboratory provide Chains of Custody (COC), which are included in **Appendices F & I.** The purge water and impacted soil

resulted from the well installation and ground water samplings were contained in 55-gallon steel drums and will be properly disposed of offsite.

4.3 Vapor Intrusion Characterization

On-site Soil Vapor Sampling:

On July 26, 2015 & March 10, 2016, MIG conducted soil vapor sampling at the onsite. Air samples were collected for both outdoor air and sub-slab air analyses. Soil vapor samples SVP-1, SVP-2 and SVP-3 were collected as shown in the figure. The outdoor air (OA-1) analyses at the site indicted that the targeted compounds were either not detected or detected below the Soil Gas-Air Criteria for Non-Residential PaDEP $MSC_{IAQ.}$ The analytical results for the samples collected from the site are presented in **Table 4**.

Given the use of the site as a gasoline station, the more applicable in-door air screening levels that might apply to this Site would be the OSHA-derived non-residential permissible exposure level volatilization to indoor air screening levels, which were not exceeded in any of the soil samples. For these OSHA derived. Screening levels to be applicable, appropriate OSHA regulations must be fully implemented at the Site.

MIG installed a 2-inch diameter opening to six (6) feet bgs. A 3/4-inch diameter perforated poly flow was inserted into the entire depth of the hole with the upper one foot being non-perforated was sealed with clay to avoid short flow and top of the hole sample with ambient air.

The analytical sample results did not exceed Soil Gas Criteria Non-Residential PaDEP MSC_{SG} as the contaminants were either not detected or detected below the standards. The tabulated results are in **Table 6**.

4. 4 Regional Environmental History

4.4.1 Local Tank Search

MIG conducted the 1-mile and 0.5-mile radius storage tank search using PaDEP Regulated Storage Tank List and PaDEP web based mapping application (eMapPA). To determine potential off-site sources of contamination at the site. The search radius of 0.5-mile conducted at the site did not identify any storage tanks within 0.5 mile radius of the site. A map depicting the 0.5-mile storage tank search is presented as **Figure 8**.

One (1) storage tank site was identified for the search radius of one mile conducted at the site. A map depicting the one-mile storage tank search is presented in **Figure 8**.

4.4.2 Local Mining Activities

Information obtained from the PaDCNR and the Department of Interior, Office of Surface Mining (OSM) website, does not indicate historical underground mining

activities occurred in the area. Information obtained from the PaDEP eMapPA web based application does not indicate historical mining activities in the area of the site.

5.0 FATE AND TRANSPORT ASSESSMENT

The migration of dissolved phase constituents in groundwater was assessed using the PaDEP-approved New Quick Dominico (QD) groundwater program. The QD program provides a steady state analytical solution based on first order decay of constituent concentrations, retardation and three-dimensional dispersion. The QD solution provides an estimate of plume extent and morphology based on current data.

Site-specific data was used to evaluate the potential migration from on-site shallow monitoring wells MW-1, MW-8 and MW-10 for Benzene and MTBE. The migration assessment was based on the distribution of dissolved phase constituents as detected at the maximum respective concentration of Benzene and MTBE observed in MW-1.

The QD spreadsheet was prepared for Benzene and MTBE from monitoring well MW-1 and MW-8 down the centerline of the dissolved phase plume. The spreadsheet was also prepared for MW-1 and MW-10 centerline for MTBE. The ending concentrations are groundwater sample results collected from MW-8 and MW-10, being downgradient from the suspected source area well, MW-1.

The time in days between the approximate date of the release, which was reported on October 23, 2013 and February 28, 2016 sampling event, which included the majority of sampling wells, is 859 days. The time in days was used to calibrate the plume migration velocity.

The following table summarizes information input into the spreadsheet for calibration purposes:

Calibration

Date	Constituent (MW-1, MW-8 and MW-10)	Starting Concentration (µg/L)	Ending Concentration (µg/L)	Act 2 U/R MSC TDS ≤ 2500 (ug/L)	Time in days used in calibration
02/28/16	Benzene	550	0.0	5	859
02/28/16	MTBE	9400	650	20	859
02/28/16	MTBE	9400	27	20	859

Details of the site conceptualization and QD analyses are described in the following sections.

The estimated ground water flow at the site has been in a south to southeast direction.

The aquifer's hydraulic conductivity was not calculated from site wells and no slug tests were performed; however, published values were assumed and used. The soil as defined in USDA NRCS Web Soil Survey is: Made land, schist and gneiss materials. Typical profile of this type of soil is gravelly silt loam. Also when soil borings were obtained, typical soil profile consisted of silty/micaceous clay with trace sand. According to USDA NRCS, typical saturated hydraulic

conductivity of sandy/silty clay is 0.42-1.41 µm/sec (**Appendix H**). Hence, the assumed value of site hydraulic conductivity is 1.41 µm/sec, which is **0.4 foot/day**.

- **Fate and Transport Calculations**

Published effective porosity (ø) of 0.42 (dimensionless) for the clay, average hydraulic gradient (I) of 0.00236 ft/ft (calculated upon shallow ground water contour maps included as figures), and an average hydraulic conductivity (K) of 0.4 ft/day were utilized to calculate hydrocarbon velocity (V_{HC}) of contaminants beneath the site.

As shown below in the hydrocarbon migration velocity calculations, the most mobile contaminant compound, benzene, exhibits a relatively low migration rate. The projected timeframes do not take into account the effects of intrinsic biodegradation and natural attenuation of the contaminants, which would further slow down hydrocarbon migration.

As Benzene, among other contaminants identified at the site, is present in the ground water at concentrations above the PaDEP standards, estimating the time that Benzene will endure before achieving the PaDEP standard was calculated. The highest Benzene concentration was detected in MW-1 (source area well) at 550 ppb in February 2016.

5.1 Conceptual Site Model

Groundwater in the aquifer occurs primarily within an unconsolidated unit with varying amounts of silty clay and trace sand, at an average depth of 19-21 feet bgs. Based on groundwater monitoring data, the aquifer exhibits a flow generally to the south-southeast at an average historic gradient of approximately 0.00236 ft/ft.

Site specific parameters (such as concentration, source width, and source thickness) and various aquifer parameters (such as hydraulic conductivity and gradient) are input into the spreadsheet along with reported or calculated geotechnical data values for fractional organic carbon (foc), bulk density, porosity, organic carbon partition coefficient (Koc) and decay rate. The spreadsheet was run for Benzene and MTBE and was utilized to estimate constituent concentrations at MW-8 (predominant south-southeasterly ground water flow direction) and MW-10 (offsite in east-southeasterly direction) and the point at which the concentration reaches the U/R MSC in 859 days.

5.2 Spreadsheet Input Parameters

Input parameter values were defined from site-specific data whenever possible. When site-specific data was not available, literature values were utilized to define model input values. The sources of the used data (published vs. obtained from field tests) are indicated accordingly. The following describes the input parameters of the spreadsheet and the values applied in the groundwater fate and transport evaluation.

Contaminants of Concern used for Fate and Transport (F&T) evaluation: Benzene and MTBE were used as the dissolved constituents detected above U/R MSCs during the February 28, 2016 sampling event.

Initial Concentrations: The constituent concentrations as detected during the February 28, 2016 sampling event for Benzene and MTBE in monitoring well MW-1 were used in the evaluation. The spreadsheet assumed equilibrium between the groundwater and soil matrices.

For Benzene the highest concentration observed in MW-1 (550 µg/L in Feb 2016) and MTBE in MW-1 (9400 µg/L in Feb 2016) were utilized to facilitate model calibration. The distances to the receptor wells (MW-8 and MW-10) are 23 feet and 40 feet respectively. The distances in 859 days to meet the MTBE PaDEP SHS are 57' and 42' respectively. Benzene is already delineated, as downgradient wells (MW-8 and MW-10) did not show Benzene concentrations.

Aquifer Characteristics: A steady-state, uniform flow was generated based on site hydrogeologic conditions. The source thickness was considered to be 5 feet, and the published soil bulk density, porosity and Foc as 1.537 grams per cubic centimeter (g/cm^3), 0.42 and 0.005, respectively were used. A value of 0.4 (ft/day) was used as the site data hydraulic conductivity based on published records. A hydraulic gradient of 0.00236 ft/ft was used based on an average hydraulic gradient calculated over the past quarters of groundwater monitoring.

Source Width: The Source Width is the maximum width of the soil of residual contamination perpendicular to the direction of ground water flow. Soil and ground water analytical results indicated petroleum hydrocarbon width along the northeast boundary of the Site to be 91 feet wide.

Source Thickness: The Source Thickness is the vertical extent of the contamination, assumed 5 feet source thickness.

Hydraulic Conductivity: The hydraulic conductivity value is assumed to be 0.4 ft/day according to published values for soils encountered onsite.

Transport Conditions: Dispersion includes both the physical dispersion from simple flow mechanics and diffusion at the molecular level. Both processes affect plume movement.

For this analysis, the original longitudinal, lateral, and vertical dispersive values were conservatively estimated based on literature according to Table 2: Dispersivity Values In Literature of Domenico Spreadsheet Analytical Model Manual by Weixing Tong and Yue Rong. The values were then calibrated to match the field data along the direction of groundwater flow (Southeast) based on site data.

Utilizing the physical and toxicological data provided in PA Code Chapter 250, the QD spreadsheet was calibrated for each dissolved phase plume to determine the dispersive values and source area size. As discussed above, the spreadsheet for each dissolved phase plume was calibrated from groundwater monitoring well MW-1 (source well) to downgradient MW-8 and

MW-10, for both Benzene and MTBE. The QD spreadsheet calibrations are included as **Appendix H** (QD Model Calibrations).

After calibration, the QD spreadsheets were used to predict the maximum distance each dissolved phase constituent plume would travel from MW-1 toward MW-8 or MW-10 in 859 days (same time as February 28, 2016 sampling event) using the current U/R MSC as the end point.

The following table summarizes the output for the migration of Benzene and MTBE in the direction of MW-8 or MW-10 when current site data is input in to the QD spreadsheet. The spreadsheet determined the distance from MW-1 at which each constituent attains the U/R MSC.

Output Migration of contaminants

Constituent	Initial Concentration (µg/L)	Final Concentration (µg/L)/Receptor	Receptor ID/ Distance to Receptor (ft)	Distance to reach GW U/R MSC's (ft)
Benzene	550-MW-2	ND/MW-8	MW-8/23	23
MTBE	9400-MW-2	650/MW-8	MW-8/23	57
MTBE	9400-MW-1	27/MW-10	MW10/40	42

6.0 POTENTIAL EXPOSURE PATHWAYS & SENSITIVE RECEPTORS

To obtain a qualitative analysis of potential exposure pathways and sensitive receptors, the following potential exposure pathways were evaluated but not limited to:

- Ingestion of surficial soils, inhalation of outdoor vapors and particulates from surficial soils, and dermal absorption from surficial soils in contact with skin;
- Ingestion and dermal contact in subsurface soils;
- Groundwater ingestion;
- Migration to surface water; and Vapor inhalation of:
  - Indoor vapors from dissolved phase petroleum hydrocarbons in groundwater,
  - Outdoor vapors from dissolved phase petroleum hydrocarbons in groundwater.

The study evaluated potential residential, non-residential and sensitive receptors exposure and concluded that potential exposure pathways are incomplete as discussed below.

6.1 Potential Soil Exposure Pathways

- ***Ingestion of surficial soils, inhalation of outdoor vapors and particulates from surface soils, and dermal absorption from skin contact with surficial soil.*** The ingestion of surficial soils, inhalation of outdoor vapors and particulates from surficial soils, and dermal absorption from surficial soils in contact with skin were evaluated. Field PID readings collected during soil sampling events did not indicate the presence of petroleum hydrocarbons within the facility surficial soils (0-2 feet bgs). Additionally, approximately 97% of the site is covered with concrete and asphalt. The remaining 3% of the site is consists of an unused grassy area at the intersection of Newtown Street Road and West Chester Pike and also on the northern & southern exterior portion of the building. ***Therefore, on-site direct contact and ingestion of surficial soil impacts is not considered a potential exposure pathway.***

Additionally, based on the depth and location of soil impacts, in combination with soils being capped by asphalt and concrete, it is unlikely ingestion, inhalation, and dermal absorption from impacted soil would occur. Also, air quality survey of utility manholes in vicinity of the site did not indicate PID readings above background readings. ***Therefore, this potential exposure pathway is not considered a pathway of concern.***

6.2 Potential Groundwater Exposure Pathways

Groundwater at the site is impacted with Benzene and MTBE. Water well inventory records obtained from the Pennsylvania Groundwater Information System database (PaGWIS) revealed that there are no wells 0.5 miles of the site.

The fate and transport analysis predicts that MTBE could potentially migrate distances of 57 feet downgradient of the site boundary. In consideration of these data, it is unlikely that impacted groundwater from the site would affect any known groundwater supply wells and therefore this pathway is currently considered incomplete.

MIG conducted 0.5-mile radius well search using the PaDEP Conservation and Natural Resources (PaDEP CNR) and PaDEP Ground water Information System (PaGWIS) to identify potable and withdrawal wells around the site. The PaGWIS identified twenty-eight (28) well locations within 0.5-mile radius of the site. *The data collected through the system shows that the wells are either abandoned or destroyed.* A tabulated data and a map showing the well locations are presented in **Tables 8A & 8B** and **Figure 4**.

Public water is supplied to the site area by the City of Newtown Square Water Supply Department. ***Therefore, groundwater ingestion is not considered a potential exposure pathway.***

6.3 Potential Surface Water Exposure Pathways

MTBE, the only gasoline constituent was detected in groundwater remaining at the point of compliance (MW-8) at concentrations exceeding U/R MSCs. The Hunter Run River is located greater than 5,000 feet south/southeast of the site. Based on the distance to the Hunter Run river

and groundwater fate and transport evaluation results **(Appendix I)** which indicated that dissolved phase constituents will migrate at approximately 57 feet in approximately 850 days (2.33 years), ***discharge of impacted groundwater to surface water is not considered a concern.***

6.4 Potential Vapor Exposure Pathways

6.4.1 Soil Vapor Inhalation

Soil characterization activities conducted in July 2015 identified compounds below the PaDEP unsaturated U/R MSCs. Since the compounds detected in soil samples were either non detected or detected below PaDEP unsaturated U/R MSCs and below Johnson-Ettinger Vapor Intrusion Model (USEPA Version 2.3) (J&E) default Screening values

Screening Values-Soil

Constituent:	Maximum on-site Soil Concentration (mg/kg)	Residential J&E Default Indoor Air Screening Value (mg/kg)	Non-Residential J&E Default Indoor Air Screening Value (mg/kg)	PaDEP Act 2 MSC (saturated/unsaturated) (mg/kg)
Benzene	(July 2015) Not Detected	0.37	0.63	0.5
MTBE	(July 2015) Not Detected	4.6	1500+	1.3/2.3

During the July 2015 site characterization activities, soil samples did not identify gasoline related compounds at the site. ***Also, the air quality survey of utility manholes did not indicate readings above background PID readings and concluded utility trenches are not pathway of concern.***

Additionally, as indicated above, the current concentrations are below the Screening levels for non-residential settings. As such, soil vapor inhalation is not considered a concern.

6.4.2 Groundwater Vapor Inhalation

The inhalation of indoor vapors from Dissolved Phase Hydrocarbon (DPH) in site groundwater was evaluated. Benzene and MTBE have been identified in groundwater exceeding U/R MSCs. Maximum on-site groundwater concentrations observed including source and downgradient wells of concern are compared to the J&E default screening values for the following constituents:

Screening Values-Ground Water

Constituent	Maximum On-site Ground water Concentration (µg/L)	Residential J&E Default Indoor Air Screening value (µg/L)	Non-Residential J&E Default Indoor Air Screening value (µg/L)	PaDEP Act 2 MSC (µg/L)
Benzene	550 (MW-1)	3,500	5,900	5
MTBE	15,000 (MW-1)	380,000	640,000	20

Current maximum constituent concentrations do not exceed respective J&E default screening values for the residential or non-residential settings.

Site characterization activities identified gasoline constituents in site groundwater along the downgradient site boundary near potential preferential pathways. However, data collected from the July 2015 and March 2016 soil vapor sampling events indicate constituent concentrations below applicable residential and non-residential indoor air quality criteria. The analytical data is illustrated in **Table 4**. Additionally, an air quality survey of utility manholes did not indicate PID readings above background PID readings and concluded utility trenches are not pathway of concern.

All such, exposure pathways to human or ecological receptors are incomplete. Accordingly, Site Specific Standards (SSS) are recommended for soil and groundwater at the site.

7.0 SELECTION OF CLEANUP STANDARDS AND RATIONALE

Facility groundwater is impacted with unleaded gasoline constituents primarily Benzene and MTBE. PaDEP cleanup standards, established in the Land Recycling Act (Act 2), 25 PA Code Chapter §250, indicate the following three potential standards for remediating a site.

The three cleanup standards are:

- Background Standard;
- Statewide Health Standard (SHS);
- Site Specific Standard (SSS).

There are different compliance criteria/procedures for each standard. There is no current evidence that the site is being impacted by an off-site source, therefore, the Background Standard has been eliminated from further consideration at this time. Due to groundwater contamination exceeding the PaDEP SHS at this active gasoline service station in urbanized Pennsylvania, the SHS is inapplicable at this time. The Ground water buffer option cannot be selected for this site since there is no buffer distances specified for several compounds including benzene and MTBE. Therefore, the SSS is the most applicable standard for this site.

7.1 Site Specific Standard

Analysis of fate and transport, potential exposure pathways, sensitive receptors, soil, and ground water has concluded the development of a nonnumeric SSS as the most appropriate criteria for at this site. ***The SSS was selected as a cleanup standard for this site based upon rationales and Technical Guidance in The Pennsylvania's Land and Recycling Program: Technical Guidance Manual, Section II (Remediation standards) C. Site Specific Standards (1-9) and Section 304 (j,o,n) of Act 2.***

As required for attainment of a nonnumeric SSS, MIG conducted a detailed evaluation of potential receptors (Section 2.2) and exposure pathways (Section 6). All pathways of exposure are evaluated and the past, current and future use of the land is considered. The resulting cleanup remedy selected to meet site-specific soil and groundwater standards. The groundwater monitoring will be conducted along with maintaining engineering and institutional controls of the site. Consideration of engineering and institutional controls at the site concluded exposure pathways to be incomplete or nonexistent.

In accordance to 25 Pa. Code Chapters 250.404, 250.405, and 245.310, a risk assessment is not necessary because neither present nor future exposure pathways exist for soil and ground water. Determinations of exposure pathways are available in Section 6.0. As a risk assessment is not required, a numerical SSS is not calculated at this time. In determining soil and groundwater standards, consideration was given to appropriate exposure factors to receptors based on land use of the site, the effectiveness of institutional or other controls placed on the future land use, potential pathways for human exposure, and appropriate statistical techniques.

7.2 Attainment Demonstration and Proposed Remedial Action Plan

Fate and transport analysis, which takes into account the effects of engineering and institutional controls, and analysis of potential exposure pathways and sensitive receptors ***demonstrate that neither present nor future exposure pathways exist***. Hence, according to 25 Pa. Code Chapter 250.405 and 25 Pa. Code Chapter 245.310, a risk assessment report is not required. Also, according to the Land Recycling Program Q&A Database, question ID#:88, the response indicates development of site-specific numeric values is not necessary when no complete exposure pathway exists. The groundwater monitoring will be conducted along with maintaining engineering and institutional controls of the site.

The Remedial Action Plan (RAP) will be submitted to the PaDEP, along with the revised SCR within 90 days of the date of this SCR. In the RAP, to demonstrate attainment of groundwater remediation via natural attenuation and biodegradation, MIG proposes 8 rounds of quarterly groundwater sampling events. Each event will be reported to PaDEP in a Remedial Action Progress Reports (RAPR).

8.0 CONCLUSIONS AND RECOMMENDATIONS

The site is currently and planned future use is retail gasoline facility (Facility #: 23-093154). Land use surrounding the site is primarily commercial down gradient and residential up gradient of the site. Site Characterization activities conducted to-date indicates that ground water is impacted by gasoline related compounds. The identified compounds (Benzene & MTBE) were delineated horizontally and proposed to be delineated vertically.

Laboratory analyses indicated the following:

- Soil sample results did not indicate contaminant concentrations above PaDEP SHS.
- Only Benzene and MTBE are detected in groundwater at the site above the PaDEP SHS;
- Benzene was detected in only 3 wells (MW-1, MW-2 & MW-5) out of 10 wells sampled at the site at concentrations above the PaDEP SHS. Benzene concentration in these wells is generally steady although occasionally fluctuating with seasonal water table elevations at the site.
- MTBE was detected in 5 wells (MW-1, MW-6, MW-7, MW-8 & MW-10) out of 10 wells sampled at the site at concentrations above PaDEP SHS. MTBE concentration in these wells is generally fluctuating with seasonal water table elevations at the site.
- As indicated by fate and transport analyses, the modeled extend of the plume is not expected to impact sensitive receptors as contaminants will naturally attenuate and over time as the initial source of contamination is depleting and no additional source(s) is contributing to the existing contamination. Vapor screening analysis indicates that soil

and ground water contaminants volatilization are not a concern for this site. Additionally, exposure pathways relevant for this site are incomplete or none existing.

- Considering the site conditions, SSS are selected as most applicable cleanup standards. Based on the determination that no known exposure pathway is of concern, a risk assessment and a numerical set of site specific standards is not warranted.

- Upon the PaDEP approval, the process checklist as indicated in Section II-C (Remediation Standards-Site Specific Standard) of the Pennsylvania's Land Recycling Program: Technical Guidance Manual will be followed.

Potential Source Area

- MIG reviewed the historic reports (KEM Reports 2007 & 2013) & RTKL records in search for source area. However, the reports did not specify the source area and emphasized only Groundwater contamination.

- MIGs recent soil sampling as shown in **Table 1**, also did not indicate soil contamination or source area.

- MIGs groundwater sampling indicates the most elevated concentrations are located at MW-1, which is located at immediately down-gradient of dispenser area, making it suspected source area. Additional elevated Benzene concentrations were identified near the gasoline UST field in MW-2 & MW-5, which makes the Gasoline UST field as secondary potential source area.

Recommendations

- To complete the horizontal delineation, down-gradient of MW-8 and MW-10, two (2) monitoring wells are proposed to be installed on the adjacent southern property; Neimeyer Corp. Property- as shown in **Figure 4**. Please note that B&B, a third party reviewer for USTIF, also suggested delineation on the Neimeyer Corp.

- To complete the horizontal delineation onsite, one (1) monitoring well is proposed to be installed, west of Gasoline UST field; since MW-2 & MW-5 identified Benzene concentrations above the PaDEP Standards.

- For vertical delineation within the suspected source area, in the same mobilization, MIG proposes to install one (1) deep well in the vicinity of MW-1, to approximately 45 feet (5-feet screen), within the saprolite zone (weathered bedrock) to be terminated at the top of the competent bedrock – as shown in **Figure 4.**

- The Remedial Action Plan (RAP) will be submitted to the PaDEP, along with the revised SCR within 90 days of the date of this SCR. In the RAP, to demonstrate attainment of groundwater remediation via natural attenuation and biodegradation, MIG proposes 8

rounds of quarterly groundwater sampling events. Each event will be reported to PaDEP in a Remedial Action Progress Reports (RAPR).