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**COMPREHENSIVE ENVIRONMENTAL SITE
CHARACTERIZATION**

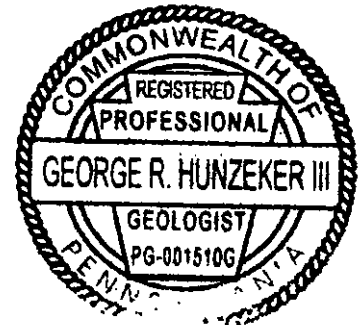
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Former Route 119 Amoco
1809 University Drive
Dunbar, Pennsylvania 15431

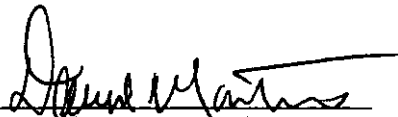
Prepared for:

Mr. & Mrs. Tim Shell
202 Center Wood Circle
Uniontown, Pennsylvania 15401


Prepared by:

Letterle & Associates, LLC
2859 Oxford Boulevard
Suite 110
Allison Park, PA 15101




David N. Martinsek, P.G.
Project Manager


George R. Hunzeker P.G.
Senior Project Manager


Laurie Hall
Project Geologist

September 2006

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1.0 INTRODUCTION

Letterle & Associates, LLC (Letterle) was retained in August 2005 by Mr. & Mrs. Timothy Shell (Shell's) to complete environmental site characterization and remedial action at the former Route 119 Amoco (Rt. 119 site) located at 1809 University Drive (79° 38' 47" W longitude and 39° 58' 04" N latitude or 79.6464° W longitude, 39.9677° N latitude) in Dunbar, Pennsylvania. The site location is shown on Figure 1. Mr. Mick McGwire is the current owner of the property, which is currently a used automobile dealership named Summit Motors Used Cars Plus. The Shells and Mr. Ron Hall (Hall) previously owned the property and the former underground storage tank (UST) system at the site. An environmental site characterization was initiated in May 1996 when a release of gasoline was reported to the Pennsylvania Department of Environmental Protection (PADEP) as a result of leaking swing joints and coupler connections along the underground pipelines from the underground storage tanks (USTs) to the dispensers.

Chambers Environmental Group, Inc. (Chambers) of Pleasant Gap, Pennsylvania conducted an environmental site characterization investigation and subsequent remedial activities at the facility from 1996 through August 2000. In June 2000, the Shells and Hall retained RETTEW Associates, Inc. (RETTEW) of Lancaster, Pennsylvania to review Chambers remedial efforts at the Rt. 119 site. RETTEW subsequently became the Shells and Hall's environmental consultant in August 2000.

The reported release in May 1996 involved unleaded gasoline. Unleaded gasoline is composed of hydrocarbons and "additives" that are blended with the fuel to improve fuel performance and engine longevity. The hydrocarbons fall primarily in the C4 to C12 range. The lightest of these are highly volatile and rapidly evaporate from spilled gasoline. The aromatic hydrocarbons in gasoline are primarily benzene, toluene, ethylbenzene, and xylenes (BTEX). Some heavier aromatics are also present including low amounts of polyaromatic hydrocarbons (PAHs) such as naphthalene and cumene. In addition, oxygenated compounds ("oxygenates") such as alcohols (for example, methanol or ethanol) and ethers [for example, methyl tertiary butyl ether (MTBE)] are generally added to gasoline as octane boosters and to reduce carbon monoxide emissions. MTBE has been a common additive since about 1980.

To date, a Site Characterization Report (SCR) for the Rt. 119 site has not been approved by the PADEP. This comprehensive SCR was prepared to meet the requirements of 25 Pa. Code § 245.309-3110 and includes a summation of all activities conducted at the Rt. 119 site to date. The objectives of the site characterization were to accomplish the following

- Describe the release, extent of contamination, and the interim remedial actions implemented to address the release
- Determine whether additional interim remedial actions were necessary to abate an imminent hazard to human health or the environment
- Determine whether additional site characterization work was required upon completion of an interim remedial action
- Determine or confirm the source(s) of contamination
- Provide sufficient physical data, through field investigations, to determine the regulated substances involved, and the extent of migration of those regulated substances in surface water, groundwater, soil, or sediment.

- Determine, from measurements at the site, values for input parameters including hydraulic conductivity, source dimensions, hydraulic gradient, water table fluctuation and fraction organic carbon necessary for fate and transport analysis.
- Provide sufficient information to select a remediation standard.
- Provide sufficient information to allow for completion of a remedial action plan or a design for remedial action.

This report demonstrates that the objectives of a site characterization as detailed in 25 Pa. Code § 245.309 have been met at this site. This report discusses the nature and extent of regulated substances in the soil and groundwater; analyzes the fate and transport mechanisms for the regulated substances; and summarizes the potential risks to human health and the environment from the identified regulated substances at the site.

The following sections present information about the site location, site background, current site operations, the site investigation, and findings of the site investigation. A conceptual site model (CSM) including an environmental media evaluation, fate and transport analysis, and exposure pathway analysis is also included. A copy of Letterle's site specific Health & Safety Plan (HASP) and Standard Operating Procedures (SOP's) with a description of Quality Control/Quality Assurance procedures for activities performed during the site characterization and remedial action work are included in Appendix A and B.

2.0 SITE BACKGROUND

2.1 Site Description

The Rt. 119 facility is located on State Route 119 (Rt. 119) in Dunbar, Fayette County, Pennsylvania (Figure 1). The site property is approximately 0.31 acres in size and is located near the intersections of Rt. 119, Pechin Road, and Hi-Way Supply Road. The property was formerly an Amoco retail gasoline service station and convenience store from approximately 1979 to November 16, 2000. Mr. Mick McGuire is the current owner of the property (Summit Motors Used Cars Plus). Structures at the site include a one-story concrete block building, small shed, and two canopies that are covering the former dispensers. There are currently no USTs at the site. Prior to January 2005, five USTs were located at the site:

- One 550-gallon heating oil tank;
- One 1,000-gallon kerosene tank;
- Two 8,000-gallon gasoline tanks; and
- One 4,000-gallon gasoline tank.

Figure 2 provides a general layout of the Rt. 119 site and includes the building, the location of the former UST systems, and other pertinent site features.

The site has an average ground surface elevation of approximately 1,240 feet above mean sea level (feet-msl). The northern portion of the property is mostly covered by concrete, asphalt, or gravel. The site slopes gently to the southeast towards Rt. 119. Surface water in the vicinity of the site

drains via overland flow and storm drains to an unnamed intermittent tributary of Gist Run (elevation approximately 1,175 feet-msl), which is located approximately 1,200 feet to the southwest of the site and flows to the south-southeast (Figure 1). A second unnamed intermittent tributary of Gist Run is located approximately 700 feet to the southeast of the site. Both unnamed intermittent tributaries join and subsequently drain into Gist Run approximately 5,040 feet to the southeast of the site.

The surrounding land use consists of commercial, rural, and residential properties (Figure 3). Public utilities at the site include water (North Fayette County Municipal Authority), telephone (Verizon), and electric (Allegheny Power). According to the Chambers 1998 SCR, the facility is equipped with a septic leach field located approximately 20 feet to the west of the onsite building. A sensitive receptor survey, discussed in Section 3.1, further identifies the surrounding land use.

2.2 Site History

The Rt. 119 site has an extensive site characterization and remedial action history. Knowledge of the site history is essential for an understanding the current conditions at the site. Previous environmental site activities pertinent to this SCR were performed by Chambers (1996 – 2000), RETTEW (2000-2005), and Precise Tank Modifications (PTM) (2005). The following sections summarize the earlier activities and results.

2.2.1 1996-June 2000 (Chambers)

Environmental characterization activities commenced at the site when evidence of a gasoline release was discovered sometime after January 1995, due to loose swing joints and coupler connections along the piping run to the dispensers. An unknown quantity of gasoline was released to the environment. Chambers was retained as the site consultant in 1996. Letterle reviewed the following documents that were submitted by Chambers to the PADEP:

- Site Characterization Report (SCR) – May 4, 1998
- Soil Vapor Extraction (SVE)/ Air Sparge (AS) Pilot Test Report – June 30, 1998
- Remedial Action Plan (RAP) – July 6, 1998
- Response to PADEP Remedial Action Review – December 7, 1999
- Remedial Action Report – August 30, 2000

Each of these documents is briefly summarized below.

2.2.1.1 Site Characterization Report (May 4, 1998)

Chambers directed the completion of 22 soil borings, installation of six monitor wells (MW-1 through MW-6) and two groundwater recovery wells (RW-1 and RW-2), and the completion of a preliminary groundwater pump test and a SVE pilot test.

Twenty seven soil samples were collected and analyzed for BTEX, MTBE, cumene, naphthalene, and benzo(a)anthracene, and benzo(a)pyrene using USEPA Methods 8021A and 8270B. The soil sample depth interval ranged from 4 to 10 feet below ground surface (feet bgs). Benzene concentrations exceeded the PADEP Used/Non-Residential Medium Specific Concentration (U/NR

MSCs) in two soil samples (A6 at 4 feet and A7 at 6.5 feet); MTBE concentrations exceeded the PADEP U/NR MSC in four soil samples (A7 at 4 feet, A7 at 6.5 feet, A8 at 4 feet, and A9 at 4 feet); and naphthalene concentrations exceeded the PADEP U/NR MSC in three soil samples (A8 at 4 feet, A9 at 4 feet, and A11 at 4 feet). A tabular summary of the soil analytical results are included in Appendix C.

Five groundwater sampling events were completed as follows:

- September 8, 1997 Monitor wells MW-2 through MW-4
- October 1, 1997 Monitor wells MW-1 through MW-4
- November 4, 1997 Monitor wells MW-2 through MW-6, RW-1, and RW-2
- January 27, 1998 Monitor wells MW-1 through MW-6, RW-1, and RW-2
- April 23, 1998 Monitor wells MW-1 through MW-6, RW-1, and RW-2

The groundwater samples were analyzed for BTEX, MTBE, and naphthalene (and cumene on April 23, 1998) by USEPA Method 8021A. A tabular summary of the groundwater results is included in Appendix D. Free product (0.17 feet) was measured in monitor well MW-1 on January 27, 1998. During the groundwater sampling events, the respective PADEP U/NR MSCs were exceeded during at least one event for each listed well:

- Benzene in MW-1 through MW-3 and RW-2.
- Toluene, ethylbenzene, and xylenes in MW-1 and MW-3.
- MTBE in MW-1 through MW-4 and RW-2.
- Naphthalene in MW-1 through MW-3 and RW-2.
- Cumene in MW-1 and MW-3.

The historic maximum concentration of benzene [MW-1; 24,500 micrograms/liter ($\mu\text{g/l}$); October 1, 1997] and MTBE (MW-3; 49,900 $\mu\text{g/l}$; January 27, 1998) at the site were detected during the site characterization from 1996 to 2000.

The results of the limited groundwater pumping tests conducted at RW-1 and RW-2 indicated that the shale bedrock aquifer had low flow characteristics. Pumping rates of 0.75 gallons per minute (gpm) and 1.4 gpm were used. Low recharge rates were observed and both pumping tests were aborted before completion. Based on the pumping test results, groundwater extraction and treatment was not recommended as a viable remedial technology at the Rt. 119 site.

2.2.1.2 SVE/AS Pilot Test Report (June 30, 1998)

Chambers completed a SVE/AS pilot test after installing three SVE wells (SVE-1 through SVE-3), two AS wells (AS-1 and AS-2), and six vapor monitoring probes (VMP-1 through VMP-6). The two-inch diameter SVE wells were constructed with a screened interval from 3 to 35 feet bgs, which was just above the apparent water table aquifer. The SVE wells were designed to extract soil vapor from the shallow petroleum-impacted soil (3 to 6 feet bgs) and from depths to 35 feet bgs as generated by the AS wells. The two-inch diameter AS wells were constructed with a screened interval from 37 to 40 feet bgs. The AS wells were designed to inject compressed air below the observed water table aquifer to volatilize dissolved petroleum constituents within the aquifer.

Each 0.75-inch diameter VMP was constructed with a one-foot well screen installed at a depth of 3 to 4 feet bgs. At each of the five SVE or AS wells, one soil sample was collected from a depth interval of 5 to 6 feet bgs. The soil samples were analyzed for unleaded gasoline constituents (BTEX, MTBE, cumene, and naphthalene). One soil sample collected from 5-6 feet at SVE-1 (553 µg/l), exceeded the PADEP U/NR MSC for benzene.

Results of the SVE/AS pilot tests demonstrated that the SVE wells would effectively remove significant concentrations of petroleum constituents (BTEX and petroleum hydrocarbons C1– C4 and C4–C10) that were present in the shallow soils (2 to 7 feet bgs). Specific analysis for MTBE was not conducted. Based on the test results, Chambers recommended using wells MW-1, MW-3, RW-2, and SVE-1 through SVE-3 as vapor extraction wells and utilizing wells MW-1, MW-3, AS-1, and AS-2 as air sparging wells.

2.2.1.3 Remedial Action Plan (July 6, 1998)

The RAP proposed using SVE/AS to remove petroleum impact to the soil and groundwater to attain the PADEP U/NR MSCs for residential, used aquifers. Initially, a SVE system would operate until the vapor concentrations declined and AS technology would be added to remove dissolved petroleum constituents from groundwater. The RAP also noted that free product (amount not specified) was measured within SVE-3 possibly in June or early July 1998. The PADEP implicitly approved this RAP, but did not formally “approve this RAP” within a letter of correspondence dated August 24, 1998.

2.2.1.4 Response to PADEP Remedial Action Review (December 7, 1999)

In November 1999, PADEP requested that Chambers:

- *Implement operational procedures and/or installation of equipment that will eliminate discharge of contaminants from the SVE system; and*
- *Institute MTBE as a component to be analyzed in the SVE system air samples.*

Chambers provided documentation of granular activated carbon installation/replacement history (generally 2,000 pounds. every one to four months), and did not recommend changes to the system. Chambers adjusted remedial system monitoring from monthly to every 2 to 3 weeks. They requested technical rationale for the request that vapor discharge (effluent) samples also be analyzed for MTBE. Subsequently, in March 2000, PADEP requested that the RAP be reassessed due to possible VOC releases to air.

2.2.1.5 Remedial Action Report (August 30, 2000)

Approximately 30 gallons of free product were recovered by manual bailing from wells SVE-3 and RW-2 from July through December 1998. Also, free product was historically observed in monitor well MW-3 (and MW-1 according to the Chambers 1998 SCR). From March 20 to May 9, 2000 free product was not detected in wells SVE-3, RW-2, and MW-3, and had not been detected at the site since January 1999.

The low vacuum SVE system was extracting air containing petroleum constituents at an average rate of approximately 34.9 cubic feet per minute (ft³/minute).

Analytical results for the groundwater sampling event conducted on April 28, 2000, revealed the following:

- Benzene exceeded the PADEP U/NR MSC in two monitor wells, MW-3 (466 µg/l) and MW-1 (435 µg/l).
- MTBE exceeded the PADEP U/NR MSC in three monitor wells, MW-3 (3,400 µg/l), MW-1 (1,210 µg/l), and MW-4 (44.6 µg/l).
- Naphthalene exceeded the PADEP U/NR MSC in two monitor wells, MW-3 (85.7 µg/l) and MW-1 (55 µg/l).

The SVE system was activated on October 12, 1998 and the AS system was activated on March 22, 1999. The SVE/AS systems were deactivated on June 21, 2000.

2.2.2 July 2000-July 2005 (RETTEW)

In June 2000, RETTEW was retained to review the progress and effectiveness of the remedial action at the Rt. 119 site. In July 2000, RETTEW became the environmental consultant at the site. Subsequently, RETTEW modified the SVE/AS system and initiated bioaugmentation remedial methods to treat the petroleum constituents in the groundwater. The remedial system was eventually deactivated in July 2005. Letterle reviewed the following documents that RETTEW submitted to the PADEP:

- Review of Remedial Effectiveness – June 2000
- Updated Workplan – August 2000
- Revised RAP – November 2000
- Correspondence and Progress Reports

Each of these documents is briefly summarized below.

2.2.2.1 Review of Remedial Effectiveness (June 2000)

According to RETTEW, the SVE system was effectively removing volatile petroleum constituents from subsurface soils in the remediation area; however, the AS system appeared to be less effective at treating the dissolved hydrocarbon phase in groundwater. Regression analysis trends of historic groundwater results indicated that the onsite soils were being effectively remediated, while petroleum impacted groundwater continued to migrate away from the release location.

2.2.2.2 Updated Workplan (August 2000)

RETTEW proposed to utilize the existing SVE/AS system with bioaugmentation, including the installation of high diffusion air bubblers (HDAB) within the AS system wells, and the addition of hydrocarbon- and MTBE-degrading enzyme complexes and bacterial consortium. Soil attainment

sampling was also recommended to confirm that the SVE system had successfully removed the absorbed phase petroleum constituents from the soil.

2.2.2.3 Revised RAP (November 2000)

RETTEW proposed to modify the existing SVE/AS system with bioaugmentation activities including the installation of HDABs within the AS system wells (MW-1, MW-3, RW-2, SVE-2, and SVE-3) to add dissolved oxygen to the groundwater, and the addition of hydrocarbon- and MTBE-degrading enzyme complexes, nutrients, and bacterial consortium to aid in the removal of the dissolved phase constituents.

The remedial system would be monitored by quarterly groundwater sampling and reporting. Also, the completion of a fate and transport analysis was recommended to determine a clean-up level for groundwater at the site and to validate the future use of monitored natural attenuation subsequent to bioaugmentation remediation activities.

2.2.2.4 Correspondence and Progress Reports

Through August 2005, RETTEW, the PADEP, and the Shells communicated through various progress reports and correspondence regarding the site characterization and remedial action activities, from which the following summations were chronologically compiled:

- The HDABs were apparently installed and the addition of bioaugmentation was begun in July 2000. One groundwater monitoring event was conducted in August 2000.
- The remedial actions recommended in the RETTEW Revised RAP were not approved by the PADEP. A new SCR/RAP was requested by the PADEP in December 2000, and remediation activities were considered to be interim remedial actions.
- A PADEP site visit conducted on January 25, 2001 indicated that the remediation system was not operating. (No remedial activities were conducted since June 21, 2000.) The PADEP requested a meeting with the site owners on February 20, 2001.
- On March 28, 2001, RETTEW and the PADEP met to discuss the PADEP's concerns regarding the potential for dissolved MTBE to migrate into deeper aquifer zones and to the northwest through underlying geologic structural features.
- On April 5, 2001, the PADEP issued a notice of violation and requested a new SCR/RAP.
- The PADEP reviewed the RETTEW Workplan (April 2001) for additional site characterization activities (geologic evaluation, deeper aquifer investigation, etc.) and the RETTEW request in May 2001 to use bioaugmentation as an interim remedial action.
- On June 1, 2001, the PADEP did not concur with the use of bioaugmentation and requested a time frame for completion of a SCR.

- On June 12, 2001, RETTEW notified the PADEP that bioaugmentation activities would begin after July 16, 2001 as an Interim Remedial Action until a formal RAP was approved and implemented. (The United States Environmental Protection Agency had formerly approved the injection of the enzyme complexes, nutrients, and bacterial consortium without permit requirements.)
- From July 23 through July 27, 2001, RETTEW directed the installation of a deep well (DW-1) at the site to evaluate the vertical extent of the dissolved phase constituents (Figure 2). The well was screened from 93 feet to 103 feet bgs.
- A project update letter to the Shells (January 5, 2005) from RETTEW discussed a possible unknown additional source of petroleum impact due to an unexpected increase in groundwater concentrations in December 2003. RETTEW recommended a review of previous site ownership and historical aerial photography to characterize former site usage, an evaluation of the USTs compliance status, evaluation of the liquid levels within the USTs, and an evaluation of a gas chromatograph fingerprint analysis of the water/sludge sample collected from SVE-3.

On July 7, 2004, each of the five tanks contained 1 to 12 inches of liquid. The fingerprint analysis indicated that the contaminant in the sample might contain constituents of diesel fuel and/or kerosene.

- Quarterly groundwater monitoring was performed at the site from August 2000 to July 2005. A tabular summary of analytical groundwater results from August 2000 to July 2005 is included in Appendix E. RETTEW stated that while unleaded gasoline constituents significantly decreased since remediation began, residual concentrations of benzene and MTBE above the PADEP U/NR MSCs are in onsite wells such as MW-3, RW-1, RW-2, SVE-1 through SVE-3, and AS-2.

2.2.3 USTs Closure (January 2005)

In January 2005, PTM conducted the closure of the five USTs at the Rt. 119 facility. The PTM UST Closure report (Appendix F) was submitted to the PADEP in February 2005. A RETTEW representative was present during a part of the tank closure activities to observe subsurface environmental conditions in the vicinity of the UST field.

PTM documented that the tanks and approximately 100 feet of piping were in good condition with no problems. The excavated USTs soil (approximately 86 tons) had a petroleum odor and was considered impacted. Water was encountered 6 inches below the ground surface. Reportedly, the water appeared to be impacted by petroleum. PTM was unsure of the source of the contamination found in the groundwater.

According to RETTEW, free-product was noted in the groundwater excavation of USTs #001 through #003. USTs #001 and #002 appeared intact with no corrosion or pitting. The tank interiors were covered with a yellow plastic-like lining, with no voids or holes visible. The metal on the

bottom of UST #003 was corroded and flaked; minor pitting was noted on the outer surface.

The excavations for USTs #004 and #005 were closed prior to RETTEW arriving onsite. After excavation, the tanks were observed to be single-wall tanks without linings, both tanks had exterior pitting, and small voids or pinholes were observed in the tanks after they were cut open. UST #004 contained 50 to 100 gallons of water.

Two groundwater and five soil samples were collected and analyzed during the UST closure. The sample collection depths are based on RETTEW field notes. The two water samples (W-1 and W-2) were collected at four feet bgs from the base of the excavation. Analytical results exceeded the PADEP U/NR MSC for benzene, toluene, ethylbenzene, MTBE, and naphthalene. Concentrations of xylenes were below the PADEP U/NR MSC.

A total of five soil samples were collected to assess the UST excavation, product lines, and dispensers as described below:

- Two soil samples (SW-1 and SW-2) were collected at a depth of 4 feet bgs on the northeast and the southwest walls of the shared excavation.
- Three soil samples (D-1 through D-3) were collected at depths of 3 to 3.5 feet bgs from below the three dispensers.
- One soil sample (PL-1) was collected at a depth of 2.5 feet bgs from below the piping run between dispensers #1 and #2.

The laboratory detection limits for benzene and naphthalene significantly exceeded the PADEP U/NR MSCs in soil samples SW-1 and SW-2. Concentrations of benzene, toluene, and naphthalene exceeded the PADEP U/NR MSCs in soil sample PL-1. No soil or water samples appear to have been collected from the shared excavation for USTs #004 and #005. The laboratory results from the soil and groundwater samples collected during the tank closure are summarized on Tables 1 and 2. PTM reported that the owner notified the PADEP of a release at the site on January 20, 2005.

Interim remedial actions performed at the site by PTM included the removal of the regulated substances from the USTs and the excavation of approximately 86 tons of petroleum-impacted soil. The impacted soil was temporarily stockpiled onsite. According to waste disposal receipts within the PTM closure report, the soil was removed on March 23 and 25, 2006 and transported to the Greenridge Reclamation Landfill in Scottdale, Pennsylvania for certified disposal of nonhazardous waste.

2.3 Regional Geology and Hydrogeology

The Rt. 119 site is situated within the Pittsburgh Low Plateau Section of the Appalachian Plateaus Physiographic Province. The Pittsburgh Low Plateau Section consists of a rolling upland surface cut by numerous, narrow, relatively shallow valleys.

The Rt. 119 site is located on discontinuous unconsolidated deposits of clayey silt, gravelly sand, and/or weathered shale to an approximate depth of 8 to 12 feet bgs. Based on site investigations, the bedrock is primarily grey shale and siltstone with very few thin sandstone and coal beds. The bedrock in the site vicinity consists of the Permian-aged Dunkard Series (County Report 26 -

Geology and Mineral Resources of Fayette County, Pennsylvania). The Dunkard Series is composed of interbedded sandstone, siltstone, claystone, shale, limestone, and coal (Pennsylvania Geological Survey, 1999). The Dunkard is separated into the Waynesburg, Washington, and Greene Formations, from oldest to youngest. The site is believed to be located within the Waynesburg Formation.

The Waynesburg Formation, which extends from the base of the Waynesburg coal to the base of the Washington coal, is between 85 and 210 feet thick. While the Waynesburg Formation is similar to the other overlying portions of the Dunkard Series, it tends to be somewhat sandier, its coal beds are thicker and more persistent, and it has few, if any, red beds. In older publications, the Waynesburg Formation was not defined as a formation. Instead, that lithologic section was separated into the underlying Monongahela Formation and the overlying Washington Formation (Pennsylvania Geological Survey, 1999).

The Rt. 119 site is located within the Lower Youghiogheny River Watershed (Watershed 19D), which has a total drainage area of 478 square miles. The major streams within the watershed are Sewickley Creek, Jacobs Creek, and the lower portion of the Youghiogheny River. A south-southeastern-flowing unnamed intermittent tributary of Gist Run is located approximately 1,000 feet southeast of the site. A southern-flowing unnamed intermittent stream forms approximately 300 feet to the east of the property boundary. The intermittent tributaries join approximately 1,500 feet to the south of the site and continue to flow to the southeast. The perennial northeastern-flowing Gist Run receives the intermittent flow approximately 4,200 feet to the southeast of the site. Streams within the drainage basin of Gist Run are designated as trout-stocking streams by the PADEP.

3.0 SITE INVESTIGATION

Letterle conducted site characterization and remedial action activities on behalf of the Shells at the Rt. 119 site. Letterle first reviewed the work and documents of the previous consultants and conducted an initial round of groundwater sampling in November 2005. In March 2006, Letterle met with the PADEP at the site to discuss the status of the Rt. 119 site characterization. The PADEP noted there were data deficiencies in the Chambers SCR (May 1998), which needed to be included in a revised SCR. Therefore, Letterle conducted additional site investigation and sampling activities at the site to obtain the necessary data. The work performed, the methodologies used, and results of these activities are discussed in the following sections:

- A Sensitive Receptor Survey
- Advancement of soil borings (Geoprobe®)
- Soil sampling and analysis
- Installation of monitor wells
- Installation and sampling of vapor monitor points
- Groundwater sampling and analysis
- Site survey (including monitor well locations and elevations)
- Soil and groundwater quality evaluation
- Conceptual site model (CSM)

3.1 Sensitive Receptor Survey

Letterle performed a sensitive receptor survey around the immediate area (within 2,500 feet) of the facility. The survey was performed to evaluate potential receptors in the area from impacted soil and groundwater at the Rt. 119 site. The survey included a review of the surrounding land use, an assessment of underground conduits and utilities, and an investigation of groundwater usage in the vicinity of the Rt. 119 site.

3.1.1 Surrounding Land Use

The results of the survey reveal that the surrounding area consists primarily of rural, commercial, and residential properties. The following properties border the site:

- To the north - Pechin Road and its intersection with Hi-Way Supply Road, one residential property, and the Hi-Way Supply Company.
- To the east - Rt. 119 and the Jaszyn Bistro Grille restaurant. Beyond the restaurant to the east lies a wooded parcel, and to the northeast lies Fayette County fairground property.
- To the south - a portion of the DeBlasio parcel and the intersection of Rt. 119 and Hi-Way Supply Road. Beyond the intersection to the south lies the Health First Medical Center and a former Honda Dealership on the west side of Rt. 119, and the DeBlasio parcel on the east side of Rt. 119.
- To the west - Hi-Way Supply Road, two residential properties, and two adjoining commercial properties (Showoff's Hair Stylists plus an unoccupied property).

The various properties in the vicinity of the site are shown on Figure 3.

3.1.2 Underground Conduits and Utilities

A review of the local utilities (Figure 2) indicated the presence of water, storm sewer, telephone, and electric line in the vicinity of the site. A water line is located along the west side of Hi-Way Supply Road. A water supply line crosses beneath Hi-Way Supply Road and enters the onsite building near the northwestern corner at an approximate depth of 2.5 feet. Storm sewer lines are located along the western side of Hi-Way Supply Road and along the eastern property boundary (Rt. 119). Storm water flows to the southwest along Rt. 119 after leaving the site vicinity. Electric lines are located overhead within the northern portion of the site. Also, electric and telephone lines that service the site are located overhead along the western property boundary. Service lines enter the western wall of the site building. Sanitary sewers do not currently exist in this area. The on-site septic system is located southwest of the site building. It is presumed that the on-site building is heated with electricity since the former heating oil tank was removed, and no natural gas lines are known to be present at the site.

3.1.3 Groundwater Usage

The Pennsylvania Groundwater Information System (PaGWIS) located on the Pennsylvania Bureau of Topographic and Geological Survey website (www.dcnr.state.pa.us/topogeo/index.htm) was reviewed to determine whether any private water wells are located within 2,500 feet of the Rt. 119

site.

According to the PaGWIS, there are no active private water wells located within 2,500 feet of the Rt. 119 site. However, since the inventory report is based solely on the data that is reported to the Pennsylvania Topographic and Geographic Survey, additional wells may exist within 2,500 feet of the site. Therefore, Letterle accessed the Fayette County website to review information for the properties surrounding the site. The website provides the names of the property owners near the Rt. 119 site. Two municipal water companies supply potable water to the area, the North Fayette County Municipal Water Authority (NFCMA) and the Pennsylvania American Water Company (PAWC).

According to Mr. Bob Softcheck, a Manager at NFCMA and Mr. Dave Gumbert, a Network Superintendant at PAWC, potable water is provided to all developed site vicinity properties by the NFCMA or the PAWC. A water main does not exist to date along the portion of Pechin Road that lies east of Rt. 119, with one exception. The Dunbar Borough Elementary School, which lies approximately 2,000 feet to the southeast of the site, is provided potable water via an extended water service line. The PAWC purchases water from the NFCMA. The source of their potable water is a surface water inlet located approximately 2 miles northeast of the site on the Youghiogheny River.

On March 24 and 26, 2006, Letterle contacted Mr. Larry Mayros, Supervisor and Mr. Ron Keller, Secretary for Dunbar Township (724-628-1440), who stated that all developed properties within 2,500 feet of the site are supplied municipal water. While there are no township ordinances that restrict the use of groundwater, no private water wells were observed in the vicinity of the site. Mr. Keller stated that Dunbar Township mandates that residences must connect to public water, which is available to all properties. He provided Letterle with a copy of the local ordinance (no. 8-1 – 1990) of the Code of Dunbar Township, which is included as Appendix G and states the following within Section 1:

“The owner or owners of each property in Dunbar Township accessible to and whose principal building, previously erected or hereafter constructed, is within one hundred fifty (150) feet of a public water supply, shall connect with and use the public water supply, except; those owner or owners of industries and farms who have their own supply of water for uses other than human consumption, shall be an exemption.”

Mr. Mayros and Mr. Keller were unaware of any water wells in use. Mr. Keller was unaware of any ordinance prohibiting the use of water wells or requiring a permit for water wells in Dunbar Township. Properties in the vicinity of the site use septic leach fields. Installation of public sewer lines is expected to in this area of the township within approximately three years. At that time, an existing ordinance, which requires a connection to a public sewer, will become active in this portion of the township.

3.2 Advancement of Geoprobe® Borings

Soil quality at the former Rt. 119 site was investigated during the initial site characterization in 1997, and by soil sampling conducted during tank closure activities in January 2005. Letterle conducted additional soil sampling on May 8-9, 2006 at the site to further delineate soil quality at the site, and to verify if remedial actions performed at the site to date achieved the requirements for

demonstration of attainment of the PADEP Statewide Health Standards for soil.

Nineteen soil borings were advanced by Letterle at strategic locations across the site using direct push technology methods with a Geoprobe® machine (Model 54DT). The Geoprobe® soil boring locations are shown on Figure 4. The first three locations were identified as SB-1 through SB-3; however, were renamed GB-1 through GB-3. GB-4 was eliminated because monitor well MW-9 drilled at the proposed location. A soil sample was collected from the MW-9 soil boring for laboratory analysis.

Soil samples were collected by advancing four-foot long Macro-Core® (MC) sampling devices into the subsurface. A new disposable acetate liner was inserted inside the MC sampling device for each sample interval. Soil samples were collected continuously from the ground surface to the top of bedrock or sample refusal. The maximum depth of sampling was approximately eight feet, which was reached at several soil boring locations.

After the MC sampler was advanced through each sample interval, the soil sample was retrieved and opened for general lithologic description and field screening for the presence of volatile organic compound (VOC) vapors with a photoionization detector (PID), and for possible laboratory analysis. The Geoprobe® soil boring logs are included in Appendix H.

3.3 Soil Sampling and Analysis

One soil sample per soil boring (19 samples) was selected for laboratory analysis of unleaded gasoline constituents. The soil samples were placed in laboratory-supplied sample containers, labeled, and stored on ice in a sample cooler to maintain a temperature of approximately 4°C for preservation. Chain of custody documentation followed standard protocol. The samples were submitted to Pace Analytical Services, Inc. (Pace) in Export, Pennsylvania and analyzed for BTEX, MTBE, naphthalene, and cumene using USEPA Method 8260B. The soil analytical results are discussed in Section 3.10.1.

The MC sampling devices and fittings were decontaminated using the following steps:

- Soapy water wash
- Potable water rinse
- Air dry

Discarded portions of the soil samples and the decontamination waste were collected and placed in a 55-gallon steel drum for eventual disposal. The waste disposal receipts are included in Appendix I.

3.4 Installation and Sampling of Vapor Monitor Points

Three vapor monitor point implants (VP-1 through VP-3) were installed adjacent to the on-property building on May 9, 2006. The VP borings were advanced using direct push methods with a Geoprobe® machine. The VP borings were advanced to an approximate depth of 6 feet bgs. After reaching the target depth, a 1.25-inch diameter by 8.25-inch long PVC well screen connected to polyethylene tubing was placed near the base of the borehole. Clean, coarse filter sand was placed in

the borehole annulus around the well screen interval and extended to approximately one foot above the top of the screen. Granular bentonite was used to fill the remaining annular space to the ground surface. The polyethylene tubing was sealed at the end with a silicon membrane fitting.

Soil vapor samples were collected immediately following installation of the VPs. Prior to sampling, each VP was purged with a dedicated sterile syringe to flush the tubing and fill it with in-situ soil vapor. The syringe needle was inserted through the silicon membrane and vapor was drawn from the VP until the syringe was fully retracted. The vapor was then expelled to the open atmosphere and the procedure was repeated several times until the VP was completely purged.

Following purging, a soil vapor sample was collected with the syringe and immediately transferred to sample vials. The soil vapor samples were submitted to Vaportech Services, Inc. of Valencia, Pennsylvania for analysis of unleaded gasoline parameters (BTEX, MTBE, naphthalene, and cumene) by EPA method T015A. The analytical results are discussed in Section 3.10.3.

3.5 Installation of Monitor Wells

Chambers installed six monitor wells (MW-1 through MW-6) during site characterization activities in 1997. Additional wells including air sparge wells (AS-1 and AS-2), soil vapor extraction wells (SVE-1 through SVE-3), and recovery wells (RW-1 and RW-2) were installed for remedial action purposes. RETTEW later installed a deep monitor well, DW-1, in July 2001. RETTEW conducted quarterly groundwater sampling at the site from August 2000 to July 2005 to characterize groundwater quality at the site.

The PADEP informed Letterle during a February 2006 site meeting that the remedial system wells were inappropriate for monitoring groundwater quality at the site. Therefore, Letterle responded by installing three additional monitor wells (MW-7 through MW-9) at the site. The additional monitor wells were combined with the existing monitor wells (MW-2, MW-3, MW-4, and MW-6) to form the network for characterizing groundwater conditions at the site (Figure 4)

The additional monitor wells were installed on May 4-8, 2006. Terra Testing, Inc. of Washington, Pennsylvania performed the drilling and well installations using a truck-mounted drilling rig (CME-55). A combination of hollow-stem auger and air-hammer drilling methods were used to advance the soil borings to the first available water-bearing zone at each location. The soil borings were first advanced to a target depth range of approximately 30 to 40 feet bgs. Drilling was halted to evaluate for the presence of groundwater, which was not encountered at the additional monitor well locations within the target depth range. Drilling resumed until a sufficient water-bearing zone was encountered, which was approximately 50 to 55 feet bgs at the additional monitor well locations. Soil and rock cuttings generated from drilling were collected and placed in 55-gallon steel drums for disposal. The waste disposal receipts are included in Appendix I.

A monitor well was installed in each soil boring after reaching the desired depth. The monitor wells were constructed with flush-threaded, two-inch diameter, Schedule 40 polyvinyl chloride (PVC) well screens and risers. The well screens were 15 feet long and had 0.020-inch machine slot openings. Clean, coarse filter sand was placed around the well screen interval and extended to approximately two feet above the top of the well screen. A minimum two-foot thick bentonite pellet seal was

placed on top the sand pack and hydrated with potable water. The remaining borehole annulus was filled with cement-bentonite grout to within approximately one-foot from the ground surface. Each well was secured with an expanding locking cap and protected with an eight-inch diameter flush-mount steel protective cover set in a two-foot by two-foot concrete pad. Well construction details for the site monitor wells are summarized on Table 3. The soil boring/monitor well logs are included in Appendix J [including the Chambers (MW-1 through MW-6) and RETTEW (DW-1) well logs]. The well construction details are included on the soil boring logs.

A temporary decontamination pad was erected at the site to clean the drilling equipment before starting at each location. The decontamination waste was collected and placed in 55-gallon steel drums for disposal. (Appendix I).

The additional monitoring wells were developed by hand-bailing methods to remove fine-grained material generated from drilling and to ensure proper hydraulic communication with the aquifer. The development water was collected, treated with granular activated carbon (GAC) and disposed of on-site.

3.6 Groundwater Sampling and Analysis

Groundwater samples were collected from the monitor well network (MW-2 through MW-4 and MW-6 through MW-9) for laboratory analysis on May 12, 2006. Prior to purging, the depth to groundwater in each monitor well was measured using an electronic oil/water interface probe accurate to the nearest 0.01 foot. Three well volumes of the standing water column were purged from each well using hand-bailing methods. The purge water was collected, treated with granular activated carbon (GAC), and discharged on-site. The GAC was subsequently transported off-site for regeneration.

After well purging, groundwater samples were collected using dedicated disposable polyethylene bailers. Each sample was placed in laboratory-provided containers, labeled, and placed on ice in a sample cooler to maintain a temperature of approximately 4°C for preservation. The samples were submitted to Pace for unleaded gasoline analysis using EPA Method 8260B (BTEX, MTBE, naphthalene, and cumene). The groundwater results are discussed in Section 3.10.2.

3.7 Site Survey

All the site monitor wells were surveyed to establish horizontal and vertical control. The wells were surveyed using stadia surveying techniques to determine their relative top of casing (TOC) elevations in relation to an arbitrary datum point. The TOC elevations are included on Table 3. Horizontal positions were located by measuring distances with a survey measuring wheel. All the site monitor wells and significant site features (i.e. canopies, on-site building, parking area, etc.) were identified for the generalized site map (Figure 2).

3.8 Limited Aquifer Characterization and Results

Letterle performed aquifer testing on July 31, 2006 via slug testing to characterize the aquifer beneath the site. Rising-head slug tests were performed on monitor wells MW-3, MW-8, and MW-

9. A slug test was proposed at monitor well MW-7; however, the extent of the water column was insufficient to conduct a statistically viable test.

The slug test procedure consisted of lowering a pressure transducer into the water column, which was connected to a programmed data logger. A solid slug was then placed in the well and fully submerged within the water column. The water column was permitted time to recover to near static conditions prior to starting the slug test. The test was initiated when the slug was removed from the well while the data logger simultaneously activated. The data logger was programmed to collect the dynamic water levels until equilibrium was reached.

The slug test data collected from monitor wells MW-3, MW-8, and MW-9 were reduced using the Bower and Rice Method for the calculation of hydraulic conductivity (K).

The calculated hydraulic conductivity (K) values for the monitor wells are listed below:

- MW-3 0.0008771 feet/min (1.263 feet/day)
- MW-8 0.000002313 feet/min (0.003331 feet/day)
- MW-9 0.000002821 feet/min (0.004062 feet/day)

The slug test curves are included in Appendix K.

Due to the large difference between the K value for MW-3 and those for MW-8 and MW-9, an average value of 0.000002567 feet/min (0.003697 feet/day) was calculated using only the values for MW-8 and MW-9.

An average groundwater flow velocity was calculated from the average K value at the site, groundwater gradient, and total porosity by the following relationship (Freeze & Cherry, 1979):

$$V_c \approx Ki/n$$

where:

- V_c = groundwater flow velocity (feet/minute)
- K = average hydraulic conductivity (feet/minute)
- i = groundwater gradient (feet/feet)
- n = total porosity (%)

Using the following values:

- K = 0.000002567 feet/minute
- i = 0.182 feet/feet (from May 12, 2006 groundwater elevation data)
- n = 0.1 (typical value for shale)

The groundwater flow velocity was calculated as 0.00000467 feet/min (0.00673 feet/day). The slug test results generally confirm data obtained from the limited groundwater pumping tests conducted at the site in 1998. The pumping test results indicated that the aquifer beneath the site has low transmissivity and low yield characteristics.

3.9 Site Geology and Hydrogeology

The site specific geology was interpreted from all the soil boring logs prepared during site characterization activities. Generally, the Rt. 119 site is underlain by unconsolidated material, weathered shale, and shale. Soil at the surface has been modified by site development, which has included grading activities, erection of the on-site building, installation and removal of USTs, and paving portions of the property with concrete and asphalt. The subsurface soil generally consists of fill material, silty clay, and weathered shale. The soil layer extends to the top of bedrock, which ranges in depth from approximately 5 feet bgs to 9 feet bgs. The upper layers of bedrock beneath the site generally consist of shale and siltstone. Monitor well DW-1, installed by RETTEW, was the deepest borehole advanced on the property to a depth of 134 feet bgs (Appendix J). The DW-1 drilling log indicates that the deeper layers of the bedrock are composed of alternating layers of siltstone, sandstone, limestone, dolomite, shale, and minor coal layers.

Two geologic cross sections were constructed from the soil boring logs (not including DW-1). The first cross section, A-A' (Figure 5), depicts a west to east perspective of the subsurface geology and the B-B' cross section (Figure 6) provides a north to south view.

The first continuous water-bearing zone beneath the site occurs within the shale bedrock. Static depth to water measurements were collected on May 12, 2006 and ranged from 12.86 feet below top of casing (feet TOC) in MW-3 to 37.89 feet TOC in MW-9. Groundwater elevations were calculated from the depth to water measurements and were used to construct a groundwater contour map as shown on Figure 7. Based on the May 12, 2006 measurements the interpreted groundwater flow direction at the site is generally to the south and southeast. Groundwater flow in the vicinity of monitor well MW-3 exhibited a localized radial flow pattern on May 12, 2006. MW-3 is screened in a shallower portion of the aquifer, which is a possible reason for the higher water elevation (see cross section A-A') in relation to the other site monitor wells. The May 12, 2006 groundwater data are summarized on Table 4.

Historical groundwater contour maps that were prepared by Chambers (Appendix D) and RETTEW (Appendix E) also indicate that the general groundwater flow direction is to the south and southeast.

3.10 Soil, Groundwater, and Soil Vapor Quality Evaluation

3.10.1 Soil Quality

Chambers initially evaluated soil quality at the Rt. 119 site during the site characterization in May 1997. Chambers advanced 16 soil borings across the property and collected 27 soil samples for laboratory analysis BTEX, MTBE, cumene, naphthalene, benzo(a)anthracene, and benzo(a)pyrene using USEPA Methods 8021A and 8270B. The soil results indicated that benzene concentrations exceeded the PADEP U/NR MSC in two soil samples (A6 at 4 feet and A7 at 6.5 feet; MTBE concentrations exceeded the PADEP U/NR MSC in four soil samples (A7 at 4 feet, A7 at 6.5 feet, A8 at 4 feet, and A9 at 4 feet); and naphthalene concentrations exceeded the PADEP U/NR MSC in three soil samples (A8 at 4 feet, A9 at 4 feet, and A11 at 4 feet). Chambers subsequently installed a SVE/AS system to remediate the impacted soils. The soil analytical table and associated figure from

Chambers' SCR are provided in Appendix C.

Chambers obtained additional soil data during installation of the SVE/AS system at the site in June 1998. Five soil samples were collected and analyzed for unleaded gasoline constituents from the SVE and AS soil borings. The sample results revealed that benzene (553 µg/kg) was the only constituent that exceeded the PADEP soil standards in one sample collected from SVE-1 (5 to 6').

Soil data were also obtained during removal of the USTs in January 2005. PTM collected soil samples from beneath the dispensers, beneath the pipeline between the canopies and, two sidewall soil samples from the tank cavity. The samples were analyzed for unleaded gasoline constituents. The laboratory results indicated that the pipeline soil sample, collected between the canopies, had benzene (13,000 µg/kg), toluene (1,000,000 µg/kg), and naphthalene (18,000 µg/kg) concentrations that exceeded the PADEP U/NR MSCs (Table 1).

Letterle advanced 19 soil borings at the site (Figure 2) on May 8 to 9, 2006, to the top of bedrock within the former UST system area. The objective of the investigation was to evaluate current soil conditions at the site and to determine if demonstration of attainment of PADEP Statewide Health Standards for soils had been achieved at the site. Nineteen soil samples were submitted to the laboratory for unleaded gasoline analysis. The soil results indicated that 2 of the 19 samples had unleaded gasoline constituents that exceeded the PADEP U/NR MSCs. Benzene (2,000 µg/kg), toluene (290,000 µg/kg), and naphthalene (31,000 µg/kg) were detected in the soil sample collected from 0 to 2 feet in Geoprobe® boring GB-14. Naphthalene was detected at a concentration of 13,000 µg/kg in soil boring GB-2. The remaining soil samples were all less than the PADEP U/NR MSCs.

The concentration ranges for the unleaded gasoline parameters detected in soil are as follows:

- Benzene ranged from less than detectable concentrations to 2,000 µg/kg in GB-14 (0-2')
- Toluene ranged from less than detectable concentrations to 290,000 µg/kg in GB-14 (0-2')
- Ethylbenzene ranged from less than detectable concentrations to 54,000 µg/kg in GB-14 (0-2')
- Xylenes ranged from less than detectable concentrations to 390,000 µg/kg in GB-14 (0-2')
- Cumene ranged from less than detectable concentrations to 11,000 µg/kg in GB-14 (0-2')
- Naphthalene ranged from less than detectable concentrations to 100 µg/kg in GB-12 (2'-4').
- MTBE ranged from less than detectable concentrations to 54,000 µg/kg in GB-14 (0-2')

Based on the soil investigation results, there are two isolated areas of petroleum-impacted soil that currently do not meet the PADEP Statewide Health Standards. The areas were identified by soil borings GB-2 and GB-14 (Figure 8). However, based on the soil results collected to date, the PADEP Statewide Health Standard for soil is attained due to the 75/10x rule [Pa Code § 250.707 (b)(1)(i)]. The analytical results of the soil samples collected during Letterle's investigation are summarized on Table 5 and are shown on Figure 8. The complete laboratory reports are in Appendix L.

3.10.2 Groundwater Quality

The Rt. 119 site has an extensive database of groundwater quality that began with the initial site

characterization in 1997. Numerous groundwater sampling events have been conducted at the site between September 1997 and May 12, 2006. The groundwater samples collected during this period were analyzed for unleaded gasoline parameters. Chambers and RETTEW also performed groundwater remediation at different stages since 1997. The following wells have been sampled at various times to assess groundwater conditions at the site:

- Monitor wells MW-1 through MW-6, and deep monitor well DW-1
- Recovery wells RW-1 and RW-2
- Soil vapor extraction wells SVE-1 through SVE-3
- Air sparge wells AS-1 and AS-2

Groundwater samples collected from the remediation system wells are not recognized by the PADEP as being representative of the actual groundwater quality in order to verify attainment of the PADEP Statewide Health Standard. However, analytical data from these wells provide a close approximation of the unleaded gasoline concentrations in groundwater at the site.

Through a combination of groundwater remediation and natural biodegradation processes, the unleaded gasoline concentrations have significantly decreased since 1997. The following is a summary of the maximum concentrations of regulated unleaded gasoline constituents that were detected in groundwater during the site characterization sampling events in 1997 and 1998 (Chambers SCR, 1998):

- Benzene - 24,500 µg/l in MW-1 (October 1997)
- Toluene - 317,000 µg/l in MW-1 (October 1997)
- Ethylbenzene - 264,000 µg/l in MW-1 (October 1997)
- Xylenes (total) - 767,000 µg/l in MW-1 (October 1997)
- MTBE - 49,900 µg/l in MW-3 (January 1998)
- Naphthalene - 141,000 in MW-1 (October 1997)
- Cumene - 125 µg/l in MW-1 (April 1998 - first time the samples were analyzed for cumene)

Since April 2000 no unleaded gasoline constituents have been detected at concentrations that exceed their respective PADEP U/NR MSCs in downgradient monitor wells MW-4, MW-5, and MW-6 (Table 6). Monitor well MW-5 was destroyed sometime after the last quarter it was sampled on April 29, 2003. Unleaded gasoline constituents were never detected above the laboratory detection limits in eight consecutive rounds of groundwater sampling at MW-5 including the April 29, 2003 event. Consequently, a new monitor well was not installed to replace MW-5 because the PADEP Statewide Health Standard was attained.

All of the regulated unleaded gasoline constituents, with the exception of cumene, were detected during at least one out of the past sixteen rounds of groundwater sampling at monitor well MW-4. However, none of the unleaded gasoline concentrations have exceeded the PADEP U/NR MSCs since April 2000.

Toluene and MTBE were the only unleaded gasoline constituents detected in monitor well MW-6, each on a separate occasion during the past 16 sampling events. Toluene was detected at a

concentration of 1.5 µg/l on March 24, 2005, and MTBE was detected at a concentration of 2.2 µg/l on December 4, 2002.

Deep monitor well DW-1 was located downgradient of the former UST system, in the area between the on-site building and the canopies. The monitor well was paved over sometime after July 7, 2005, the final date it was sampled. DW-1 was first sampled on August 28, 2001 and none of the unleaded gasoline constituents were detected at concentrations above the PADEP U/NR MSCs during eight successive quarterly sampling events. DW-1 was not replaced with a new monitor well because the PADEP Statewide Health Standards for groundwater was attained.

Historical groundwater analytical data collected at the site from 1997 to July 2005 are summarized on tables that are included in Appendices D and E.

Letterle conducted groundwater sampling at the Rt. 119 site on November 14, 2005. Groundwater samples were collected from wells that RETTEW had previously used for quarterly groundwater monitoring. The wells included MW-3, MW-4, MW-6, RW-1, RW-2, AS-2, and SVE-2. A groundwater sample was also collected from AS-1 for laboratory analysis. The groundwater analytical data revealed the following:

- Benzene ranged from less than detectable concentrations to 57 µg/l in SVE-2.
- Toluene ranged from less than detectable concentrations to 1.5 µg/l in SVE-2.
- Ethylbenzene was not detected above laboratory detection limits in any of the wells.
- Xylenes were not detected above laboratory detection limits in any of the wells.
- MTBE ranged from less than detectable concentrations to 130 µg/l in AS-2.
- Cumene ranged from less than detectable concentrations to 1.3 µg/l in SVE-2.
- Naphthalene ranged from less than detectable concentrations to 2.4 µg/l in AS-1.

Benzene and MTBE were the only constituents that exceeded their PADEP U/NR MSCs. The highest concentrations of unleaded gasoline constituents were primarily centered in the area between the canopies, on-site building, and Rt. 119. The unleaded gasoline constituents were all less than the PADEP U/NR MSCs in the groundwater samples collected from downgradient wells MW-4 and MW-6. The November 14, 2005 groundwater data are summarized on Table 6.

Groundwater samples were also collected for total dissolved solids (TDS) analysis on November 14, 2005. The TDS results ranged from 300 milligrams per liter (mg/l) in MW-3 to 3,500 mg/l in MW-4. The TDS results are summarized on Table 7.

Letterle installed new monitor wells MW-7, MW-8, and MW-9 after the November 2005 groundwater sampling event. Groundwater samples were collected from all the monitor wells (MW-2, MW-3, MW-4, MW-6, MW-7, MW-8, and MW-9) on May 12, 2006. The groundwater analytical data revealed the following:

- Benzene ranged from less than detectable concentrations to 120 µg/l in MW-8.
- Toluene ranged from less than detectable concentrations to 93 µg/l in MW-8.
- Ethylbenzene ranged from less than detectable concentrations to 150 µg/l in MW-9.
- Xylenes ranged from less than detectable concentrations to 520 µg/l in MW-9.

- MTBE ranged from less than detectable concentrations to 29 µg/l in MW-8.
- Cumene ranged from less than detectable concentrations to 36 µg/l in MW-9.
- Naphthalene ranged from less than detectable concentrations to 80 µg/l in MW-9.

The groundwater analytical results are summarized on Table 8 and are shown on Figure 9. The complete laboratory reports are included in Appendix L.

Benzene and MTBE were the only unleaded gasoline constituents that exceeded the PADEP U/NR MSCs. Isoconcentration maps for benzene and MTBE in groundwater are shown on Figures 10 and 11. Similar to previous sampling events, groundwater that exceeds the PADEP Statewide Health Standard is generally downgradient of the former UST system. This area is defined by monitor wells MW-3, MW-8, and MW-9. Various unleaded gasoline constituents were detected in groundwater at the property boundary with Rt. 119; however, there have not been unleaded gasoline constituents detected as concentrations that exceed the PADEP U/NR MSCs in downgradient monitor wells MW-4, MW-5, or MW-6 since April 2000.

3.10.3 Soil Vapor Quality

Soil vapor samples were collected immediately following the installation of vapor monitor points VP-1 through VP-3 (Figure 12) on May 8, 2006 for analysis of unleaded gasoline parameters (BTEX, MTBE, naphthalene, and cumene) by EPA method T015A. The laboratory results indicated the presence of benzene [12.45 parts per million volume (ppmv)] and toluene (2.37 ppmv) in the soil vapor sample collected from VP-2. Xylenes (0.10 ppmv) were detected in the soil vapor sample collected from VP-3. All of the unleaded gasoline parameters were reported as less than laboratory detection limits for the soil vapor sample collected from VP-1. The benzene concentration detected in VP-2 exceeded the PADEP residential (0.27 ppmv) and non-residential (1.1 ppmv) standards.

VP-2 was resampled on August 31, 2006 to verify the initial sample result. Laboratory analysis of the second sample indicated the presence of benzene (8.82 ppmv) and xylenes (0.07 ppmv). The vapor monitor points will continue to be monitored in the future in accordance with PADEP Indoor Air Quality (IAQ) guidance by collecting soil vapor samples at the site from VP-1 through VP-3 during the winter of 2006/2007 and the spring of 2007. The soil vapor results are summarized on Table 9 and the laboratory reports are included in Appendix L.

4.0 CONCEPTUAL SITE MODEL

This Conceptual Site Model (CSM) was developed to assess the nature and extent of regulated substances identified at the Rt. 119 site and the potential routes of exposure for human health and ecological receptors. It is based on soil and groundwater data collected during the sampling events conducted to date at the site, which are summarized in Sections 3.10.1 and 3.10.2; Appendices C, D, and E; and Tables 5, 6, and 8.

The CSM is intended to serve as the technical basis for evaluation of future investigation and response actions at the Rt. 119 site, if needed. The CSM also provides for the identification of additional data needs that will affect the ultimate understanding of the potential risks. In doing so,

the CSM focuses activities on potentially complete exposure pathways, bypassing those that do not warrant further attention.

4.1 Environmental Quality

The area in the immediate vicinity of the site has been influenced by human activities in the past, particularly development of commercial and residential properties along Rt. 119, including a golf course to the southwest of the site. Surface water from the site drains to the southwest towards an unnamed intermittent tributary of Gist Run, which flows southwest of the site (Section 2.1). Regionally, the Lower Youghiogheny River Watershed includes degraded streams from historic coal mining activities in Fayette County. Other contributors to degraded water quality include inadequate domestic sewage treatment, present and historical disposal of industrial wastes, and runoff from agricultural land.

4.2 Environmental Media Evaluation

Based on the results of the site characterization activities conducted to date, several regulated substances have been identified in soil and groundwater on-site. The Pennsylvania Land Recycling Program (Act 2) established the PADEP U/NR MSCs that must be attained in order to obtain the liability protection provided for in Act 2. The applicable soil and groundwater screening levels currently used for the Rt. 119 facility are conservatively based on the assumption that the property could potentially be developed as residential property and that the aquifer beneath the site can be used as a potable water source and has total dissolved solids (TDS) values of less than 2,500 ppm. The PADEP U/NR MSCs for BTEX, MTBE, cumene, and naphthalene in soil and groundwater are indicated in Tables 5 and 8.

4.3 Fate and Transport Analysis

Regulated substances (i.e. unleaded gasoline) released at former Rt. 119 property have the potential to migrate in the environment. This section evaluates the potential for constituents detected in soil to impact groundwater quality and migrate in groundwater from the site over time.

Benzene and MTBE concentrations that exceed the PADEP U/NR MSCs have been detected in the soil and groundwater at the site (Section 3.10.1 and 3.10.2; Appendices C, D, and E; and Tables 5, 6, and 8).

The following is a brief summary of the physical and chemical properties of the regulated substances that would strongly influence their behavior within the subsurface.

4.3.1 Physical and Chemical Properties of Regulated Substances

The BTEX compounds (light aromatics) have relatively high water solubility, are highly volatile, and absorb poorly to soils. Based on human epidemiological studies, benzene has been found to be a human carcinogen. Benzene is generally more mobile in soil and groundwater than xylenes, toluene, and ethylbenzene and would be expected to migrate further from the contaminant source.

MTBE is volatile, very water soluble, and has a very low capacity to absorb to soils. MTBE will generally migrate at or near the same velocity as the water in which it is dissolved. In addition, MTBE has a low potential to biodegrade. Based on its physical and chemical properties, MTBE is expected to have the greatest potential to migrate in the environment.

Naphthalene and cumene are generally volatile, moderately water soluble, have a moderate capacity to absorb to soils, and are very biodegradable. Naphthalene and cumene are expected to have the least potential to migrate in the environment and are generally found closer to the source of the impact.

4.3.2 Groundwater Flow Modeling

Groundwater at the site is present within the shale and siltstone bedrock at the site. Groundwater generally flows to the southeast towards an unnamed intermittent tributary to Gist Run. The portion of this tributary that appears to be located hydrogeologically downgradient of the site lies approximately 700 feet to the southeast of the facility.

The petroleum-impacted groundwater extends to the southeastern property boundary (Rt. 119 roadway) and attainment of the PADEP U/NR MSCs at the point of compliance (i.e., the property boundary) is currently not possible. However, fate and transport modeling was conducted by Letterle to ascertain how far the regulated unleaded gasoline constituents are anticipated to migrate offsite within 30 years, and to determine whether the impact would ultimately reach the closest surface water receptor, the unnamed intermittent tributary to Gist Run (which is approximately 700 feet from the property border) given the current rate of migration.

The Quick Domenico (QD) analytical model for solute transport in groundwater was used to evaluate the migration of benzene and MTBE at the Rt. 119 site. Benzene and MTBE were used as "indicator" compounds in the QD model since they are expected to be the most mobile compounds in gasoline. The QD model, which is included in the Act 2 guidance manual, simulates the transport of contaminants via advective transport with three-dimensional dispersion and 1st order decay and retardation. The QD model calculates the concentration of contaminant species at any point and time downgradient of a source area of known size and concentration.

The QD analytical model is based on the multidimensional transport equation by P.A. Domenico (1987):

$$C(x, y, z, t) = \left(\frac{C_o}{8}\right) \exp\left\{\frac{x}{2\alpha_x} \left[1 - \left(1 + 4\lambda\alpha_x/v\right)^{1/2}\right]\right\} \operatorname{erfc}\left\{\left[x - vt\left(\sqrt{1 + 4\lambda\alpha_x/v}\right)\right] / 2\sqrt{\alpha_x vt}\right\} \\ \left\{\operatorname{erf}\left[(y + Y/2) / 2\sqrt{\alpha_y x}\right] - \operatorname{erf}\left[(y - Y/2) / 2\sqrt{\alpha_y x}\right]\right\} \left\{\operatorname{erf}\left[(z + Z/2) / 2\sqrt{\alpha_z x}\right] - \operatorname{erf}\left[(z - Z/2) / 2\sqrt{\alpha_z x}\right]\right\}$$

where:

x = the distance from the source to the location of concern (i.e., Monongahela River) along the inferred center line of the plume

C(x,y,z,t) = the concentration of the contaminant at location x,y,z from the source at time t.

- C_0 = source concentration – the highest concentration of the contaminant in the groundwater at the source.
- α_x = dispersivity in the x direction
- α_y = dispersivity in the y direction
- α_z = dispersivity in the z direction
- k = hydraulic conductivity
- i = hydraulic gradient
- n = porosity
- v = specific discharge (ki/n)
- λ = 1st order decay constant
- S_w = width of source area
- S_z = depth of source area
- X,y,z = spatial coordinates in the horizontal, transverse, and vertical directions that define the point or points where concentration information is desired.
- t = time since the plume source started moving

Like all models, the QD analytical model contains several assumptions, including the following:

- Steady, uniform flow in a porous, unconfined aquifer.
- The aquifer is homogeneous, isotropic, infinite in areal extent, and constant in thickness.
- The source is continuous and constant.

In addition, the QD analytical model has the following limitations:

- Only a single value of any one of the 20 or so flow and transport parameters required by the model are allowed at any one time.
- It is primarily intended for use in unconsolidated aquifers since physical properties such as dry bulk density and fraction organic carbon are difficult to relate to fractured bedrock aquifers.
- Intended for use with dissolved organic compounds that may react with organic carbon in the soil and/or may be subject to biodegradation or reaction that can be described by 1st order decay.

Since these assumptions and limitations simplify present site conditions and several site and contaminant specific parameters require estimation, this model provides an order-of-magnitude conservative estimate of the variation of contaminant concentrations with time and distance.

4.3.3 Model Input Parameters

Input parameters required by the QD analytical model include source concentration, distance to the location of concern, dispersivity (longitudinal, transverse, and vertical), first order decay constant (λ), source width, source thickness, hydraulic conductivity, hydraulic gradient, porosity, soil bulk density, organic carbon partitioning coefficient (k_{oc}), and fraction organic carbon (f_{oc}).

The source area of the contamination approximates the location of the UST field and dispenser areas at the Rt. 119 site (Figure 3). The water-bearing zone (saturated) thickness was calculated using the total depth of the site monitor wells and historical gauging data collected at the site. The depth and thickness of the water-bearing zone are simplified in the QD model. An additional simplification is

the assumption that the entire water-bearing zone consists of shale. The distance to the location of concern, the unnamed intermittent tributary of Gist Run, is estimated to be approximately 750 feet from the general source area.

Pre-remediation and post-remediation source concentrations were used in the QD model. The pre-remediation values were the highest benzene and MTBE concentrations detected at the site to date. Benzene (24,500 µg/l in MW-1 in October 1997) and MTBE (49,900 µg/l in MW-3 in January 1998) concentrations were from groundwater samples collected during the initial site characterization activities.

The post-remediation values were the highest benzene and MTBE concentrations detected at the site monitor wells during the most recent sampling event on May 12, 2006. The maximum benzene and MTBE concentrations (120 µg/l and 29 µg/l, respectively) were detected at monitor well MW-8. These post-remediation concentrations were doubled to provide a more conservative approximation of groundwater quality for the QD Model.

The dispersivity parameters are dispersion terms, which describe the extent to which contaminants spread out from the source into areas that cannot be accounted for by advective transport alone.

- Longitudinal dispersivity (α_x) is the dispersion parallel to the direction of groundwater flow and the water table. Longitudinal dispersivity is estimated based on the following formula: $\alpha_x = X/10$, where X is the distance a contaminant has traveled by advective transport. At the Rt. 119 site, the longitudinal dispersivity was estimated as 20 feet, based on the plume length at the site to date of approximately 200 feet.
- Transverse dispersivity (α_y) is the dispersion perpendicular to the direction of groundwater flow and water table. Transverse dispersivity is estimated based on the following formula: $\alpha_y = \alpha_x / 10$. At the Rt. 119 site, the transverse dispersivity was estimated as 2 feet, based on longitudinal dispersivity of 20 feet.
- Vertical dispersivity (α_z) is the dispersion perpendicular to the direction of groundwater flow and the water table downward below the water table. It is recommended for conservative use of the QD model to use a very small vertical dispersivity of 0.001, unless vertical monitoring can reliably justify a larger number.

The first order decay constant (λ) is determined by dividing 0.693 by the half-life of the compound (in days). The value is determined from Appendix A, Table 5, which is included in the Pennsylvania Land Recycling Program (Act 2) rules. The QD model is very sensitive to the first order decay constant. At the Rt. 119 site, the compounds of concern are benzene and MTBE. Benzene has a first order decay constant of 0.0009. MTBE is minimally biodegradable and therefore, the first order decay constant is assumed to be zero.

The source width is the maximum width of the area of contaminated soils that have been impacted, or the maximum width of free product or smear zone of contamination measured perpendicular to the direction of groundwater flow. The source width is estimated to be approximately 90 feet at the Rt. 119 site, based on the results of the site characterization (UST field and dispenser areas).

The source thickness is the thickness of the contaminated soils that contribute contamination to the water table plus the water table fluctuation that creates the smear zone. The source thickness is estimated to be approximately 10 feet at the former Rt. 119 site, based on the results of the site characterization (the soil layer overlying bedrock ranges from 5 feet to 9 feet).

The hydraulic conductivity (k) of a geologic material is a measure of the material's ability to transmit water. The hydraulic conductivity is determined from aquifer testing, such as slug or pumping tests. Only one hydraulic conductivity measurement can be used in the QD Model. Initially, an average conductivity value of 0.00370 feet/day (measured at monitor wells MW-8 and MW-9 on May 12, 2006) was used in the QD model. As a calibration parameter, the conductivity value was increased to 0.16 feet/day to simulate the possibility of secondary flow within the fractured bedrock aquifer (the hydraulic conductivity at MW-3 was measured as approximately 1.263 feet/day). While the QD model assumes a uniform hydraulic conductivity, the increased conductivity allows the historic high benzene concentration detected at monitor well MW-1 and the detected concentration of benzene at MW-3 (~5,000 $\mu\text{g/l}$) to agree with the model values. However, the average conductivity may be more applicable downgradient of monitor well MW-3, based on the non-detectable concentrations typically found at MW-6.

The hydraulic gradient is the slope of the water table in the direction of groundwater flow. The QD model assumes horizontal flow and a uniform hydraulic gradient. The hydraulic gradient at the Rt. 119 site was calculated to be 0.182 feet/feet using the May 12, 2006 groundwater monitoring data at MW-3 and MW-6.

Porosity is the ratio of volume of void space in a geologic material to the total volume of the material. Porosity was determined at the former Rt. 119 site by comparing the texture of the material to corresponding values found in published technical documents. The estimated porosity at this site was conservatively estimated as 0.1 based on the geologic material at the site (shale).

The soil bulk density is the dry weight of a sample divided by its total volume in an undisturbed state. Samples can be sent to a lab for measurement or a value of 1.8 g/cm^3 is often estimated. A value of 1.8 g/cm^3 was used as the soil bulk density at this site.

The organic carbon partition coefficient (k_{oc}) is chemical specific. K_{oc} values of 58 for benzene and 12 for MTBE were determined from Appendix A, Table 5, which is included in the Pennsylvania Land Recycling Program (Act 2) regulations. Fraction organic carbon (f_{oc}) is the organic carbon content of the soil. For conservative use of the QD model, 0.005 is commonly used as an estimated value.

A description of the QD model, applicable definitions, the input parameters and the spreadsheet results of the fate and transport modeling of benzene and MTBE at the former Rt. 119 site are included in Appendix M.

4.3.4 Model Predictions

4.3.4.1 Pre-Remediation

According to the results of the QD model using monitor wells MW-1 and MW-6, benzene concentrations at or near the tributary in 30 years are estimated to be 0 µg/l using the average and the increased hydraulic conductivity (to simulate a possible fracture zone). From the source area well with the maximum historical benzene concentration (MW-1), the tributary is approximately 800 ft downgradient to the south-southeast.

Discounting the effects of remedial action conducted at the site to date, the modeled results do not exceed the applicable PADEP U/NR MSC for used aquifers for benzene (5 µg/l) at the tributary. Groundwater may discharge to the tributary approximately 750 feet from the general source area; however, the tributary is intermittent. Hence, groundwater may discharge at the perennial Gist Run located approximately 5,040 ft southeast of the facility. Based only on the modeled results using the increased conductivity (discounting the effects of remedial action conducted at the site to date), benzene released at the site would migrate in groundwater no more than 675 feet (0 µg/l) from the source area.

Based only on the results of the QD fate and transport model, the MTBE concentration at or near the tributary in 30 years is estimated to be 0 µg/l using the average conductivity, and 29,347 µg/l using the increased hydraulic conductivity. Modeled results using the increased conductivity (discounting the effects of remedial action conducted at the site to date and potential discharge to the tributary) indicated that the MTBE released at the site would migrate in groundwater no more than 2,625 feet (0 µg/l) from the source area.

The modeled results exceed the applicable PADEP U/NR MSC for benzene (5 µg/l) and MTBE (20 µg/l) at the point of compliance (property boundary). Active groundwater remediation was necessary to reduce the contaminant mass and thus reduce downgradient concentrations to potentially meet the PADEP U/NR MSCs at the point of compliance (i.e., the property boundary).

4.3.4.2 Post-Remediation

Impacted groundwater was treated by a remedial system, which was activated at the site on October 12, 1998 and operated until July 2005. Benzene concentrations in groundwater have been reduced an average of 99.5% at the site since the remedial system was activated. The May 2006 sampling results indicated that benzene concentrations were above the PADEP U/NR MSC in three monitor wells, with the highest concentration of 120 µg/l detected in the groundwater from monitor well MW-8 (Figure 9). MTBE concentrations were above the PADEP U/NR MSC in two monitor wells, with the highest concentration of 29 µg/l detected in the groundwater from monitor well MW-8. Concentrations for all other regulated unleaded gasoline parameters in all monitor wells were below the PADEP U/NR MSCs.

According to the results of the QD model using monitor wells MW-8 and MW-6, benzene concentrations at or near the tributary in 30 years are estimated to be 0 µg/l (using the average and the increased hydraulic conductivity). Inclusive of the effects of remedial action conducted at the

points installed in close proximity to the facility building. Analytical results indicated that the nonresidential vapor standard for benzene (1.1 ppmv) was exceeded at one of three locations (VP-2) in May 2006 (12.45 ppmv) and in August 2006 (8.82 ppmv). Toluene, ethylbenzene, xylenes, MTBE, cumene, and naphthalene did not exceed the nonresidential vapor standards in any of the soil vapor samples collected at the site (Table 9).

Therefore, based on the results of the initial comparison of soil vapor sample results to the appropriate standards, indirect contact for human receptors via inhalation is currently considered to be a complete exposure pathway. This will be further evaluated in the future per the PADEP IAQ guidance by collecting soil vapor samples at the site from VP-1 through VP-3 during the winter of 2006/2007 and the spring of 2007. Based on the results of additional soil vapor sampling events, indoor air sampling and/or vapor mitigation may be conducted at the site. This will be further detailed in the RAP.

4.4.2 Groundwater

- Direct contacts for the groundwater pathway by human receptors are ingestion and dermal absorption. Based on the available information presented in Section 3.1.3, groundwater is not used as a source of potable water at or within 2,500 feet of the site. Therefore, direct contact for human receptors via ingestion and dermal absorption is considered to be an incomplete exposure pathway.
- Indirect contact for the groundwater pathway by human receptors is inhalation of volatile emissions. IAQ from the vapor intrusion of contaminants into buildings from groundwater was assessed as per the *Final Guidance on Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard* (January 24, 2004). Petroleum-impacted groundwater at the site is located within 100 horizontal feet of a non-residential building at the site. Known preferential exposure pathways do not appear to be present within 30 feet of the source.

COPIACs in groundwater present at the site (for nonresidential properties) include: ethylbenzene. To determine whether a potential pathway for vapor intrusion exists, the analytical results of the COPIAC in groundwater collected at the site (Appendices D and E and Table 6) were compared to the non-residential PADEP groundwater MSCs for used aquifers (GW MSCs, U). The concentrations of ethylbenzene detected in groundwater during the tank closure (i.e., 1,730 µg/l and 1,470 µg/l) exceeded the PADEP GW MSC, U (i.e., 700 µg/l). Concentrations of ethylbenzene at monitor wells during site characterization groundwater sampling (during remediation and post-remediation) have not exceeded 700 µg/l since June 1999 (Table 6).

Non-COPIACs in groundwater present at the site (for nonresidential properties) include: benzene, toluene, xylenes, MTBE, cumene, and naphthalene. To further evaluate whether a potential pathway for vapor intrusion exists, the analytical results of the Non-COPIACs in groundwater collected at the site were compared to non-residential PADEP groundwater MSCs for non-used aquifers (GW MSCs, NU). The W-1 tank closure sample exceeded both the benzene (500 µg/l) and MTBE (200 µg/l) GW MSCs, NU standards and the W-2 sample exceeded only the MTBE GW MSCs, NU standard. The monitor well samples did not exceed

the GW MSCs, NU standards for benzene, toluene, xylenes, MTBE, cumene, and naphthalene.

Additionally, groundwater samples did not have concentrations of any regulated unleaded gasoline parameter that exceeded the USEPA-PADEP Defaults-Nonresidential Volatilization to Indoor Air Screen Values (Johnson-Ettinger vapor intrusion model). Toluene, xylenes, and cumene are not listed as a chemical of concern in the USEPA-PADEP Defaults Nonresidential Volatilization to Indoor Air Screen Value.

Groundwater samples for the tank closure were collected from an open excavation during the UST closure activities. Whereas, the groundwater samples collected from the monitor wells are more representative of the current onsite groundwater quality. Therefore, based on the groundwater pathway evaluation, a potential pathway for vapor intrusion of contaminants from groundwater into buildings does not currently exist at the site. The indirect contact for groundwater pathway by human receptors is considered to be an incomplete exposure pathway.

- Direct contact for the surface water pathway for human and ecological receptors is ingestion and dermal contact. The fate and transport analysis indicated that regulated substances have migrated to the southeastern property boundary, but will not migrate to the unnamed tributary of Gist Run, at concentrations that exceed the PADEP U/NR MSCs. Therefore, the direct contact for the surface water pathway for human and ecological receptors is not considered to be a potential exposure pathway.
- As per § 250.311 of PA Act 2, all sites remediated to the PADEP U/NR MSC must be screened for impacts to ecological receptors. However, since the U/NR MSCs for petroleum compounds are generally protective for ecological receptors, further ecological screening is unnecessary at sites where jet fuel, gasoline, kerosene, #2 fuel oil, or diesel fuel are the only constituents detected on-site. Since the regulated substance released at the Rt. 119 property was gasoline and only petroleum products were handled at the site, an ecological assessment at the Rt. 119 facility is not necessary.
- Based on the above evaluation, the only current potential exposure pathway to human and ecological receptors at the site is the indirect soil pathway via inhalation.

5.0 SITE CHARACTERIZATION SUMMARY

The Rt. 119 site has an extensive site characterization and remedial action history as a result of the reported release from the former UST system in May 1996. Chambers performed the initial site characterization in 1997 and subsequently installed a SVE/AS system to remediate soil and groundwater at the site. RETTEW continued with remedial action at the site in June 2000. RETTEW discontinued the groundwater recovery and reinjection remediation system in 2005. PTM removed the UST system at the site in January 2004. During the tank closures, PTM excavated and disposed of 320 tons of petroleum-impacted soil and removed 10,000 gallons of petroleum-impacted groundwater for disposal. Letterle conducted groundwater sampling in November 2005 and May 2006. After a meeting with the PADEP at the site, Letterle installed additional monitor wells and conducted an additional soil investigation at the site. This Comprehensive SCR documents the

findings of the environmental site characterization and incorporates data from previous site characterization activities at the site. Letterle's site characterization work included advancement of soil borings and installation of monitor wells, soil and groundwater sampling, aquifer characterization, groundwater fate and transport modeling, exposure pathway analysis, and waste disposal. The findings of the site characterization include the following:

- A sensitive receptor survey performed within 2,500 feet of the facility indicates the surrounding area consists of rural, light commercial, and residential properties.
- A groundwater usage survey did not indicate the presence of water wells currently in use within 2,500 feet of the site. Groundwater is not the source of potable water at the Rt. 119 site and the surrounding properties. All of the properties in the vicinity of the site currently use municipal water as their source of potable water.
- PTM removed the UST system at the site in January 2005, which included two 8,000-gallon gasoline tanks, one 4,000-gallon gasoline tank, one 1,000-gallon kerosene tank, one 550-gallon heating oil tank, and associated piping. Soil and water samples were collected from the open excavations. The water results exceeded the PADEP U/NR MSCs for benzene, toluene, ethylbenzene, MTBE, and naphthalene. The soil results exceeded the PADEP U/NR MSCs for benzene, toluene, and naphthalene. Approximately 86 tons of petroleum-impacted soil (source material) was removed and transported off-site for disposal.
- The analytical results of soil samples collected during the Geoprobe® drilling program indicated that residual unleaded gasoline constituents that exceed the PADEP Statewide Health Standards are present in the overburden soil at two isolated locations in the vicinity of the former UST system area. A soil sample collected from GB-14 (0–2 feet bgs) exceeded the PADEP Statewide Health Standard for benzene, toluene, and naphthalene. A soil sample collected from GB-2 exceeded the naphthalene PADEP Statewide Health Standard.
- The first continuous water-bearing zone beneath the site occurs within shale bedrock. Groundwater was measured at depths that ranged from approximately 12.86 feet (MW-3) to 37.89 feet (MW-9) below the ground surface (May 12, 2006). Based on the May 12, 2006 groundwater contour map (Figure 7), the interpreted groundwater flow direction is generally to the south and southeast, which is consistent with previous interpretations.
- Slug tests were performed on monitor wells MW-3, MW-8, and MW-9 to estimate hydraulic conductivity values (K) at the site. The slug test results revealed K values that ranged from 0.000002313 feet/min (0.00331 feet/day) at MW-8 to 0.0008771 feet/min (1.263 feet/day) at MW-3. The average K value between MW-8 and MW-9 was used to calculate an average groundwater flow velocity of 4.67×10^{-6} feet/minute (0.00673 feet/day).
- The groundwater analytical results from the most recent sampling event conducted on May 12, 2006 indicated that the MTBE results exceeded the PADEP U/NR MSC in monitor wells MW-3, MW-8, and MW-9, and benzene results exceeded the PADEP U/NR MSC in MW-3 and MW-9. There were no unleaded gasoline constituents that exceeded the PADEP U/NR MSCs in up-gradient monitor well MW-7. There were no unleaded gasoline constituents that exceeded the

PADEP U/NR MSCs detected in down-gradient monitor wells MW-4 and MW-6.

- The groundwater sample results indicated that the total dissolved solids concentration exceeded 2,500 mg/l in only one monitor well (MW-4; 3,500 mg/l) during the November 2005 sampling event.
- The soil vapor results indicated that the PADEP residential and non-residential standards were exceeded in VP-2. The vapor monitor points will be sampled again during the winter of 2006/2007 and the spring of 2007.
- Fate and transport analysis indicated that benzene and MTBE at current (i.e. post-remediation) concentrations in groundwater exceeded the PADEP U/NR MSC at the eastern property boundary but will not migrate to the unnamed tributary of Gist Run in 30 years (using the average K value calculated from slug tests performed at the site).
- The exposure pathway analysis indicated that the indirect contact from the soil pathway by inhalation is the only potential exposure pathway that currently exists at the site..

Based on the findings of the site characterization, the on-site extent of unleaded gasoline parameters in the soil and groundwater has been vertically and horizontally delineated. Soil currently exceeds the PADEP U/NR MSCs at two isolated locations (GB-2 and GB-14) at the site. However, benzene and MTBE exceed the PADEP U/NR MSCs in groundwater at the eastern property boundary. However, the PADEP U/NR MSCs in groundwater is attained in monitor wells immediately across Rt. 119 and downgradient of the site.

Based on the findings of this site characterization, in accordance with 25 Pa. Code §§245.309 and 245.310, additional remedial actions may be necessary at the site in order to attain the PADEP Statewide Health Standards for groundwater. Soil at the site currently attains the PADEP Statewide Health Standard based on the 75/10x rule [i.e. 89.5% of the soil samples had concentrations that were less than the PADEP Statewide Health Standards (Table 5) and none of the detected constituents had concentrations that exceeded ten times the Statewide Health Standard.]

Letterle has commenced work on obtaining a non-use aquifer designation (NUAD) for the site from the PADEP, which will be submitted under a separate cover. A RAP will be submitted after a determination is made on the NUAD by the PADEP. If the NUAD is approved, groundwater samples will be collected from the monitor well network for eight consecutive quarters in accordance with groundwater attainment guidelines.

6.0 REFERENCES

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TABLES

TABLE 1
UST CLOSURE - SOIL ANALYTICAL DATA
 Former Route 119 Amoco
 Dunbar, Pennsylvania

Soil I.D.	Date	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Xylenes (ug/kg)	Cumene (µg/kg)	Naphthalene (µg/kg)	MTBE (ug/kg)
SW-1	01/21/05	<10,000	<10,000	53,000	100,000	<50,000	<50,000	<500
SW-2	01/21/05	<10,000	<10,000	36,000	77,000	<50,000	<50,000	<500
D-1	01/25/05	<45.5	<45.5	<45.5	<91	<45.5	<45.5	<45.5
D-2	01/26/05	<51.5	360	1,400	1,400	360	1,700	<51.5
D-3	01/26/05	<49	<49	<49	700	<50	350	<49
PL-1	01/26/05	13,000	1,000,000	48,000	220,000	11,000	18,000	<525
MSC's**		500	100,000	70,000	1,000,000	110,000	10,000	2,000

Notes:

Shaded cells indicate concentrations that exceed the PADEP Statewide Health Standards

**MSC's--Medium Specific Concentrations are designated as PADEP Statewide Health Standards

µg/kg - micrograms per kilogram

The regulatory standards shown above are the statewide health standards.

MTBE - methyl tertiary butyl ether

TABLE 2
UST CLOSURE - GROUNDWATER ANALYTICAL DATA
Former Route 119 Amoco
Dunbar, Pennsylvania

Sample ID	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	Naphthalene (µg/l)
W-1	01/21/05	508	3,260	1,730	4,960	770	2,140
W-2	01/21/05	422	2,790	1,470	4,320	630	580
Medium Specific Concentrations*		5	1,000	700	10,000	20	100

Notes:

Shaded cells indicate concentrations in excess of the PADEP Statewide Health Standards.

* The Medium Specific Concentrations (MSCs) listed above are the PADEP Statewide Health Standards for residential used aquifers.

µg/l - micrograms/liter

MTBE - methyl tertiary butyl ether

TABLE 3
MONITORING WELL CONSTRUCTION DETAILS
 Former Route 119 Amoco
 Dunbar, Pennsylvania

Monitoring Well	Installed By	Date Installed	Const. Depth (ft.bgs)	Screened Interval (ft. bgs)	Well Diameter (inches)	Borehole Diameter (inches)	Top of PVC Casing Elevation (ft.)*	Ground Surface Elevation (ft.)	Well Depth Elevation (ft.)
MW-1	Chambers	08/29/97	35.5	15.5-35.5	4"	6"	499.83	500.08	464.33
MW-2	Chambers	08/29/97	40.75	15.75-40.75	4"	6"	499.11	499.36	458.36
MW-3	Chambers	08/29/97	36.00	16.00-36.95	4"	6"	495.80	496.05	459.80
MW-4	Chambers	08/29/97	50.75	30.75-50.75	4"	6"	493.70	493.95	442.95
MW-5	Chambers	11/04/97	45.50	25.50-45.50	4"	6"	495.74	495.99	450.24
MW-6	Chambers	11/04/97	46.00	26.00-46.00	4"	6"	489.19	489.44	443.19
MW-7	Letterle	05/04/06	50.00	35.00-50.00	4"	6"	502.06	502.31	452.06
MW-8	Letterle	05/08/06	51.00	36.00-51.00	4"	6"	497.01	497.26	446.01
MW-9	Letterle	05/05/06	55.00	40.00-55.00	4"	6"	497.01	497.26	442.01
RW-1	Chambers	11/04/06	45.00	25.00-45.00	4"	8"	498.35	498.60	453.35
RW-2	Chambers	11/04/97	43.00	23.00-43.00	4"	8"	494.77	495.02	451.77
SVE-1	Chambers	06/02/98	35.00	3.00-35.00	2"	6"	497.74	497.99	462.74
SVE-2	Chambers	06/02/98	35.00	3.00-35.00	2"	6"	496.89	497.14	461.89
SVE-3	Chambers	06/02/98	35.00	3.00-35.00	2"	6"	497.5	497.75	462.50
AS-1	Chambers	06/02/98	40.00	37.00-40.00	2"	6"	497.44	497.69	457.44
AS-2	Chambers	06/02/98	40.00	37.00-40.00	2"	6"	497.3	497.55	457.30

Notes:

ft. bgs - feet below ground surface

ft. - feet

* elevations based on arbitrary datum of 500 ft. from RETTEW Associates, Inc report

TABLE 4
MONITOR WELL GAUGING DATA - MAY 12, 2006
Former Route 119 Amoco
Dunbar, Pennsylvania

Monitor Well ID	Date	Top of PVC Casing Elevation (feet)*	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet)*
MW-1	05/12/06	499.83	Well destroyed - not measured	
MW-2	05/12/06	499.11	37.47	461.64
MW-3	05/12/06	495.80	12.86	482.94
MW-4	05/12/06	493.70	34.66	459.04
MW-5	05/12/06	495.74	Well destroyed - not measured	
MW-6	05/12/06	489.19	27.63	461.56
MW-7	05/12/06	502.06	38.75	463.31
MW-8	05/12/06	497.01	25.82	471.19
MW-9	05/12/06	497.01	37.89	459.12

Notes:

feet.TOC- feet below top of casing

feet. - feet

* elevations based on arbitrary datum of 500 feet. from RETTEW Associates, Inc report

TABLE 5
SOIL ANALYTICAL DATA
May 2006
Former Route 119 Amoco
Dunbar, Pennsylvania

Soil I.D.	Date	Sample I.D. Depth	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Xylenes (ug/kg)	Cumene (µg/kg)	Naphthalene (µg/kg)	MTBE (ug/kg)
SB-1 (GB-1)	05/08/06	6' - 7'	160	170	8,600	780	280	6,800	<6.7
SB-2 (GB-2)	05/08/06	4' - 6'	49	100	15,000	570	340	13,000	<7.6
SB-3 (GB-3)	05/08/06	6' - 8'	94	280	2,400	5,900	180	950	<5.9
MW-9 (GB-4)	05/05/06	5' - 7'	280	210	360	620	48	82	26
GB-5	05/08/06	SS-3	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5
GB-6	05/08/06	GB-6/5'	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5
GB-7	05/08/06	GB-7/4'	22	14	<5.8	<5.8	<5.8	<5.8	<5.8
GB-8	05/08/06	GB-8/5'	170	87	3,900	17,000	75	280	8.1
GB-9	05/08/06	GB-9/5'	120	90	79	180	56	74	14
GB-10	05/09/06	SS-4/6'-7'	25	48	1,700	12,000	330	3,100	<5.4
GB-11	05/09/06	SS-3/4'-6'	110	95	290	510	81	350	16
GB-12	05/09/06	SS-2/2'-4'	130	150	300	190	160	390	100
GB-13	05/09/06	SS-2/2'-4'	61	70	86	41	17	35	23
GB-14	05/09/06	SS-1/0'-2'	2,060	250,000	54,000	390,000	11,000	31,000	<5.6
GB-15	05/09/06	SS-3/4'-6'	280	50	3,200	6,200	76	270	<5.3
GB-16	05/09/06	SS-3/4'-6'	180	270	6,500	33,000	270	4,800	<5.4
GB-17	05/09/06	SS-2/2'-4'	<5.5	<5.5	29	100	26	1,200	<5.5
GB-18	05/09/06	SS-1/0'-2'	<5.7	<5.7	<5.7	8.1	<5.7	10	<5.7
GB-19	05/09/06	SS-3/4'-6'	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3

MSC's* *	500	100,000	70,000	1,000,000	110,000	10,000	2,000
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Notes:

**MSC's--Medium Specific Concentrations are designated as PADEP Statewide Health Standards

The regulatory standards shown above are the statewide health standards.

µg/kg - micrograms per kilogram

MTBE - methyl tertiary butyl ether

TABLE 6
HISTORICAL GROUNDWATER ANALYTICAL DATA (August 2000 - May 2006)
Former Route 119 Amoco
Dunbar, Pennsylvania

Sample ID	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	Cumene (µg/l)	Naphthalene (µg/l)
MW-1	11/14/05	Well was damaged - not sampled						
	12/08/04	32.2	<1	3.1	<3	14.7	<1	<2
	07/07/04	<1	<1	<1	<3	13.8	<1	<2
	04/09/04	36.5	<1	1.2	3.3	17.4	<1	2.6
	12/04/03	29.1	3.2	10.2	5.5	64.1	1.5	<2
	09/16/03	7.6	6.7	22.0	73.1	5.0	5.2	13.4
	12/04/02	898	115	96	285	1,440	16	33
	09/16/02	118	22	41	129	187	9.2	18
	05/15/02	30	12	40	86	43	9.2	14
	02/18/02	20	3.9	2.5	19	45	5.4	4.0
	11/26/01	35	16	12	19	26	3.3	2.3
	07/24/01	80	8.6	124	32	163	19	2.5
	08/24/00	149	7.9	255	36	474	32	7.6
MW-2 39.80	05/12/06	<1	<1	<1	<3	<1	<1	<1
	11/14/05	<1	<1	<1	<3	<1	<1	<1
	02/18/02	<1	<1	<1	<3	<1	<1	<2
	11/26/01	<1	<1	<1	<3	1.3	<1	<2
	07/24/01	<1	<1	<1	<3	93	<1	<2
	08/23/00	<1	<1	<1	<3	<1	<1	<2

TABLE 6 (Cont.)
HISTORICAL GROUNDWATER ANALYTICAL DATA (August 2000 - May 2006)
Former Route 119 Amoco
Dunbar, Pennsylvania

Sample ID	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	Cumene (µg/l)	Naphthalene (µg/l)
MW-3	05/12/06	38	1.3	7.5	6.5	17	1.9	3.2
	11/14/05	1.6	<1	<1	<3	61	<1	<1
	07/06/05	51.4	19.6	3.8	38.3	140	<1	9.1
	03/24/05	<1	<1	<1	<3	28.2	<1	<2
	12/08/04	39.1	1.0	5.5	3.9	63.7	3.2	2.3
	07/07/04	26.2	3.1	3.9	19.6	33.8	2.2	3.8
	04/09/04	7.7	<1	1.0	5.4	12.0	<1	<2
	12/04/03	35.2	6.2	26.7	26.6	52.4	7.1	8.8
	02/18/02	127	34	17	407	768	2.2	9.2
	11/26/01	<1	<1	<1	<3	<1	<1	<2
	07/24/01	485	152	390	1,490	1,950	35	155
MW-4	05/12/06	<1	<1	<1	<3	4.7	<1	<1
	11/14/05	<1	<1	<1	<3	7.6	<1	<1
	07/26/05	<1	10.4	2.1	15.6	3.9	<1	<2
	03/24/05	3.5	30.8	7.5	42	6.7	<1	3.3
	12/08/04	<1	<1	<1	<3	6.8	<1	<2
	07/07/04	<1	<1	<1	<3	5.6	<1	<2
	04/09/04	<1	<1	<1	<3	7.4	<1	<2
	12/04/03	<1	<1	<1	<3	<1	<1	<2
	09/16/03	<1	<1	<1	<3	3.1	<1	<2
	04/29/03	<1	<1	<1	<3	4.3	<1	<2
	12/04/02	<1	<1	<1	<3	<1	<1	<2
	09/16/02	<1	<1	<1	<3	8.8	<1	<2
	05/15/02	<1	<1	<1	<3	13	<1	<2
	02/18/02	<1	<1	<1	<3	4.0	<1	<2
	11/26/01	<1	<1	<1	<3	6.7	<1	<2
	07/23/01	<1	<1	<1	<3	14	<1	<2
	08/23/00	<1	<1	<1	<3	11	<1	<2

TABLE 6 (Cont.)
 HISTORICAL GROUNDWATER ANALYTICAL DATA (August 2000 - May 2006)
 Former Route 119 Amoco
 Dunbar, Pennsylvania

Sample ID	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	Cumene (µg/l)	Naphthalene (µg/l)
MW-5	11/14/05	Well was paved over - not sampled						
	04/29/03	<1	<1	<1	<3	<1	<1	<2
	12/04/02	<1	<1	<1	<3	<1	<1	<2
	09/16/02	<1	<1	<1	<3	<1	<1	<2
	05/15/02	<1	<1	<1	<3	<1	<1	<2
	02/18/02	<1	<1	<1	<3	<1	<1	<2
	11/26/01	<1	<1	<1	<3	<1	<1	<2
	07/23/01	<1	<1	<1	<3	<1	<1	<2
	08/23/00	<1	<1	<1	<3	<1	<1	<2
MW-6	05/12/06	<1	<1	<1	<3	<1	<1	<1
	11/14/05	<1	<1	<1	<3	<1	<1	<1
	07/06/05	<1	<1	<1	<3	<1	<1	<2
	03/24/05	<1	1.5	<1	<3	<1	<1	<2
	12/08/04	<1	<1	<1	<3	<1	<1	<2
	07/07/04	<1	<1	<1	<3	<1	<1	<2
	04/09/04	<1	<1	<1	<3	<1	<1	<2
	12/04/03	<1	<1	<1	<3	<1	<1	<2
	04/29/03	<1	<1	<1	<3	<1	<1	<2
	12/04/02	<1	<1	<1	<3	2.2	<1	<2
	09/16/02	<1	<1	<1	<3	<1	<1	<2
	05/15/02	<1	<1	<1	<3	<1	<1	<2
	02/18/02	<1	<1	<1	<3	<1	<1	<2
	11/26/01	<1	<1	<1	<3	<1	<1	<2
	07/23/01	<1	<1	<1	<3	<1	<1	<2
	08/23/00	<1	<1	<1	<3	<1	<1	<2
MW-7	05/12/06	2.4	2.2	<1	17	18	<1	<1
MW-8	05/12/06	120	93	66	250	29	8.4	15
MW-9	05/12/06	43	10	150	520	20	36	80

TABLE 6 (Cont.)
HISTORICAL GROUNDWATER ANALYTICAL DATA (August 2000 - May 2006)
Former Route 119 Amoco
Dunbar, Pennsylvania

Sample ID	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	Cumene (µg/l)	Naphthalene (µg/l)
RW-1 Recovery well	11/14/05	<1	<1	<1	<3	1.2	<1	<1
	07/06/05	<1	<1	<1	<3	<1	<1	<2
	03/24/05	14	78.4	14.4	87.2	1.9	<1	3.8
	12/08/04	<1	<1	<1	<3	<1	<1	<2
	07/07/04	10.7	<1	<1	<3	36.7	<1	<2
	04/09/04	<1	<1	<1	<3	<1	<1	<2
	12/04/03	1.8	<1	<1	<3	105	<1	<2
	02/18/02	<1	<1	<1	<3	<1	<1	<2
	11/26/01	<1	<1	<1	<3	1.1	<1	<2
	07/23/01	<1	<1	<1	<3	2.5	<1	<2
	08/24/00	<1	<1	<1	<3	1.8	<1	<2
RW-2 Recovery well	11/14/05	651	<1	<1	<3	7.9	<1	1.1
	07/06/05	324	4.8	15.7	6.6	174	2.9	10.3
	03/24/05	<1	2.8	<1	5.2	10.8	<1	<2
	12/08/04	76.8	<1	<1	<3	133	<1	<2
	07/07/04	1.9	<1	<1	<3	73.7	<1	<2
	12/04/03	1.8	<1	<1	<3	105	<1	<2
	12/04/02	95	10	24	96	195	4.6	11
	09/16/02	66	7.8	14	66	488	<5	<10
	05/15/02	320	<10	15	93	2,380	<10	43
	02/18/02	<1	<1	<1	<3	7.6	<1	<2
	11/26/01	2.0	<1	2.2	37	39	1.2	19
	07/24/01	30	2.8	6.8	33	714	<1	<2
	08/24/00	53	<5	23	22	1,930	<5	<10

TABLE 6 (Cont.)
HISTORICAL GROUNDWATER ANALYTICAL DATA (August 2000 - May 2006)
Former Route 119 Amoco
Dunbar, Pennsylvania

Sample ID	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	Cumene (µg/l)	Naphthalene (µg/l)
DW-1 Recovery well	11/14/05	Well was paved over - not sampled.						
	07/07/04	<1	<1	<1	<3	<1	<1	<2
	04/09/04	<1	<1	<1	<3	<1	<1	<2
	12/04/03	<1	<1	<1	<3	<1	<1	<2
	09/16/02	<1	<1	<1	<3	<1	<1	<2
	05/15/02	<1	<1	2.5	<3	<1	<1	<2
	02/18/02	2.2	1.6	7.0	3.4	<1	<1	<2
	11/26/01	2.9	<1	<1	<3	<1	<1	2.0
	08/28/01	3.2	3.9	<1	14	<1	<1	2.0
SVE-1 Soil Vapor Extraction Well	11/14/05	Well was not sampled.						
	03/24/05	<1	<1	<1	<3	<1	<1	<2
	12/08/04	324	16.3	50.0	49.7	131	4.3	12.9
	04/09/04	431	16.6	27.0	78.5	203	8.8	26.6
	12/04/03	114	7.2	18.9	11.0	70.1	1.6	3.4
	09/16/03	4.2	2.5	<1	21.8	2.5	2.3	<2
SVE-2 Soil Vapor Extraction Well	11/14/05	57	1.5	<1	<3	45	1.3	<1
	07/06/05	622	10.5	180	36.7	225	9.4	35.4
	03/24/05	1.3	3.1	1.5	7.0	<1	<1	2.2
	12/08/04	304	22.6	63.8	82.6	113	4.4	15.0
	07/07/04	41.4	3.2	2.5	10.0	53.6	<1	<2
	04/09/04	356	41.6	42.6	126	279	7.6	19.4
	12/04/03	185	66.2	23.4	135	321	2.3	7.7
	09/16/03	9.1	3.6	<1	21.7	4.7	2.3	<2
	04/29/03	263	16.7	54.7	55.5	403	5.5	17.2
	12/04/02	1,490	243	144	453	745	<20	48
	09/16/02	719	82	65	290	1,190	<20	41
	05/15/02	850	196	182	783	2,320	27	60
	02/18/02	575	119	47	532	9,400	3.1	15
	11/26/01	<1	<1	<1	<3	6.2	<1	<2
	07/24/01	251	57	117	325	1,740	17	27
	08/24/00	3,890	1,840	766	7,750	28,900	60	268

TABLE 6 (Cont.)
HISTORICAL GROUNDWATER ANALYTICAL DATA (August 2000 - May 2006)
Former Route 119 Amoco
Dunbar, Pennsylvania

Sample ID	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	Cumene (µg/l)	Naphthalene (µg/l)
SVE-3 Soil Vapor Extraction Well 32.80	11/14/05	Well was not sampled.						
	03/24/05	<1	1.4	<1	3.6	<1	<1	<2
	12/08/04	579	58.0	136	226	190	10.9	38.6
	07/07/04	196	9.4	6.1	12.6	258	<1	2.4
	04/09/04	630	77.8	145	239	318	15.4	53.2
	12/04/03	200	18.6	43.8	50.6	173	3.9	14.8
	09/16/03	31.5	4.5	17.3	29.4	4.1	3.1	<2
	04/29/03	258	29.3	89.6	102	366	8.8	32.3
	12/04/02	794	166	107	337	364	14	36
	09/16/02	1,990	207	216	847	3,480	22	146
	05/15/02	414	26	60	200	51	14	75
	02/18/02	311	11	11	106	109	3.5	30
	11/26/01	781	<20	<20	135	4,770	<20	<40
	08/24/00	671	47	416	547	140	26	138
AS-1 Air Sparge well 35.45	11/14/05	1	<1	<1	<3	6.3	<1	2.4
	08/23/00	Well was not sampled.						
AS-2 Air Sparge well 40.80	11/14/05	<1	<1	<1	<3	120	<1	<1
	07/06/05	<1	<1	<1	<3	155	<1	<2
	07/07/04	7.6	1.1	<1	<3	85.4	<1	<2
	08/24/00	<1	<1	<1	<3	55	<1	<2
Medium Specific Concentrations*		5	1,000	700	10,000	20	1,100	100

Notes:

Shaded cells indicate concentrations in excess of the PADEP Statewide Health Standards.

* The Medium Specific Concentrations (MSCs) listed above are the PADEP Statewide Health Standards for residential used aquifers.

TABLE 7
TOTAL DISSOLVED SOLIDS
Former Route 119 Amoco
Dunbar, Pennsylvania

Well ID	Date	Total Dissolved Solids (mg/l)
MW-2	11/14/05	520
MW-3	11/14/05	300
MW-4	11/14/05	3,500
MW-6	11/14/05	440
SVE-2	11/14/05	470
RW-1	11/14/05	1,600
RW-2	11/14/05	710
AS-2	11/14/05	1,200

Notes:

mg/l - milligrams per liter

TABLE 8
GROUNDWATER ANALYTICAL DATA
POST-REMEDIATION
Former Route 119 Amoco
Dunbar, Pennsylvania

Sample ID	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	Cumene (µg/l)	Naphthalene (µg/l)
MW-1	05/12/06	Well was damaged - not sampled						
	11/14/05	Well was damaged - not sampled						
MW-2	05/12/06	<1	<1	<1	<3	<1	<1	<1
	11/14/05	<1	<1	<1	<3	<1	<1	<1
MW-3	05/12/06	1.3	1.3	7.5	6.5	17	1.9	3.2
	11/14/05	1.6	<1	<1	<3	61	<1	<1
MW-4	05/12/06	<1	<1	<1	<3	4.7	<1	<1
	11/14/05	<1	<1	<1	<3	7.6	<1	<1
MW-5	05/12/06	Well was paved over - not sampled						
	11/14/05	Well was damaged - not sampled						
MW-6	05/12/06	<1	<1	<1	<3	<1	<1	<1
	11/14/05	<1	<1	<1	<3	<1	<1	<1
MW-7	05/12/06	2.4	2.2	<1	17	18	<1	<1
MW-8	05/12/06	93	93	66	250	29	8.4	15
MW-9	05/12/06	10	10	150	520	20	36	80
Medium Specific Concentrations*		5	1,000	700	10,000	20	1,100	100
GW MSC USED AQUIFER (non-residential)		5	1,000	700	10,000	20	2,300	100

Notes:

µg/l -micrograms per liter

MTBE - methyl tertiary butyl ether

Shaded cells indicate concentrations in excess of the PADEP Statewide Health Standards.

* The Medium Specific Concentrations (MSCs) listed above are the PADEP Statewide Health Standards for residential used aquifers.

TABLE 9
SOIL VAPOR ANALYTICAL DATA
Former Route 119 Amoco
Dunbar, Pennsylvania

Sample	Date	Benzene (ppmv)	Toluene (ppmv)	Ethylbenzene (ppmv)	Xylenes* (ppmv)	MTBE (ppmv)	Cumene (ppmv)	Naphthalene (ppmv)
VP-1	05/08/06	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
	08/31/06	Not sampled						
VP-2	05/08/06	12.45	2.37	<0.07	<0.07	<0.07	<0.07	<0.07
	08/31/06	8.82	<3.00	<0.07	0.07**	<0.07	<0.07	<0.07
VP-3	05/08/06	<0.07	0.07	<0.07	0.10	<0.07	<0.07	<0.07
	08/31/06	Not sampled						
Residential Vapor Standards		0.27	56	1.9	14	8.1	54	0.42
Non-Residential Vapor Standards		1.1	120	73	30	31	110	0.88

Notes:

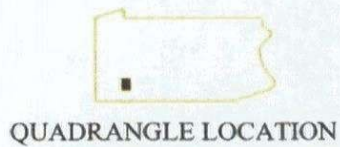
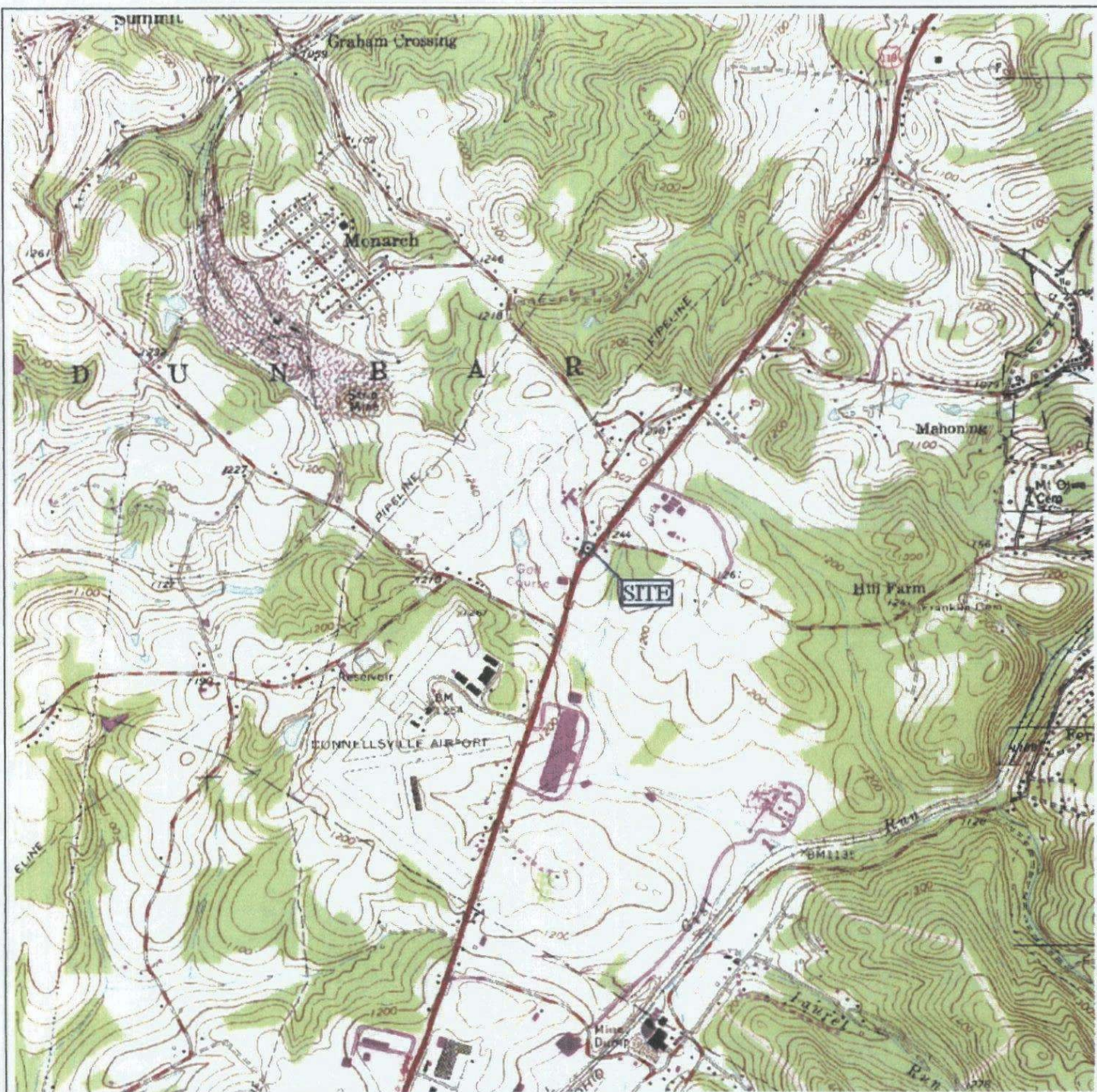
ppmv - parts per million volume

* Total for m-xylene, o-xylene, p-xylene

** M-xylene and P-xylene were reported as a total concentration of 0.07 ppmv, and O-xylene was reported as <0.07 ppmv.

MTBE - methyl tertiary butyl ether

FIGURES



QUADRANGLE LOCATION

REFERENCE

USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE
UNIONTOWN



SITE LOCATION MAP

FORMER ROUTE 119 AMOCO
1809 UNIVERSITY DRIVE
DUNBAR, PA 15431

COORDINATES
39.9676 N
79.6466 W

BY:
MSV

CK:
TJ

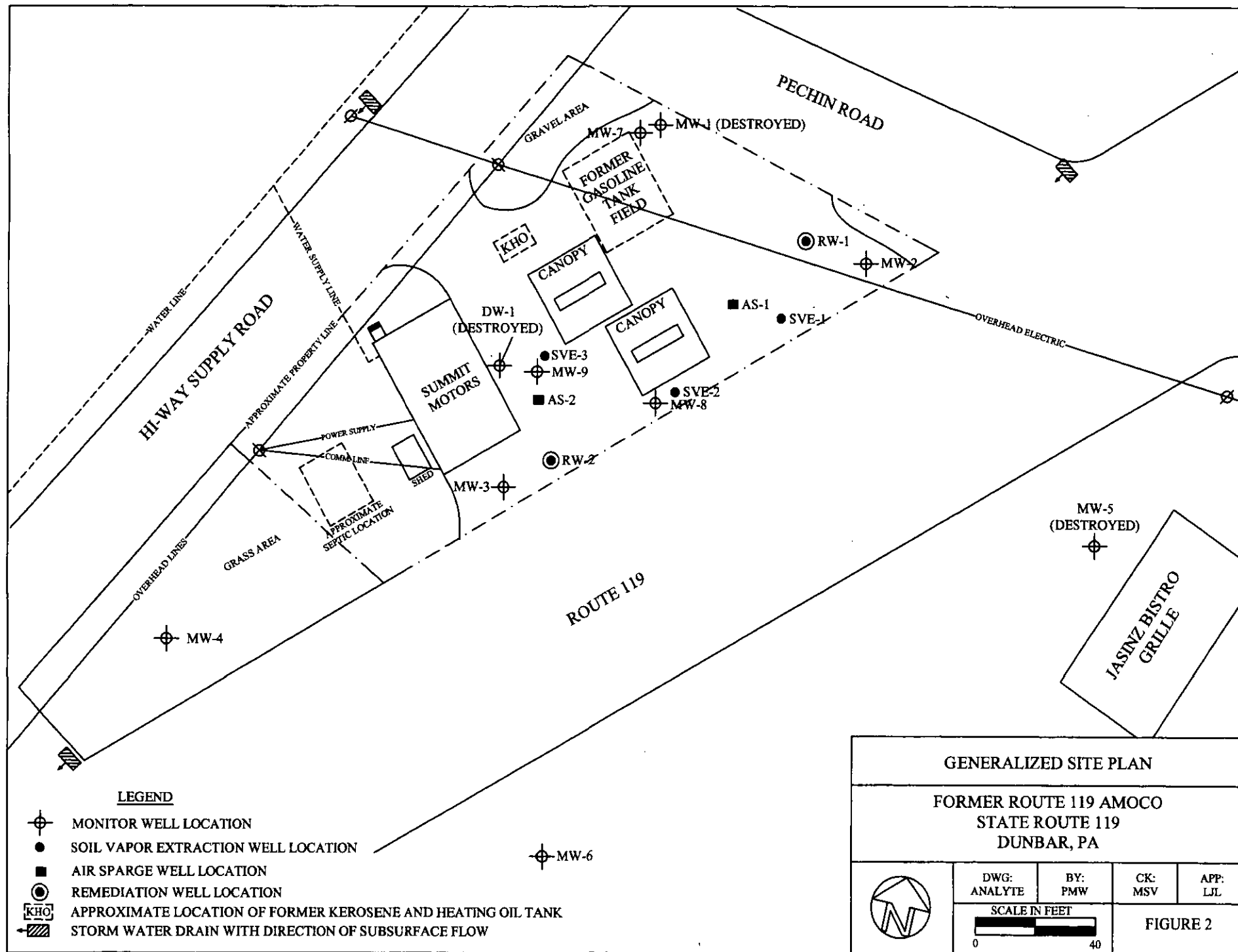
APP:
TJ

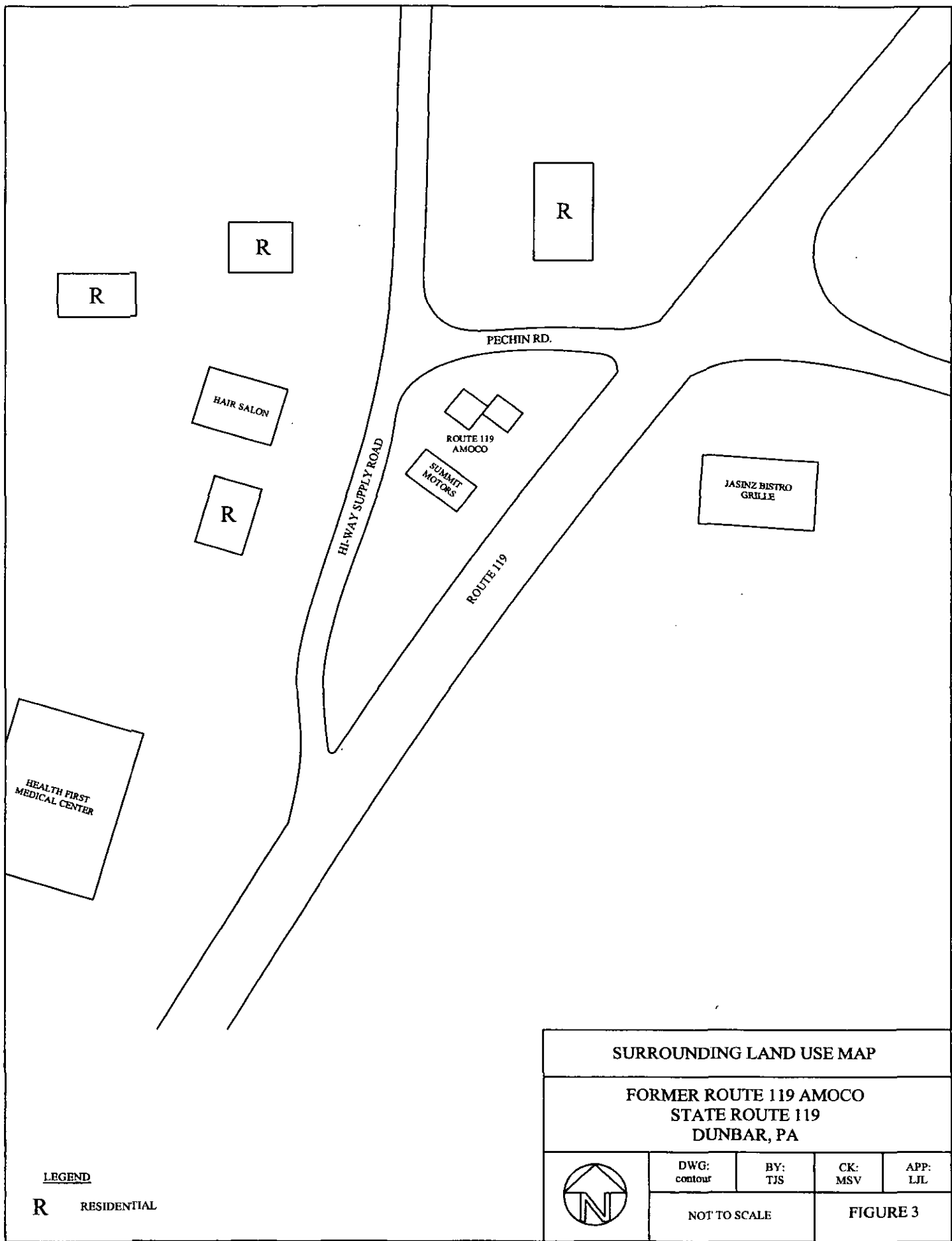
SCALE



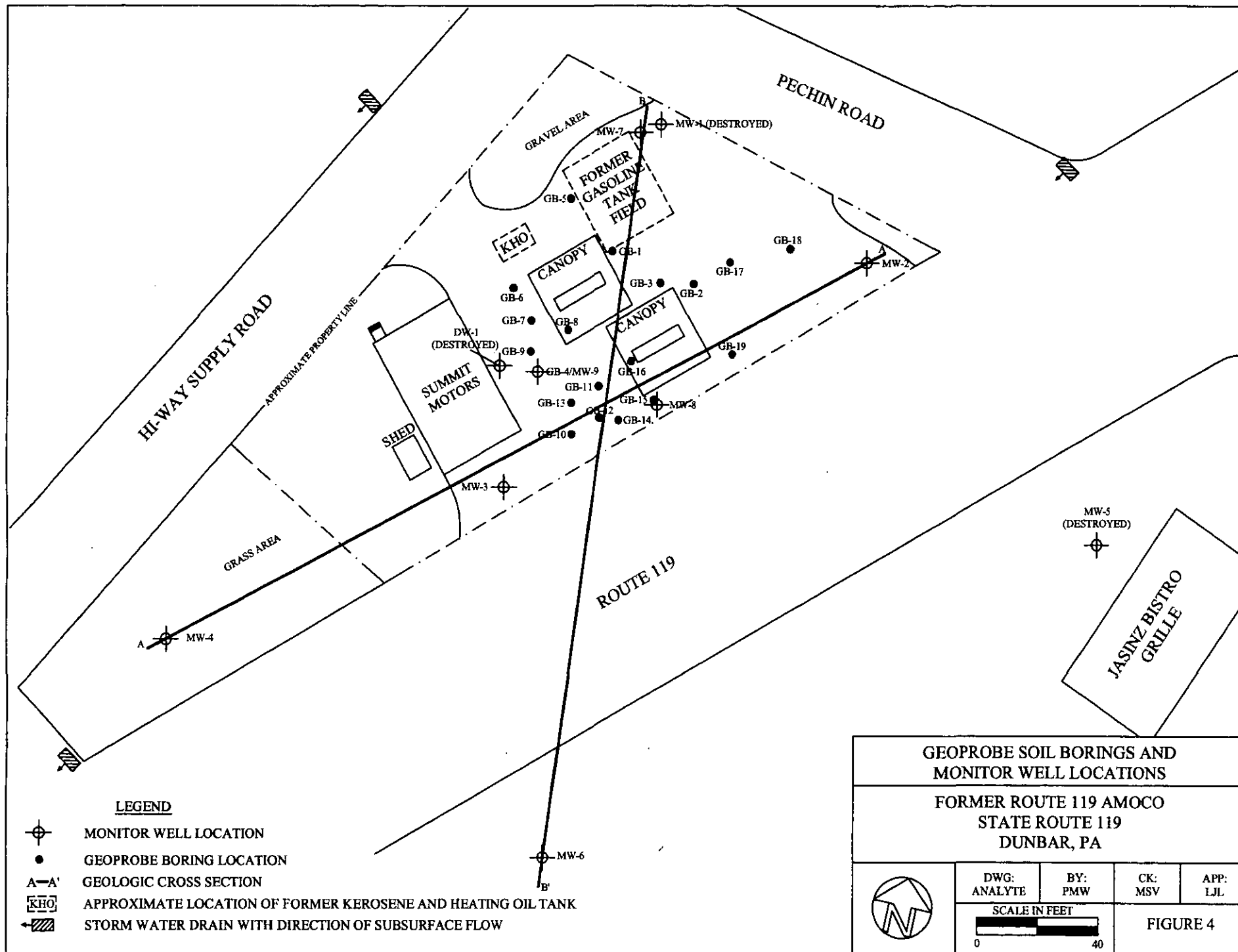
1 INCH = APPROXIMATELY 1,000 FEET

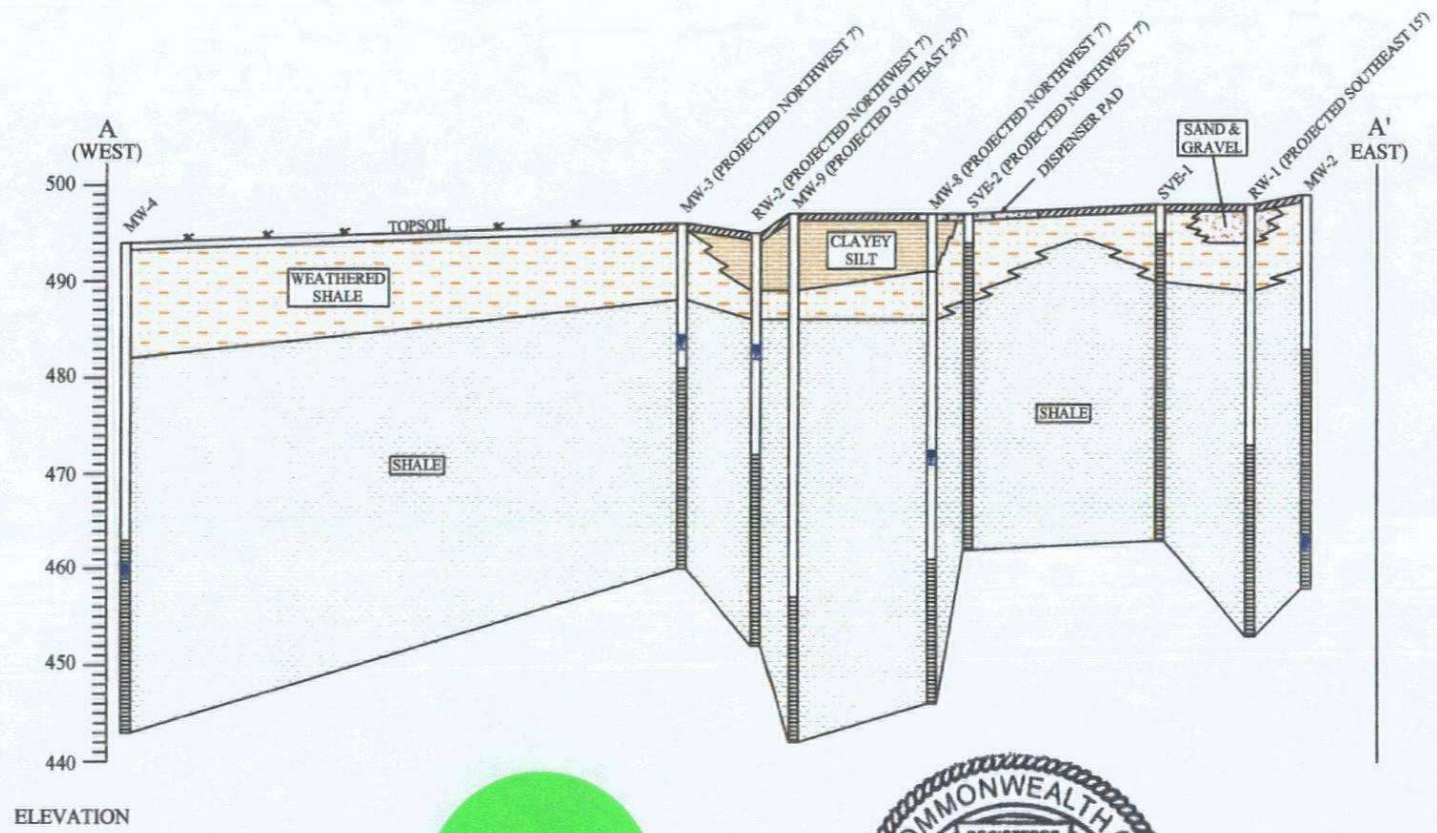
FIGURE 1





SURROUNDING LAND USE MAP				
FORMER ROUTE 119 AMOCO STATE ROUTE 119 DUNBAR, PA				
	DWG: contour	BY: TJS	CK: MSV	APP: LJL
	NOT TO SCALE		FIGURE 3	





LEGEND

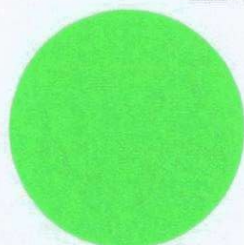
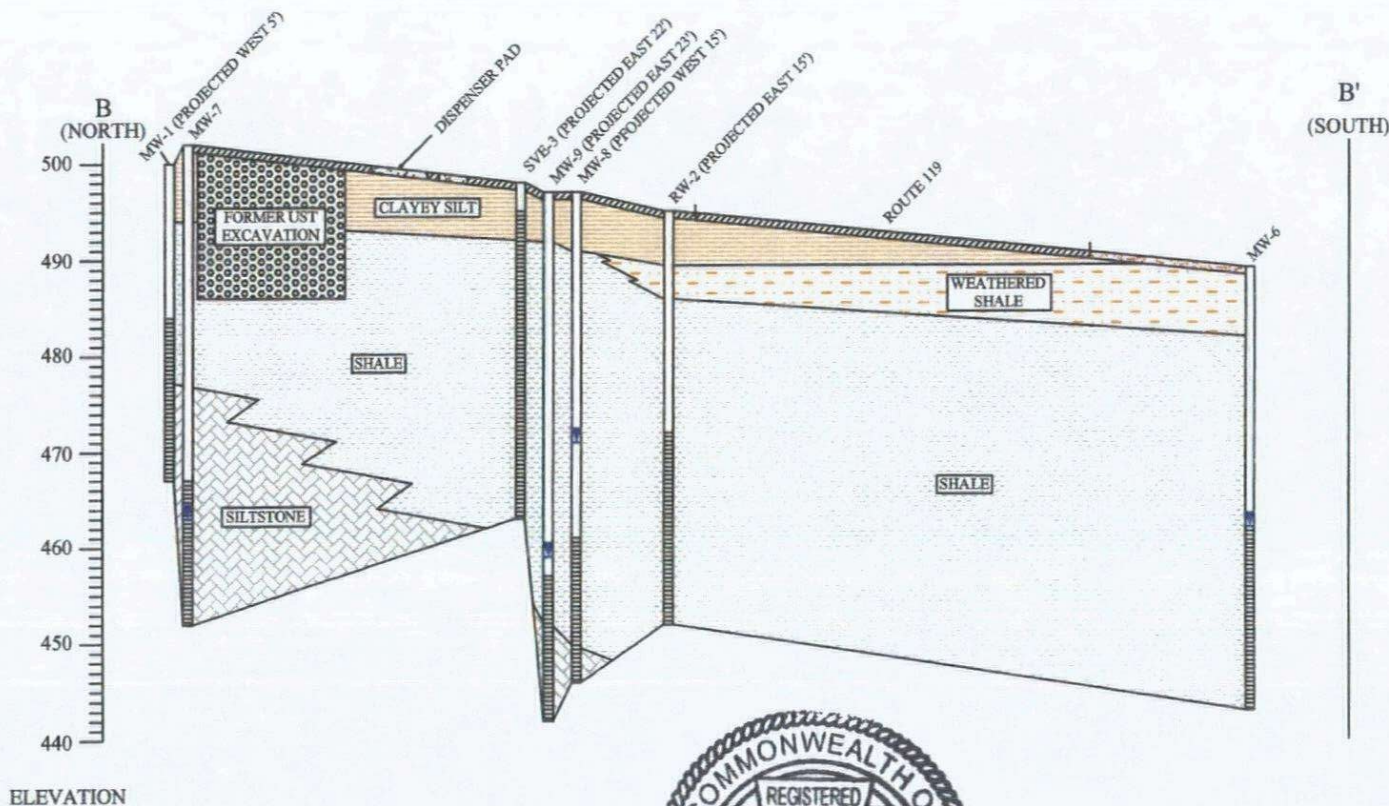
- | | | |
|-----------------|----------|-----------------------------------|
| CLAYEY SILT | ASPHALT | WELL SCREEN INTERVAL |
| SAND AND GRAVEL | CONCRETE | STATIC WATER LEVEL (MAY 12, 2006) |
| WEATHERED SHALE | SHALE | |



GEOLOGIC CROSS-SECTION A TO A'

FORMER ROUTE 119 AMOCO
STATE ROUTE 119
DUNBAR, PA

DWG: GEO	BY: PMW	CK: MSV	APP: LJL
SCALE HORIZONTAL 1" = 40' VERTICAL 1" = 20'		FIGURE 5	



LEGEND

- | | | |
|-----------------|----------|-----------------------------------|
| CLAYEY SILT | ASPHALT | WELL SCREEN INTERVAL |
| SILTSTONE | CONCRETE | STATIC WATER LEVEL (MAY 12, 2006) |
| WEATHERED SHALE | SHALE | SAND AND GRAVEL |

GEOLOGIC CROSS-SECTION B TO B'

FORMER ROUTE 119 AMOCO
STATE ROUTE 119
DUNBAR, PA

DWG:
GBO

BY:
PMW

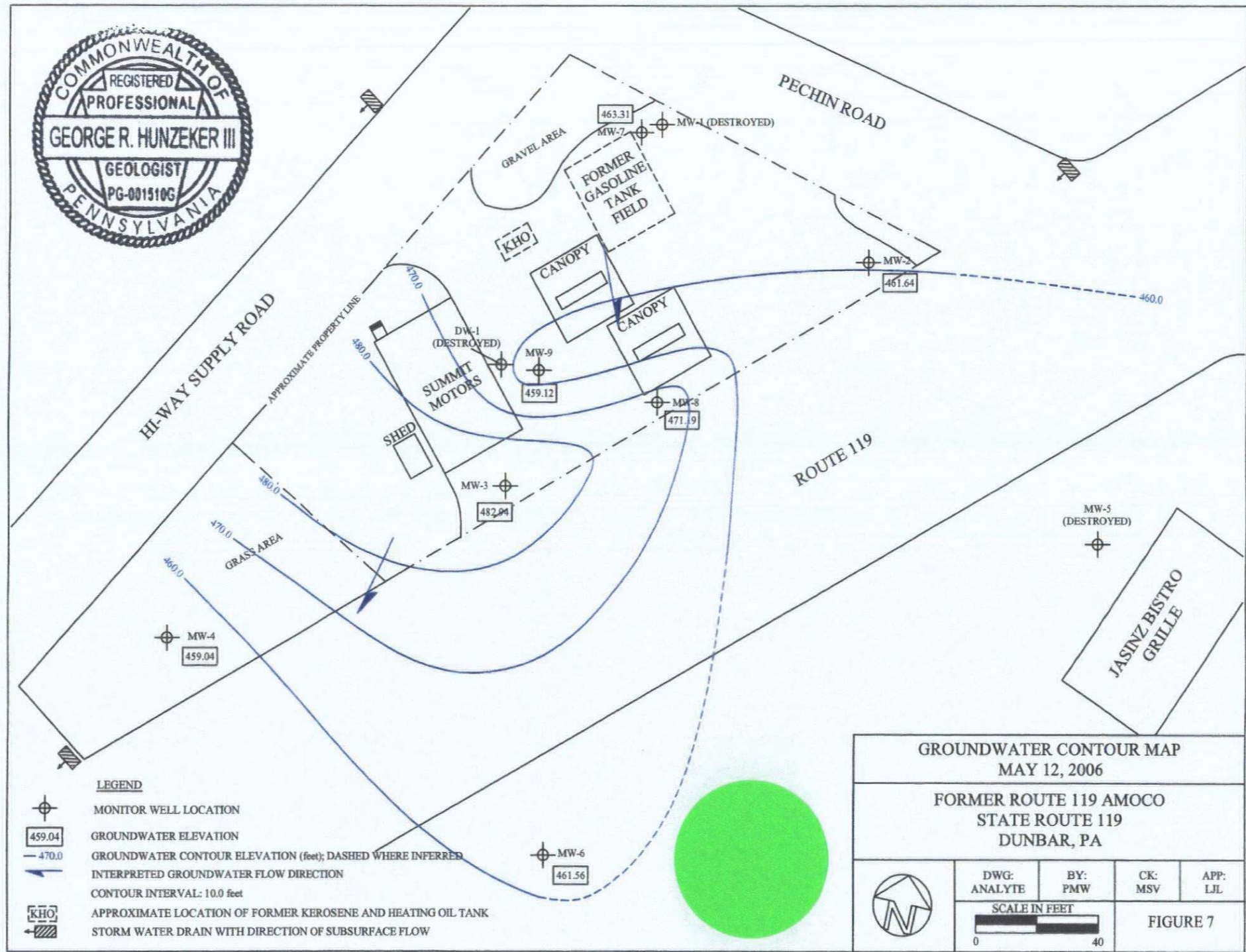
CK:
MSV

APP:
LJL

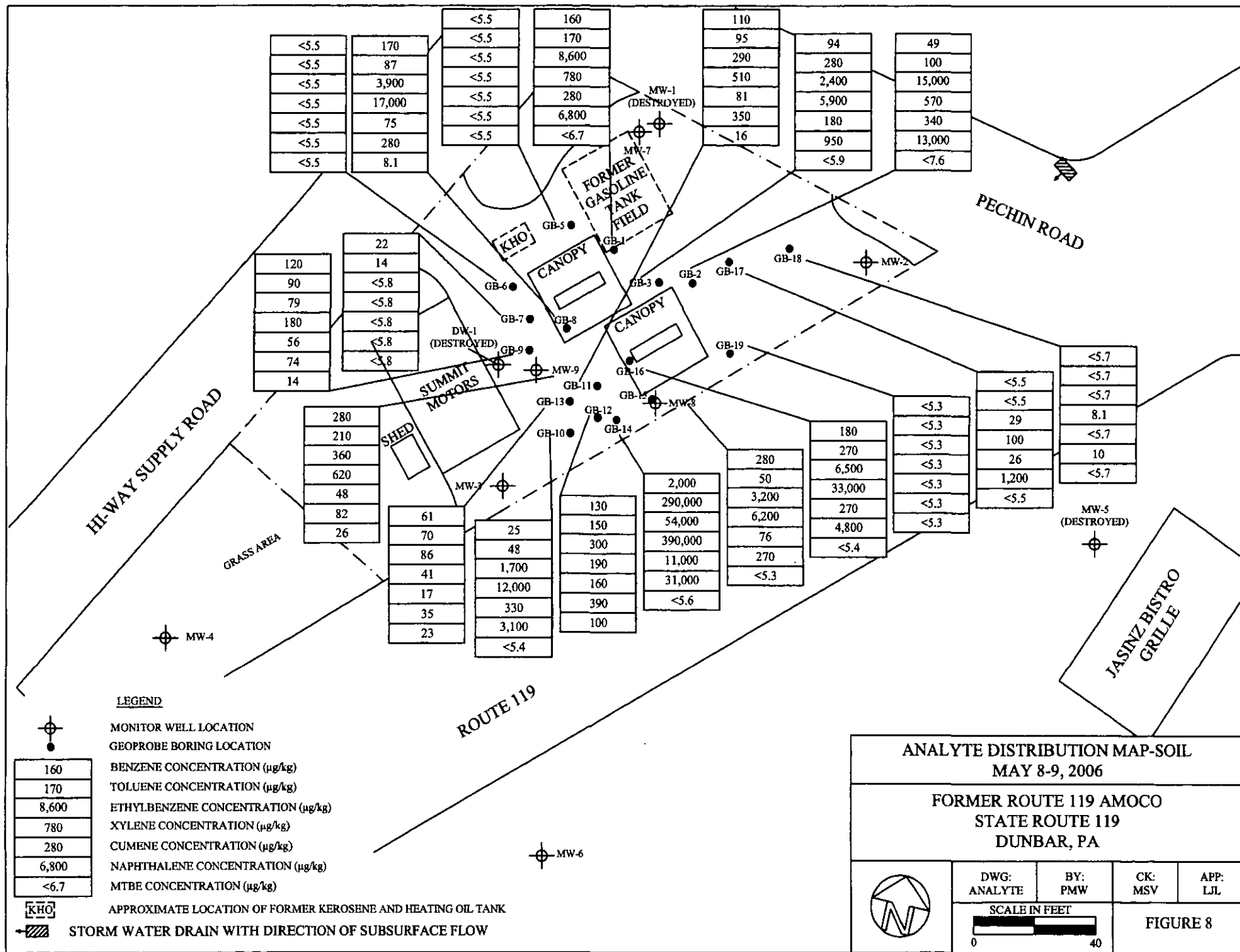
SCALE

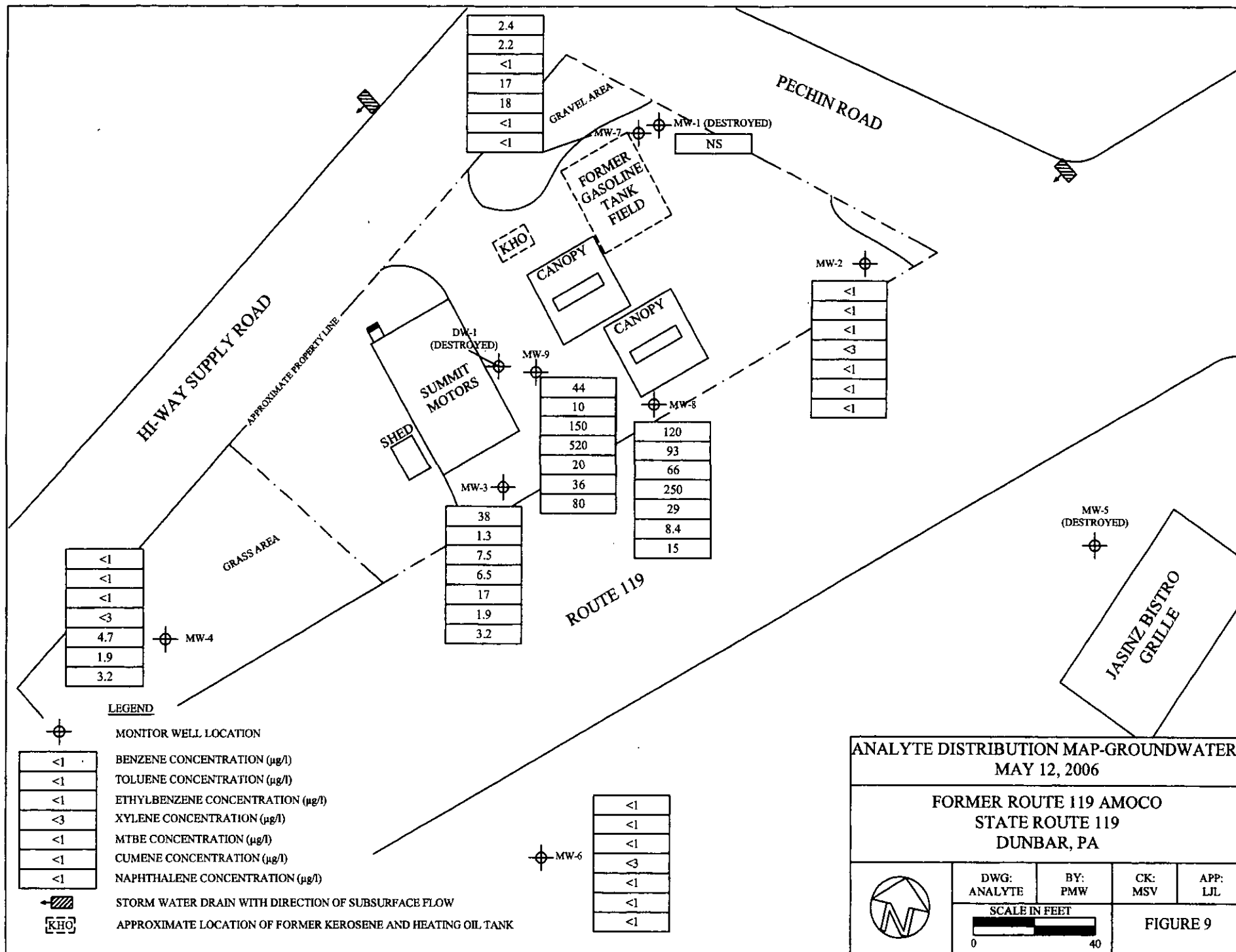
HORIZONTAL 1" = 40'
VERTICAL 1" = 20'

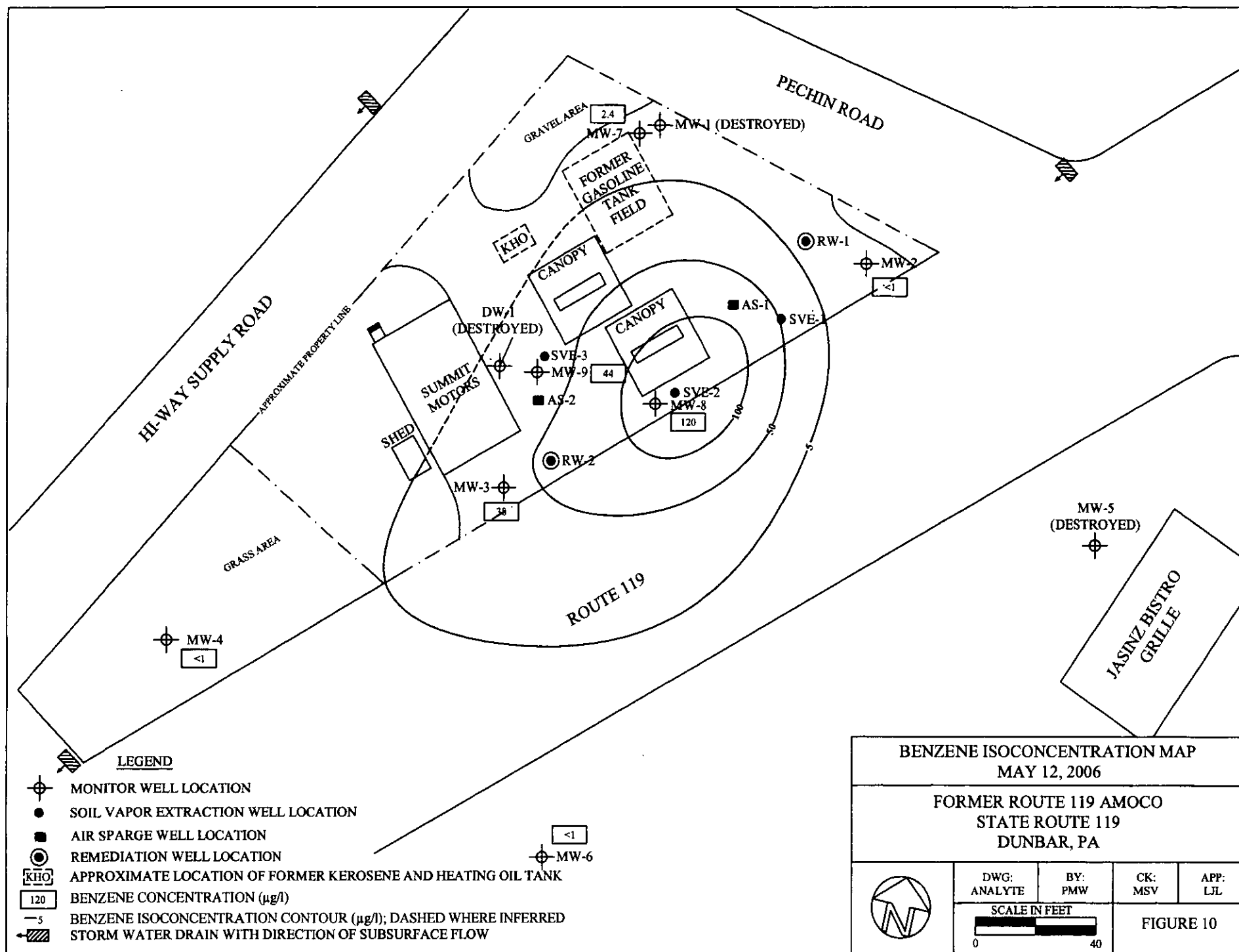
FIGURE 6

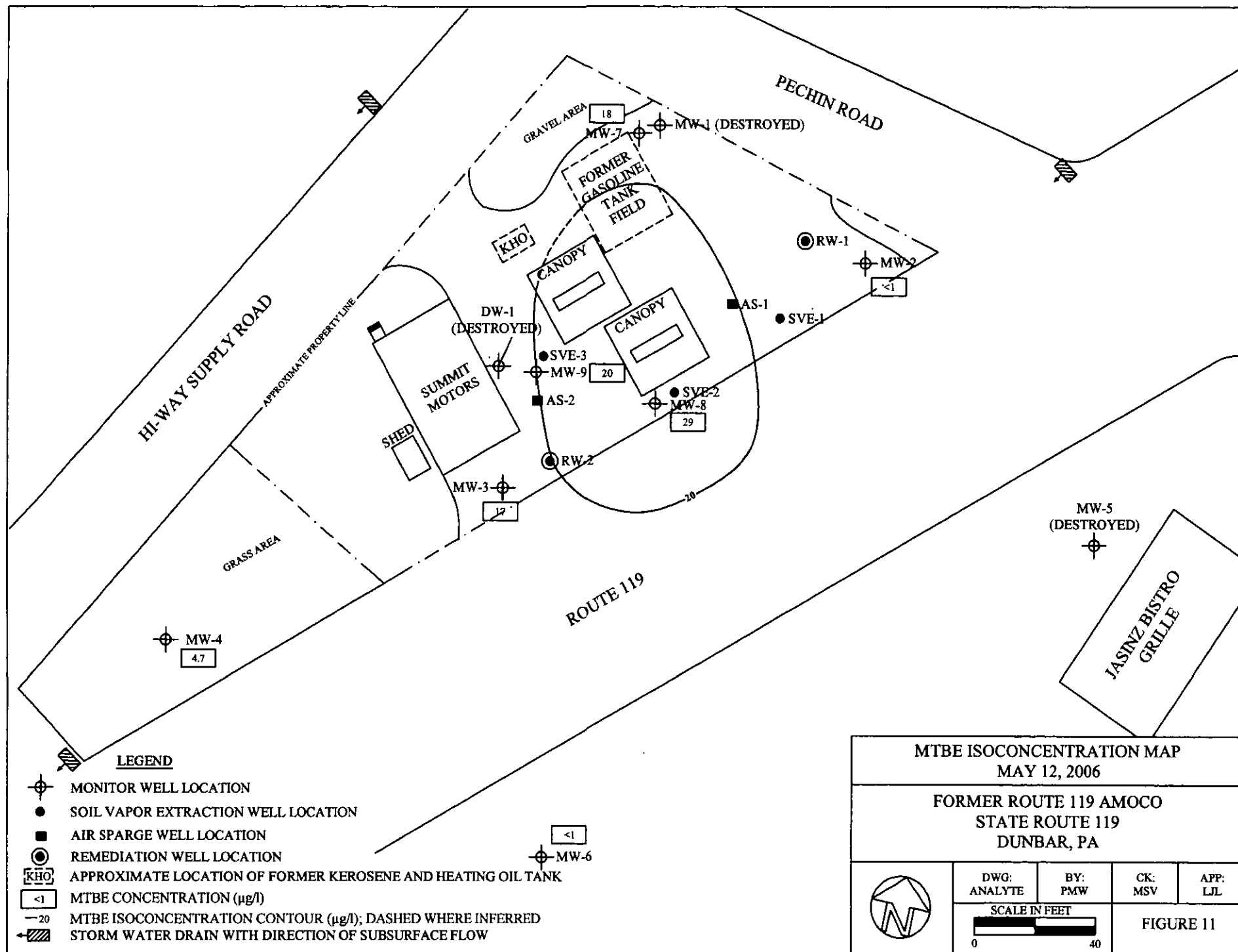


GROUNDWATER CONTOUR MAP MAY 12, 2006			
FORMER ROUTE 119 AMOCO STATE ROUTE 119 DUNBAR, PA			
	DWG: ANALYTE	BY: PMW	CK: MSV
			APP: LJL
			FIGURE 7









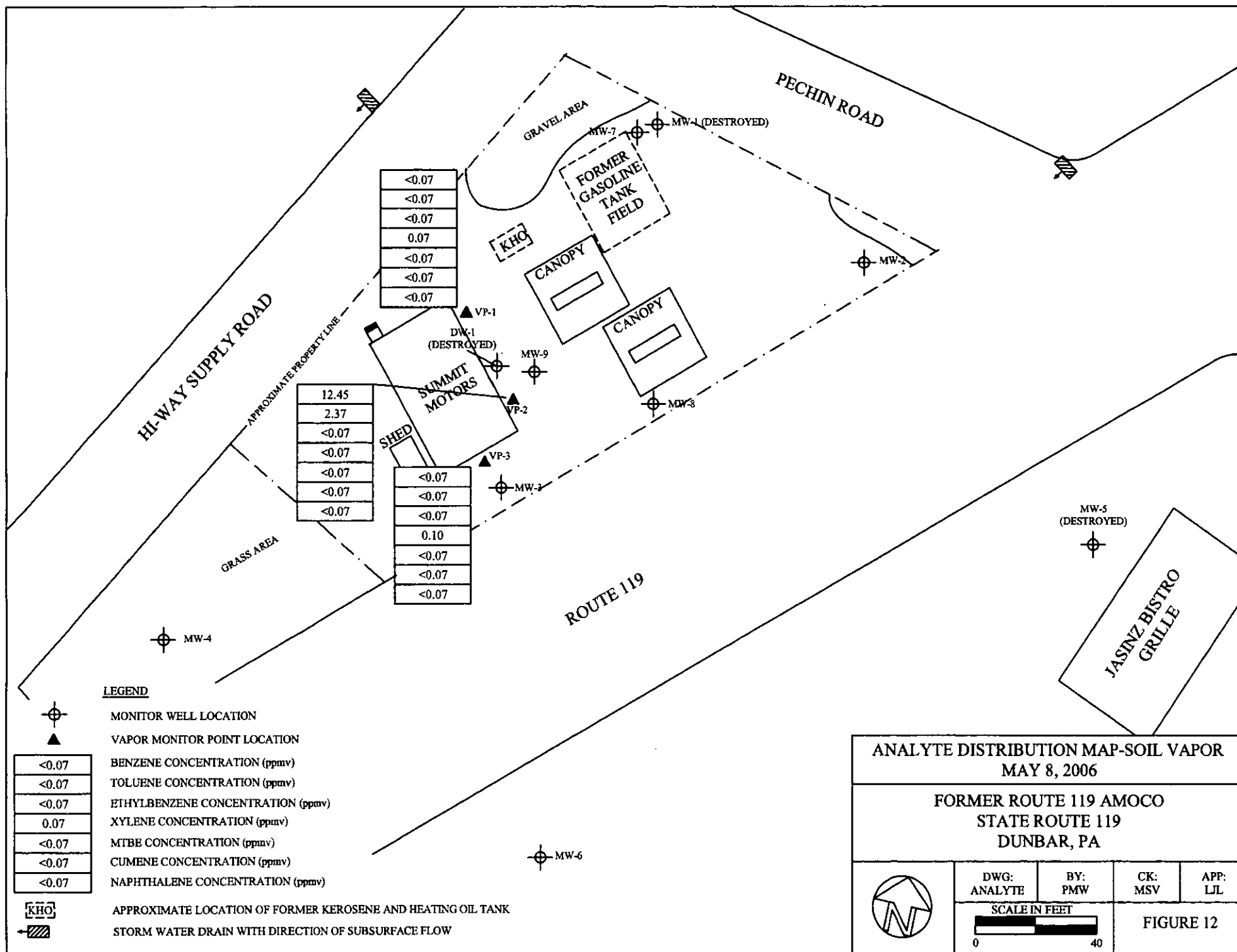
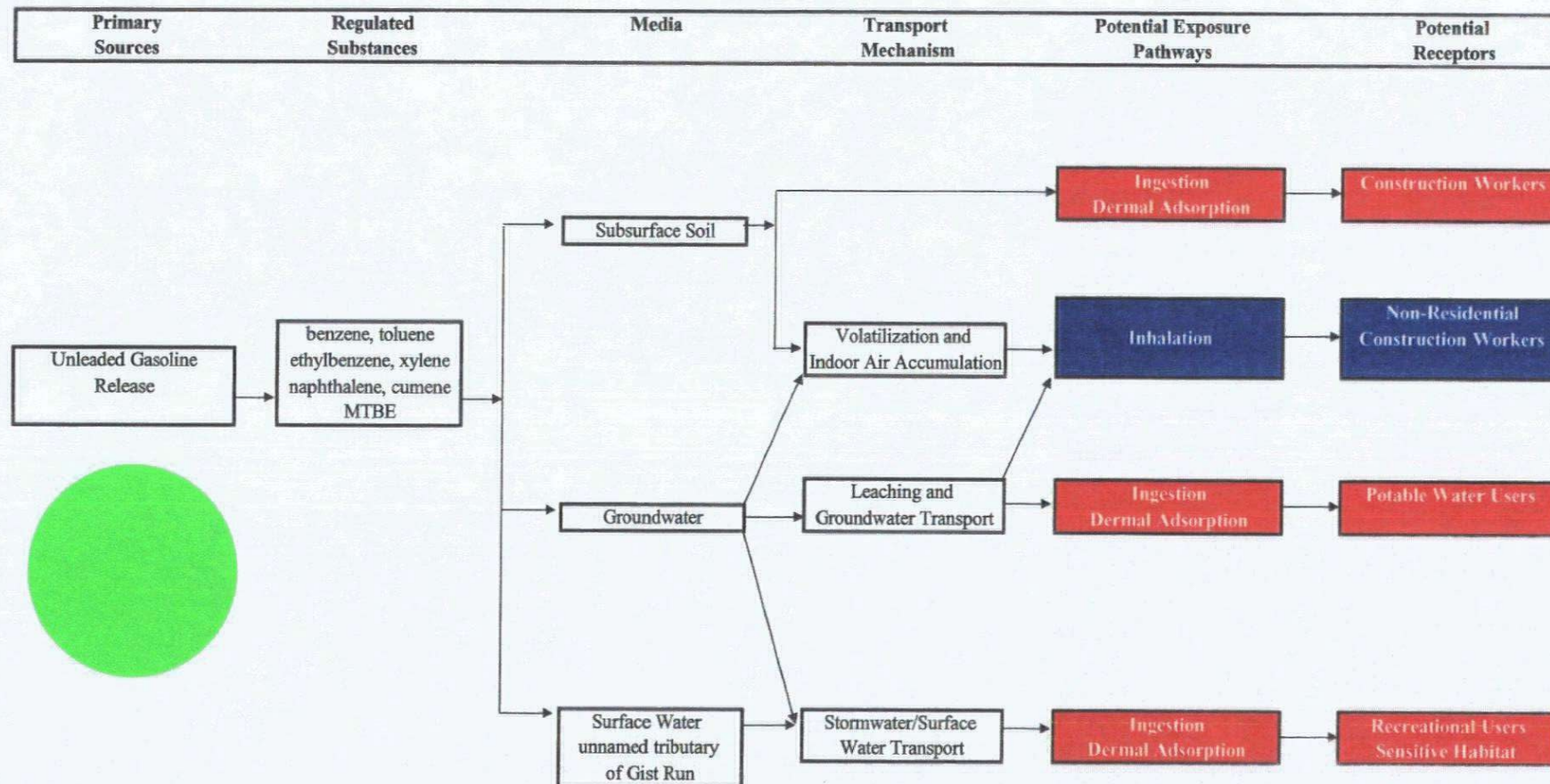


Figure 13
Former Rt. 119 Amoco
Conceptual Site Model



Notes:

Incomplete exposure pathways are indicated in Red
Potentially complete exposure pathways are indicated in Blue

APPENDIX A
Health and Safety Plan

SITE-SPECIFIC HEALTH AND SAFETY PLAN

FORMER ROUTE 119 AMOCO
STATE ROUTE 119
DUNBAR, PENNSYLVANIA 15431

LETTERLE & ASSOCIATES, LLC

**SITE-SPECIFIC HEALTH AND SAFETY PLAN
FOR
FORMER ROUTE 119 AMOCO
STATE ROUTE 119
DUNBAR, PENNSYLVANIA 15431**

EMERGENCY PHONE NUMBERS

Emergency Hotline	911
Local Police Connellsville Police Department	724-628-2020
Local Fire Dunbar Fire Department	724-277-0207
Local Rescue Rescue 14 Ambulance Service	724-523-5609
Local Hospital Name, Number, and Address:	Highlands Hospital 401 E Murphy Ave Connellsville, PA 15425 724-626-2335

Map and directions to hospital attached.

National Response Center	1-800-424-8802
Poison Control Center	1-800-682-9211
Letterle & Associates, LLC	412 486-0600
<u>Louis J. Letterle</u> President	Business: 412-486-0600
<u>George Hunzeker</u> Health and Safety Officer	Business: 724-486-0600 Home: 724-443-8492
<u>Tim and Michelle Shell.</u> Client	724-438-8472
<u>Ms. Amy Kemerer - PADEP</u> State Agency Representative	412-442 4000

**DO NOT TRANSPORT SERIOUSLY INJURED
CALL 911 or LOCAL RESCUE**

ATTACHMENT A

Hospital Route Map

1. Start at **1809 UNIVERSITY DR[US-119], DUNBAR** going toward **HIWAY**
SUPPLY RD - go **0.3 mi**
2. Make a U-turn at **EIGHTY ACRES RD** onto **UNIVERSITY DR[US-119]** - go **2.3 mi**
3. Continue to follow **US-119 NORTH** - go **3.3 mi**
4. Turn **R** on **N PITTSBURGH ST** - go **0.2 mi**
5. Turn **L** on **E MURPHY AVE** - go **0.1 mi**
6. Arrive at **401 E MURPHY AVE, CONNELLSVILLE**

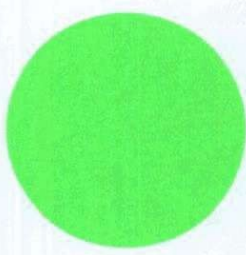
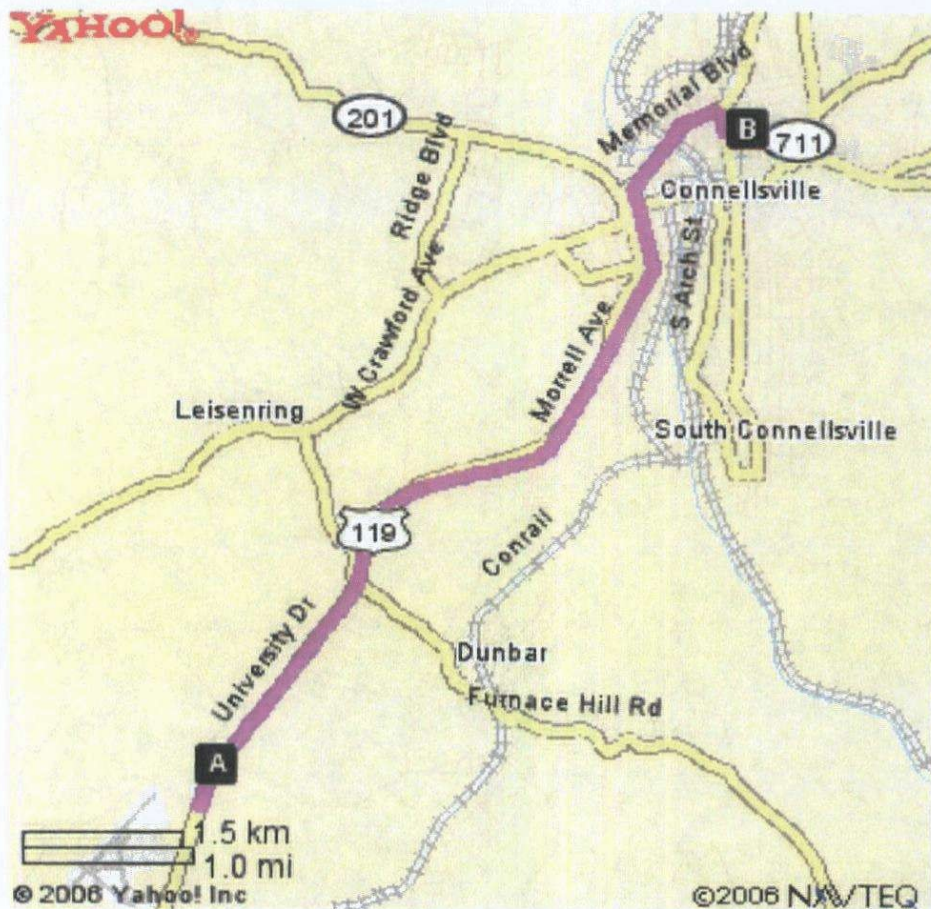


TABLE OF CONTENTS

Emergency Contacts/Telephone Numbers

Hospital Map ATTACHMENT A

Table of Contents

1. Site Description	1
2. Description of Tasks to Be Performed	2
3. Employee Training Requirements	3
4. Medical Monitoring	3
5. First Aid	3
6. Site Control Measures	3
7. Decontamination Procedures	3
8. Emergency Procedures	4
9. Site Operation General SOP's	6
10. General Hazard Evaluation	6
11. General Personal Protection Requirements	9

ATTACHMENTS

ATTACHMENT B	Site Maps
ATTACHMENT C	Job Safety Analysis Sheets and Daily Site Safety Checklists
ATTACHMENT D	Material Safety Data Sheets
ATTACHMENT E	Pre-Entry Meetings Notes
ATTACHMENT F	Sign Off Sheet

Plan Preparation, Review and Approval

Prepared By: Peter Weir

Date: 11/02/05

Reviewed By: Mark Valenty

Date: 11/02/05

Approved By: Louis Letterle

Date: 11/02/05

Last Revision Date: 09/11/06

1. SITE DESCRIPTION

Project Name Former Route 119 Amoco

Site Address 1809 University Drive

Nearest Intersection Route 119 and Highway Supply Road

Township/ Municipality Dunbar

County Fayette

Additional Site Info Site is currently a used-car dealership.

Utility Markout

			Markout Number	Date
<u>Yes</u>	No	NA	<u>Peter Weir</u>	<u>5/2/06</u>
Yes	No	NA		
Yes	No	NA		
Yes	No	NA		
Yes	No	NA		
Yes	No	NA		
Yes	No	NA		
Yes	No	NA		
Yes	No	NA		
Yes	No	NA		

Key Project Personnel:

<u>Responsibility</u>	<u>Name</u>	<u>Task Description</u>
Project Manager	<u>Dave Martincek</u>	Oversee and coordinate all budget aspects for the project.
Site Safety Officer	<u>Eric Itle</u>	Coordinate and inspect all health and safety operations from the project site.
Field Team Leader	<u>Eric Itle</u>	Oversee and coordinate all environmental aspects from the project site.

2. BRIEF DESCRIPTION OF TASKS TO BE PERFORMED

Task 1- Installation of Groundwater Monitoring Wells

Task 2- Soil and Groundwater Sampling

Task 3- Monitor Well Survey

Task 4- Slug Testing

Task 5- _____

3. EMPLOYEE TRAINING REQUIREMENT

All personnel performing activities covered by this plan must be trained in accordance with the requirements of 29 CFR 1910.120(e). This includes initial 40 hour HAZWOPER plus three days supervised on-site training, refresher and manager training courses as appropriate. Subcontractors chosen to perform well drilling, excavation, materials disposal, utility installation in trenches, and any other site activities where the potential exists for contact with contaminants must provide written documentation of such, for each of his employees who will be involved in activities at this site, before the start of work.

4. MEDICAL MONITORING

All personnel performing activities covered by this plan must be active participants in a ongoing medical monitoring program in accordance with the requirements of 29 CFR 1910.120(f). Subcontractors chosen to perform selected site activities must provide written documentation of such, for each employee who will be involved in activities at this site, before the start of work.

5. FIRST AID

For field activities involving three or more Letterle & Associates (Letterle) personnel, at least one employee shall be trained in the performance of standard first aid and adult CPR.

6. SITE CONTROL MEASURES

A controlled work area should be established in the immediate vicinity of the site activities covered by this plan. Only those persons who can comply with the requirements of this plan should be allowed into this area during work activities that may result in exposure to the hazards associated with the specific task being performed. The work site should be marked off with traffic cones, caution tape, etc., as appropriate. For the purpose of this plan, the following definition of terms is provided.

- | | |
|------------------------|--|
| Exclusion Zone - | The immediate area (30 foot diameter) of the wok activity to be performed or an area fully enclosing the hazards present, whichever is greatest. |
| Decontamination Zone - | The area where decontamination takes place. |
| Support Zone - | The uncontaminated area where exposure to hazardous conditions is not anticipated. |

7. DECONTAMINATION PROCEDURES

At a minimum, the procedures outlined shall be followed for decontamination (decon):

- Remove gross contamination from tools, respirator, monitoring equipment, boots, etc., prior to leaving the "exclusion zone" using water, paper towels, etc.

- Completely decon soiled equipment in the decon zone using detergent and water and dispose of all cleaning materials as follows.
 1. Due to the small quantity of waste generated during decon, it is allowable in most states to dispose of lightly contaminated materials in the site dumpster. It is important however, to ensure that there is no chance of vapor generation or fluid leaking from the dumpster. At no time are materials containing free product to be disposed of in this manner. In this case, arrangements must be made for use of labeled drums and proper disposal.
 2. All decon materials including protective sheeting, rags, sorbents, disposable PPE, and decon fluids should be carefully screened with an OVA/OVM prior to disposal to determine relative levels of contamination.
 3. Lightly contaminated decon fluid should be treated via the site treatment system prior to discharge to the sanitary sewer system. Highly contaminated decontamination fluid must be stored in labeled drums and proper disposal arrangements must be made.
 4. Prior to site entry, consult the appropriate state environmental agency for confirmation of the applicability of the practices.
- Dispose of contaminated gloves, Tyvek suits, used cartridges, paper towels, etc., by placing in a plastic bag and discarding in accordance with applicable standards.
- Wash hands and face thoroughly with soap and water before lunch or coffee breaks, and as soon as practical after finishing work for the day.
- Shower as soon as possible.

8. EMERGENCY PROCEDURES

Personal Injury Within Exclusion Zone

Site operations shall be temporarily halted and all site personnel shall assemble in the Decon Zone. The Site Safety Officer shall evaluate the nature of the injury and, if indicated by the hazards present on site, the injured person shall be decontaminated to the extent possible prior to movement to Support Zone.

Contact shall be made for an ambulance and with the designated medical facility (if required). An individual certified in Standard First Aid and Adult CPR may choose to initiate the appropriate first aid. No person shall re-enter the Exclusion Zone until the cause of the injury or symptoms are determined and appropriate revisions are made to this plan.

Personal Injury Within the Decontamination Zone

The Site Safety office shall evaluate the nature of the injury and, if indicated by the hazards present on site, the injured person shall be decontaminated to the extent possible prior to movement to the Support Zone.

Contact shall be made for an ambulance and with the designated medical facility (if required). An individual certified in Standard First Aid and Adult CPR may choose to initiate the appropriate first aid.

If the injury increases risk to other site workers, all site personnel shall move to the Decontamination Zone and site activities will stop until the risks can be assessed and either removed or minimized.

Personal Injury Within the Support Zone

The Site Safety Officer will assess the nature of the injury and determine if the cause of the injury or loss of the injured person will affect continuation of site operations. If the injury will not affect the safety or performance of other site workers, operations may continue, with the person certified in first aid initiating the appropriate first aid and necessary follow up as stated above.

If the injury increases the risk to other site workers, all site personnel shall move to the decon zone and site activities will stop until the risks can be assessed and either removed or minimized.

Fire/Explosion

Upon notification of a fire or explosion on site, the designated emergency signal, three whistle blows shall be sounded and all site personnel assembled in the Decon Zone of the site. The fire department shall be alerted and all personnel moved to a safe distance from the involved area.

Personal Protective Equipment Failure

If any site worker experiences a failure or alteration of protective equipment that affects the protection factor, that person and his buddy, if applicable, shall immediately leave the Exclusion Zone. Re-entry shall not be permitted until the equipment has been repaired or replaced

Equipment Failure

If any other equipment on site fails to operate properly, the Site Safety Officer shall be notified and then determine the effect of the failure on continuing operations. If the failure will affect the safety of personnel, all personnel shall leave the Exclusion Zone until the situation is evaluated and appropriate actions are taken.

In all situations, when an on site emergency results in evacuation of the Exclusion Zone, personnel shall not re-enter until:

1. The conditions resulting in the emergency have been corrected.
2. The hazards have been reassessed.
3. The Site Safety Plan has been reviewed; and
4. Site personnel have been briefed on any changes in the Site Safety Plan.

9. SITE OPERATION GENERAL SOPs

The following are the required general site operation procedures:

- The Occupational Safety & Health Administration (OSHA) has established permissible exposure limits (PEL) for gasoline. The OSHA recommended 8-hour time-weighted average (TWA) and 15-minute short-term exposure limits (STEL) are 300 and 500 parts per million (PPM), respectively.
- Before daily site operation begins with two or more personnel or sub-contractors, a pre-entry briefing will be held to review the site's health and safety plan concerns and emergency procedures. This meeting will be registered in this health and safety plan. Attendance will be documented.
- One site worker will be assigned to keep the daily log for all health and safety specific site activities, unless otherwise noted
- Steel-toe / steel shank safety boot will be worn by all personnel entering the Decon and Exclusion Zones. Hard hats will be worn when working on anything above head height or working near heavy equipment.
- Eye protection will be worn when there is a potential for airborne hazards
- Possession or consumption of alcohol or illegal substances on the job site during hours of site operations is strictly prohibited.
- Food and/or beverages are not permitted in the site's Exclusion or Decon Zones.
- Smoking is not permitted in the site's Exclusion or Decon Zones. Smoking is permitted in the Support Zone. No smoking is permitted on active service stations.
- A change in level of protection will be based on air monitoring equipment readings taken in the breathing zone
- Field personnel will use air monitoring equipment and not their nose to determine site contamination. Odors detected during the course of standard operating procedures, however, should be noted in the daily log.

Separate Health and Safety Plans will be developed for Level A/Level B investigations and for Emergency Responses, which may involve the use of Level A and/or Level B health and Safety Measures.

10. GENERAL HAZARD EVALUATION

Materials of Concern

- Gasoline Irritant to skin, Flammable, Combustible. If ingested, induce nausea and vomiting.

Operational Hazards

Petroleum Hydrocarbons (liquid and vapors)

- Eye protection is to be worn when the potential for groundwater to splash is present
- Respirators may be necessary, in accordance with action levels
- Nitrile sampling gloves are to be worn when handling free-phase product
- Be aware of potential vapors when opening recovery wells and product storage tanks.
- Use nitrile glove when changing filters and dispose of properly

Slip/Trip/Fall/Cuts

- Be aware of open manholes
- Take caution when removing manhole covers
- Use caution tape and barricade fencing when warranted.
- Use caution when cutting pipe
- Watch for piping and water on shed floors
- Be cautious of pressure released when changing filters

Excessive Noise

- Use hearing protection during loud mechanical operations
- Use hearing protection inside remedial shed when equipment is operating loudly.

Airborne Particulate

- Eye protection is to be worn when using power equipment and heavy equipment.
- Respiratory protection is to be worn when site activities cause excessive particulates, and when performing carbon changeouts.

On-site traffic

- Safety vests shall be worn and safety cones placed around the work site.

Ladder Safety

- Ladder must be inspected prior to use. Any damaged ladder will be discarded immediately.
- Painted ladders are forbidden.
- Never stand on the top step of the ladder.
- Extension ladders must extend 36" beyond the work area.
- Pitch ladders at a 4:1 ratio.
- Extension and straight ladders must be tied off.
- Fall protection must be worn when dealing with high pressure air and steam.

Air Compressor

- Eye protection will be worn when dealing with high-pressure air and steam.
- Hot steam will burn skin upon contact.

Power Tools

- Equipment will be inspected for defects prior to use.
- Shielding or guarding will be in effect if applicable.

Electrical

- Inspect all electrical equipment and extension cords prior to use.
- Equipment producing sparks is not to be used in operating remedial system sheds.
- Lockout/Tagout procedures will be in effect if equipment is to be repaired.
- Use three pronged plugs and extension cords.
- Use ground-fault circuit interrupters as required.

Back Strain

- Utilize proper lifting procedures when loading and unloading heavy equipment.
- Bend down at the knees rather than bending the back.
- Use mechanical lifting device or a lifting aid where appropriate.

Pedestrian Traffic

- Be aware of curious and naïve bystanders who may interfere with the task at hand.
- No one is permitted in the Exclusion or Decontamination Zones without the proper PPE equipment.

Heat Stress

- Know and recognize the signs and symptoms of heat-related illnesses.
- Adjust work schedules to provide time intervals for intake of juice, juice products and water in an area free from contamination.

Cold Stress

- Know and recognize the signs and symptoms of cold-related illnesses.
- Have appropriate clothing available to protect against cold weather.
- Adjust work schedules to provide sufficient rest periods in a heated area for warming up during operations conducted in cold weather.

11. GENERAL PERSONAL PROTECTION REQUIREMENTS

Respiratory Protection

- Level D No respiratory protection is necessary during on-site activities. Monitoring of the zone using an OVA/OVM will be performed during field activities.
- Level C If warranted by monitoring, use of a half-face or full-face, negative pressure, air purifying respirator equipped with GHC-H combination cartridges. All site personnel must be fit tested prior to performing site work.

Action Levels

For sustained readings in the breathing zone (10 minutes) above background levels of;

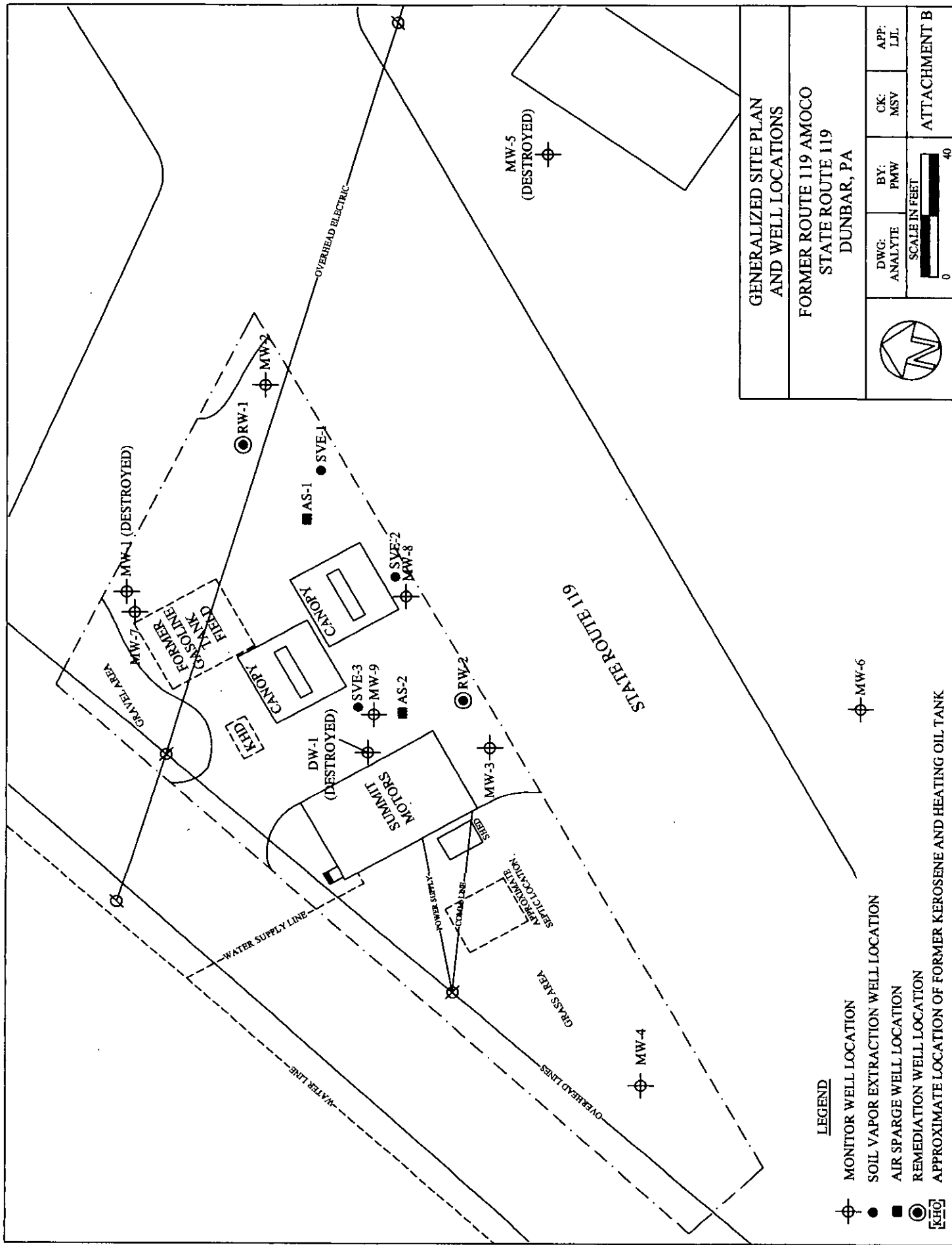
- 0-5 ppm remain in Level D.
- 5-50 ppm upgrade to half-face air purifying respirator with organic vapor cartridges.
- 50-250 ppm upgrade to full-face air purifying respirator with organic vapor cartridges.
- >250ppm Discontinue work and notify Project Manager and Health and Safety Officer.

Protective Clothing Available for Level C and D Protection

- Tyvek Coveralls (coated and uncoated)
- Hearing Protection
- Work Gloves
- Safety Glasses
- Steel Toe/Steel Shank Boots
- Hard Hat
- Disposable Outerboots
- Face Shields (optional)
- Nitrile Gloves with inner liners

ATTACHMENT B

Site Map



STATE ROUTE 119

MW-6

MW-4

MW-5 (DESTROYED)

MW-3

RW-2

SVE-2

MW-8

AS-1

SVE-1

RW-1

MW-1

MW-7

MW-1 (DESTROYED)

DW-1 (DESTROYED)

AS-2

SVE-3

MW-9

SUMMIT MOTORS

REBS

APPROXIMATE LOCATION OF FORMER KEROSENE AND HEATING OIL TANK

GRASS AREA

WATER SUPPLY LINE

WATER LINE

OVERHEAD ELECTRIC

GRAVEL AREA

FORMER GASOLINE TANK

KHD

CANOPY

CANOPY

CANOPY

ATTACHMENT C

Job Safety Analysis Sheets and Daily Site Safety Checklists

DAILY SITE SAFETY CHECKLIST

Task performed:

☐ GW Sampling
☐ Liquid level Gauging
☐ Carbon Changeout
☐ Soil Vapor Extraction
☐ other

___ Pump test _____
 ___ Product Bailing _____
 ___ Dewatering _____
 ___ O & M _____

This check list is to be completed on a daily basis. The date should be noted in the space provided. The employee completing the checklist should verify that each item is correct and initial in the last space provided.

Date _____

1. Proper training certificates have been obtained from subcontractors.
 2. The site specific HASP has been reviewed by all personnel.
 3. The daily site-safety meeting has been conducted.
 4. Fire extinguishers are available for use and are fully charged.
 5. A fully stocked first aid bottle is available.
 6. Any potential tripping hazards have been removed.
 7. All vessels containing flammable material are properly labeled.
 8. Proper PPE equipment is being used for current conditions.
 9. All Equipment on-site is in safe working order.
 10. Safety cones or barricades have been utilized to mark out work area.
 11. No person on-site has the appearance of being under the influence of a motor skills altering substance.
 12. All workers on-site are clothed in an appropriate manner.
 13. Electrical power tools shall be properly grounded using a GFCI.
- I verify that the above information is correct:

[illegible]

ATTACHMENT D
Material Safety Data Sheets

MATERIAL SAFETY DATA SHEET

MSDS Number: 51162M - 22

24 Hour Emergency Assistance: CHEMTEL (877) 276-7283

General Assistance Number: (877) 276-7285

SECTION 1

PRODUCT IDENTIFICATION

MATERIAL IDENTITY: Premium Unleaded Gasoline (Conventional, CARB and RFG)

PRODUCT CODES: 00318, 00319, 00335, 00361, 00364, 01003, 01005, 01099, 01133, 01134, 01137, 01142, 01143, 01146, 01147, 01167, 01446, 01447, 01450, 01451, 01461, 01526, 02548, 02567, 02568, 02571, 02579, 02581, 02590, 02592, 02593, 02617, 02760, 02763, 02764, 06024, 07443, 07444, 07610, 07616, 07627, 07650, 07675, 07676, 07685, 07696, 08615, 08616, 26640, 26641, 26642, 26643, 26645, 26646, 26647, 26648, 26649, 26658, 26659, 26665, 26670, 26759, 26762, 26805, 26806, 26812, 26816, 26818, 26831, 26833, 26853, 26857, 26926, 26927, 27022, 27024

COMPANY ADDRESS: Motiva Enterprises LLC, P.O. Box 4540, Houston, TX. 77210-4540

SECTION 2

PRODUCT/INGREDIENTS

INGREDIENTS

CAS#

CONCENTRATION

Gasoline (Conventional, CARB and RFG)	Mixture	100	%volume
Miscellaneous Hydrocarbons	Mixture	0 - 50	%volume
Xylene, mixed isomers	1330-20-7	0 - 25	%volume
Toluene	108-88-3	0 - 25	%volume
1,2,4-Trimethyl Benzene (Pseudocumene)	95-63-6	0 - 5	%volume
Styrene	100-42-5	0 - 4	%volume
Benzene	71-43-2	0 - 4	%volume
Ethyl Benzene	100-41-4	0 - 3	%volume
Hexane	110-54-3	0 - 3	%volume
Cyclohexane	110-82-7	0 - 1	%volume
Naphthalene	91-20-3	0 - 1	%volume
Methyl Tert-Butyl Ether (MTBE)	1634-04-4	0 - 15	%volume
Ethyl Tert-Butyl Ether (ETBE)	637-92-3	0 - 18.5	%volume
Tert-Amyl Methyl Ether (TAME)	994-05-8	0 - 18.6	%volume
Diisopropyl Ether (DIPE)	108-20-3	0 - 2	%volume

NOTE: Content of Gasoline components will vary; Individual components may be present from trace amounts up to the maximum shown.

SECTION 3

HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance & Odor: Bronze color, clear & bright liquid. Hydrocarbon odor.

Health Hazards: May be harmful or fatal if swallowed. Do not induce vomiting. May cause aspiration pneumonia. May cause CNS depression.

Physical Hazards: Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

Hazard Rating: Least - 0 Slight - 1 Moderate - 2 High - 3 Extreme - 4

Inhalation:

May cause irritation to the nose, throat and respiratory tract. Breathing of high vapor concentrations may cause CNS depression, evidenced by dizziness, light-headedness, headache, nausea, drowsiness, and loss of coordination. Continued inhalation may result in unconsciousness.

Eye Irritation:

May be irritating to the eyes causing a burning sensation, redness, swelling and/or blurred vision.

Skin Contact:

May be irritating to the skin causing a burning sensation, redness and/or swelling. Prolonged or repeated skin contact can cause defatting and drying of the skin which may result in a burning sensation and a dried, cracked appearance.

Ingestion:

This material may be harmful or fatal if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Generally considered to have a low order of acute oral toxicity.

Other Health Effects:

Carcinogenic in animal tests. Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant. It is probable that the material causes cancer in laboratory animals. Material may adversely effect male reproductive performance based on testing in laboratory animals.

This material and/or components may cause the following effects:

Developmental Toxicity, Genotoxicity, Immunotoxicity, Reproductive Toxicity

Primary Target Organs:

The following organs and/or organ systems may be damaged by overexposure to this material and/or its components.

Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver, Nervous System

Signs and Symptoms:

Irritation as noted above. Aspiration pneumonitis may be evidenced by coughing, labored breathing and cyanosis (bluish skin); in severe cases death may occur. Damage to blood-forming organs may be evidenced by: a) easy fatigability and pallor (RBC), b) decreased resistance to infection (WBC effect), c) excessive bruising and bleeding (platelet effect). Kidney damage may be indicated by changes in urine output or appearance, pain upon urination or in the lower back or general edema (swelling from fluid retention). Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye color), fatigue and sometimes pain and swelling in the upper right abdomen.

For additional health information, refer to section 11.

SECTION 4 FIRST AID MEASURES**Inhalation:**

Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin:

Remove contaminated clothing. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye:

Flush eyes with large amounts of water for at least 15 minutes. If redness, burning, blurred vision or swelling persist, transport to nearest medical facility for additional treatment.

Ingestion:

DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Note to Physician:

If more than 2.0ml/kg body weight has been ingested and vomiting has not occurred, emesis should be induced with supervision. Keep victim's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions, or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

SECTION 5 FIRE FIGHTING MEASURES

Flash Point [Method]: -40 °F/-40 °C [Tagliabue Closed Cup]

Flammability in Air: 1.3 - 7.6 %volume

Extinguishing Media:

Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

Fire Fighting Instructions:

DANGER! EXTREMELY FLAMMABLE. Clear fire area of all non-emergency personnel. Only enter confined fire space with full bunker gear, including a positive pressure, NIOSH-approved, self-contained breathing apparatus. Cool surrounding equipment, fire-exposed containers and structures with water. Container areas exposed to direct flame contact should be cooled with large quantities of water (500 gallons water per minute flame impingement exposure) to prevent weakening of container structure.

Unusual Fire Hazards:

Vapors are heavier than air accumulating in low areas and traveling along the ground away from the handling site. Do not weld, heat or drill on or near container. However, if emergency situations require drilling, only trained emergency personnel should drill.

SECTION 6 ACCIDENTAL RELEASE MEASURES**Protective Measures:**

DANGER! EXTREMELY FLAMMABLE! Eliminate potential sources of ignition. Handling equipment must be bonded and grounded to prevent sparking.

Spill Management:

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

Reporting:

CERCLA: Product is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) petroleum exclusion. Releases to air, land, or water are not reportable under CERCLA (Superfund).

CWA: This product is an oil as defined under Section 311 of EPA's Clean Water Act (CWA). Spills into or leading to surface waters that cause a sheen must be reported to the National Response Center, 1-800-424-8802.

SECTION 7 HANDLING AND STORAGE**Precautionary Measures:**

Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet. Launder

contaminated clothing before reuse. Properly dispose of contaminated leather articles such as shoes or belts that cannot be decontaminated. Avoid heat, open flames, including pilot lights, and strong oxidizing agents. Use explosion-proof ventilation to prevent vapor accumulation. Ground all handling equipment to prevent sparking. Do not siphon gasoline by mouth; harmful or fatal if swallowed. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

For use as a motor fuel only. Do not use as a cleaning solvent or for other non-motor fuel uses.

Handling:

Surfaces that are sufficiently hot may ignite liquid material. Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

Keep containers closed when not in use. **WARNING!** The flow of gasoline through the pump nozzle can produce static electricity, which may cause a fire if gasoline is pumped into an ungrounded container. To avoid static buildup, place approved container on the ground. Do not fill container in vehicle or truck bed. Keep nozzle in contact with container while filling. Do not use automatic pump handle (latch-open) device. Turn off all battery operated portable electronic devices (examples include: cellular phones, pagers and CD players) before operating gasoline pump. Use only with adequate ventilation.

Storage:

Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures.

Keep liquid and vapor away from heat, sparks and flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors have dissipated. Use explosion-proof ventilation to prevent vapor accumulation while in use.

Container Warnings:

Keep containers closed when not in use. Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical	Limit	TWA	STEL	Ceiling	Notation
Benzene	ACGIH TLV	0.5 ppmv	2.5 ppmv		Skin
Benzene	OSHA PEL	1 ppmv	5 ppmv		
Cyclohexane	ACGIH TLV	300 ppmv			
Cyclohexane	OSHA PEL	300 ppmv			
Ethyl Benzene	ACGIH TLV	100 ppmv	125 ppmv		
Ethyl Benzene	OSHA PEL	100 ppmv			
Ethyl Benzene	OSHA PEL - 1989(revoked)	100 ppmv	125 ppmv		
Gasoline	ACGIH TLV	300 ppmv	500 ppmv		
Gasoline	OSHA PEL - 1989(revoked)	300 ppmv	500 ppmv		
Isopropyl ether	ACGIH TLV	250 ppmv	310 ppmv		
Isopropyl ether	OSHA PEL	500 ppmv			
Methyl T-Butyl Ether	ACGIH TLV	40 ppmv			
N-Hexane	OSHA PEL	50 ppmv			
N-Hexane	OSHA PEL - 1989(revoked)	50 ppmv			
Naphthalene	ACGIH TLV	10 ppmm	15 ppmm		
Naphthalene	OSHA PEL	10 ppmv			
Naphthalene	OSHA PEL - 1989(revoked)	10 ppmv	15 ppmv		
Styrene	ACGIH TLV	20 ppmv	40 ppmv		
Styrene	OSHA PEL	100 ppmv		200 ppmv	

Styrene	OSHA PEL - 1989(revoked)	50 ppmv	100 ppmv		
Styrene, monomer	SHELL PEL - 1989(revoked)	50 ppmv	100 ppmv		Embryo-Fetus Policy
Toluene	ACGIH TLV	50 ppmv			Skin
Toluene	OSHA PEL	200 ppmv		300 ppmv	
Toluene	OSHA PEL - 1989(revoked)	100 ppmv	150 ppmv		
Toluene	SHELL SIS	50 ppmv			
Trimethyl Benzene	ACGIH TLV	25 ppmv			
Trimethyl Benzene	OSHA PEL - 1989(revoked)	25 ppmv			
Trimethyl Benzene	SHELL PEL - 1989(revoked)	25 ppmv			
xylene (o-, m-, p- isomers)	OSHA PEL	100 ppmv			
xylene (o-, m-, p- isomers)	OSHA PEL - 1989(revoked)	100 ppmv	150 ppmv		
Xylene (o-, m-, p-isomers)	ACGIH TLV	100 ppmv	150 ppmv		

Exposure Controls

Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.

Personal Protection

Personal protective equipment (PPE) selections vary based on potential exposure conditions such as handling practices, concentration and ventilation. Information on the selection of eye, skin and respiratory protection for use with this material is provided below.

Eye Protection:

Chemical Goggles - If liquid contact is likely.

Skin Protection:

Use protective clothing which is chemically resistant to this material. Selection of protective clothing depends on potential exposure conditions and may include gloves, boots, suits and other items. The selection(s) should take into account such factors as job task, type of exposure and durability requirements.

Published literature, test data and/or glove and clothing manufacturers indicate the best protection is provided by: Neoprene, or Nitrile Rubber, or Polyvinyl Alcohol (PVA)

Respiratory Protection:

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Types of respirator(s) to be considered in the selection process include:

Supplied-Air Respirator. Air-Purifying Respirator for Organic Vapors. Self-contained breathing apparatus.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Bronze color, clear & bright liquid. Hydrocarbon odor.

Substance Chemical Family: Hydrocarbon

Flammability in Air	1.3 - 7.6 %volume	Flash Point	-40 °F [Tagliabue Closed Cup]
Freezing Point	-72 °F	Solubility (in Water)	Negligible
Specific Gravity	0.72 - 0.76	Stability	Stable
Vapor Density	3.5	Vapor Pressure	7 - 14.5 psia [Reid]
Viscosity	< 1.4 cSt Typical @ 100 °F	Volatility	100 %volume

SECTION 10

REACTIVITY AND STABILITY

Stability:

Material is stable under normal conditions.

Conditions to Avoid:

Avoid heat, sparks, open flames and other ignition sources.

Materials to Avoid:

Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products:

Thermal decomposition products are highly dependent on combustion conditions. A complex mixture of airborne solids, liquids and gases will evolve when this material undergoes pyrolysis or combustion. Aldehydes, Carbon Monoxide, Carbon Dioxide, Peroxide, Styrene oxide and other unidentified organic compounds may be formed upon combustion.

SECTION 11

TOXICOLOGICAL INFORMATION

Acute Toxicity

TEST	Result	OSHA Classification	Material Tested
Dermal LD50	>2 g/kg(Rabbit)	Non-Toxic	Based on similar material(s)
Eye Irritation	Moderate to Severe Irritation [Human]	Irritating	Based on similar material(s)
Oral LD50	>5 g/kg(Rat)	Non-Toxic	Based on similar material(s)
Skin Irritation Draize	0.98 [Rabbit, 24 HOUR(S)]	Irritating	Based on similar material(s)

Carcinogenicity:

Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant.

Carcinogenicity Classification

Chemical Name	NTP	IARC	ACGIH	OSHA
Gasoline (Conventional, CARB and RFG)		Possible Carcinogen (2B)	A3	Yes
Benzene	Yes	Carcinogen (1)	A1	Yes
Ethyl Benzene		Possible Carcinogen (2B)		
Methyl Tert-Butyl Ether (MTBE)			A3	
Naphthalene			A4	
Styrene		Possible Carcinogen (2B)	A4	

Toluene		Not Classifiable (3)	A4	
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Toxic Effects - Equiva Gasoline MSDS

Carcinogenicity	Chronic inhalation of wholly vaporized gasoline produced kidney tumors in male rats and liver tumors in female mice. The kidney tumors have been shown to develop through a unique mechanism involving Alpha-2u globulin. This protein is not present in humans making the kidney tumors irrelevant to potential human health risks. Origin of the female mouse liver tumors is less understood, leaving their significance for human risks uncertain. Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs, is associated with anemia (depletion of blood cells) and is linked to the later development of acute myelogenous leukemia (AML) in humans. A recent chronic bioassay of ethylbenzene by the NTP produced clear evidence of carcinogenicity in male rats based on kidney tumor increase. Other animal tumors possibly associated with ethylbenzene include testicular adenomas in male rats, kidney tumors in female rats, lung tumors in male mice and liver tumors in female mice. Toluene is not known to be mutagenic or carcinogenic although available human and experimental animal data are limited and insufficient to assess carcinogenic potential. Chronic inhalation of MTBE produced liver tumors in female mice and kidney tumors in male rats. These tumors are of questionable relevance to humans and further studies are being done to address their significance.
Cardiovascular System	While there is no evidence that workplace exposure to acceptable levels of toluene vapors (e.g., the TLV) have produced cardiac effects in humans, high concentrations may cause cardiac sensitization and sudden lethality has been reported from habitual sniffing of solvents or glue. Animal studies have confirmed the sensitizing effects. Sensitization may lead to fatal changes in heart rhythms. Hypoxia or injection of adrenalin-like agents may enhance this effect. Thickening of heart blood vessels has been reported in animals exposed to xylene.
Developmental Toxicity	Daily exposure of pregnant rats to unleaded gasoline vapor at concentrations up to 9000 ppm resulted in no detectable maternal or developmental toxicity. Numerous studies of benzene in experimental animals have failed to detect teratogenic effects (birth defects) even at doses of benzene toxic to the mothers. There is some evidence of fetal toxicity, but not malformations, in mice and rabbits exposed to 500 ppm and higher concentrations of benzene vapor during gestation. Ethylbenzene caused birth defects in rats but not rabbits at doses that produced toxic effects in the mothers. n-Hexane produced fetal toxicity, reduced fetal weight, in mice at maternally toxic doses. Developmental toxicity studies of xylenes showed embryolethal/toxic and teratogenic effects with maternal toxicity. Many case studies involving abuse during pregnancy implicate toluene as a developmental toxicant. Studies in laboratory animals have shown developmental effects comparable to those reported in humans, but the effects were generally associated with maternal toxicity. Exposing pregnant mice to maternally toxic MTBE levels greater than 1000 ppm produced adverse gestational and developmental effects including malformations. No developmental toxicity was seen in rabbits exposed to MTBE concentrations up to 8000 ppm. Birth defects in mice and fetotoxicity in both rats and mice were observed following maternally toxic TAME exposures. Exposure of pregnant rats to high concentrations of DIPE (3095 and 6745 ppm) by inhalation during pregnancy increased the frequency of rudimentary 14th ribs in the offspring. The effect was not seen following exposure to 430 ppm DIPE. The significance of this finding is not known.
Genotoxicity	Unleaded gasoline was tested for genetic activity in tests using microbial cells, cultured mammalian cells and rats (bone marrow) and was judged to be negative in every case. Benzene has been shown to be non-mutagenic or weakly mutagenic in a variety of in vitro (test tube) systems. It has, however, been found to cause other types of chromosome damage (micronuclei, chromosome breakage, non-dysjunctional events) in both laboratory animals and workers exposed to high doses of benzene. These effects appear to be related to one or more metabolites of benzene, possibly acting in combination. Benzene metabolites can also bind to proteins forming detectable complexes (adducts). There is limited evidence of binding to the genetic material (DNA) itself. The relationship of these effects to the causation of leukemia or tumors in experimental animals is unknown. Changes in chromosomes of lymphocytes have been identified in some studies of humans exposed to styrene. The significance of these changes is not known, and other such studies have produced negative results. Chromosomal breaks have been reported in the bone marrow cells of rats exposed to styrene by inhalation along with increased frequency of sister chromatid exchanges in alveolar macrophages, bone marrow cells and regenerating liver cells. Ethylbenzene was not mutagenic in a number of in vitro procedures. Naphthalene was negative in Ames mutagenicity and rat cell transformation assays. Cyclohexane and pseudocumene were also negative in Ames testing. Toluene was negative in the Ames assay and negative for chromosomal aberrations and sister-chromatid exchanges in human lymphocytes and in an in vitro test using hamster cells. Mouse lymphoma test results for toluene were inconclusive. MTBE was negative in several mutagenicity tests, but was positive in a mouse lymphoma test.
Blood/Blood Forming Organs	Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs and is associated with anemia (depletion of blood cells). Repeated exposure of rabbits to high cyclohexane vapor concentrations causes a slight increase in blood clotting time. Blood effects were seen in rats following prolonged and repeated oral exposure to a mixture of xylenes containing ethylbenzene.
Immunotoxicity	Various studies of workers exposed to high levels of benzene have found impairment of both humoral (antibody) and cellular immunity, most notably a decrease in levels of circulating leukocytes. Many of these exposures also involve other solvents and chemicals. Animal studies with high benzene doses have reported similar effects.

Kidney	Long-term Inhalation of wholly vaporized gasoline caused increased kidney weight and progressive nephropathy (tissue damage) in male rats. In rats exposed orally to a xylene mixture also containing ethylbenzene, males developed hyaline droplet changes and females showed evidence of early chronic nephropathy. Intentional abuse of toluene vapors by 'glue-sniffers' has been associated with damage to the kidneys. Long term inhalation of up to 8000 ppm MTBE vapor produced a chronic, progressive nephropathy (kidney damage) in male rats. This effect may be related to the accumulation of alpha-2u globulin and therefore specific to the male rat. (See Carcinogenicity) Increased kidney weights without evidence of tissue injury were reported in rats exposed to high, inhaled doses of TAME. Prolonged inhalation of DIPE (90 days or longer) increased kidney weights in both male and female rats. In male rats exposed to the highest concentration (7100 ppm) there was also evidence of microscopic changes (hyaline droplets) in the kidney tubules resembling those produced by exposure to gasoline.
Liver	Inhalation of gasoline vapor increased liver weights, urinary excretion of ascorbic acid, and hepatic enzyme activity in male rats. Liver weight increases were seen in rats dosed orally for 90 days with a xylene mixture also containing ethylbenzene. Reversible liver damage has been reported in persons exposed to toluene by solvent abuse. Liver weight increases without evidence of tissue injury were seen in rats exposed to greater than 500 ppm TAME by inhalation for four weeks. Prolonged inhalation of DIPE (90 days or longer) increased liver weights in both rats and rabbits. In rabbits and in male rats exposed to 7100 ppm there was also evidence of microscopic changes in the liver tissue.
Nervous System	Inhalation of MTBE vapors at high concentrations (above 800 ppm) induced reversible central nervous system depression in rats. Inhalation of TAME at concentrations greater than 250 ppm produced reversible sedation in rats and mice.
Neurotoxicity	Inhalation exposure to high n-hexane concentrations has resulted in peripheral neuropathy in rodents and also in human workers. Rats receiving prolonged and repeated exposure to high doses of xylene have shown hearing loss. Prolonged and repeated exposures to high toluene concentrations (mixed solvent) have resulted in hearing loss in laboratory animals. There have also been reports of hearing damage in humans overexposed to toluene and other solvents, however, these effects and their possible relationship to noise exposure remain uncertain. Intentional inhalation ('glue-sniffing') and resulting overexposure to toluene vapors has been linked to brain injury. Rats exposed repeatedly to high concentrations of styrene vapor also developed hearing deficits.
Reproductive Toxicity	Inhalation of high n-hexane concentrations resulted in testicular and epididymal lesions in laboratory animals. Animal studies on benzene have shown testicular effects and alteration in reproductive cycles.
Sensitization	Gasoline and component petroleum streams blended to produce it were tested in animal studies and found not to cause skin sensitization.
Systemic Toxicity	Studies on n-hexane in laboratory animals have shown mild, transitory effects on the spleen and blood (white blood cells) and evidence of nasal tract and lung damage. Chronic exposure to vapors of a mixture containing 50% pseudocumene (and possibly contaminated with benzene) caused decreased weight gain and blood changes (lymphopenia and neutrophilia), liver, lung, spleen, kidney, and bone marrow effects in rats. Microscopic changes in the lung, including congestion, hemorrhage, edema, exudation, and leukocyte infiltration were observed in rats and guinea pigs following acute inhalation of styrene. In fatally exposed animals, pulmonary congestion, edema, and necrosis of the kidney and liver were reported. Repeated exposure to high vapor concentrations of cyclohexane caused minor microscopic liver and kidney changes in rabbits. Laboratory animals exposed to prolonged and repeated doses of xylenes by various routes have shown effects in liver, kidneys, lungs, spleen, heart, blood and adrenals.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Impact Summary:

There is no ecological data available for this product.

SECTION 13 DISPOSAL CONSIDERATIONS

RCRA Information:

If this material, as it is originally purchased, were subsequently DISCARDED as a waste, the waste would be a RCRA hazardous waste.

D001 (Ignitable Hazardous Waste) D018 (Toxicity, Benzene > 0.5 mg/l)

Under RCRA, it is the responsibility of the user of the material to determine, at the time of the disposal, whether

the material meets RCRA criteria for hazardous waste. This is because material uses, transformations, mixtures, processes, etc. may affect the classification. Refer to the latest EPA, state and local regulations regarding proper disposal.

SECTION 14

TRANSPORT INFORMATION

US Department of Transportation Classification

Proper Shipping Name: Gasoline
Identification Number: UN1203
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II
Marine Pollutant % of Total: 100 %weight

Marine Pollutant: Marine Pollutant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.

Oil: Per 49 CFR 130.5, containers of 3500 gallon capacity or greater transported by road or rail are excepted from 49 CFR 172.303(L)(2) if shipping papers contain the word 'OIL'; exceptions are not applicable to shipments by water.

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SECTION 15

REGULATORY INFORMATION

Federal Regulatory Status

OSHA Classification:

Product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 19.10.1200.

Ozone Depleting Substances (40 CFR 82 Clean Air Act):

This material does not contain nor was it directly manufactured with any Class I or Class II ozone depleting substances.

Superfund Amendment & Reauthorization Act (SARA) Title III:

There are no components in this product on the SARA 302 list.

SARA Hazard Categories (311/312):

Immediate Health	Delayed Health	Fire	Pressure	Reactivity
YES	YES	YES	NO	NO

SARA Toxic Release Inventory (TRI) (313):

Xylene (mixed isomers), Styrene, 1,2,4-Trimethylbenzene, Toluene, Naphthalene, Methyl Tert-Butyl Ether, N-Hexane, Ethylbenzene, Cyclohexane, Benzene

Toxic Substances Control Act (TSCA) Status:

All component(s) of this material is(are) listed on the EPATSCA Inventory of Chemical Substances.

Other Chemical Inventories:

Australian AICS, Chinese Inventory, European EINECS, Japan ENCS, Korean Inventory, Philippines PICCS

State Regulation

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65):

The chemical identified with this code, Reproductive Toxin is known to the state of California to cause birth defects or other reproductive harm. The chemical identified with this code, Carcinogen & Reproduction Toxin, is known to the state of California to cause both cancer and birth defects or other reproductive harm.

Benzene (71-43-2)	0 - 4 %volume	Carcinogen/Reproduction
Toluene (108-88-3)	0 - 25 %volume	Reproduction

New Jersey Right-To-Know Chemical List:

Benzene (71-43-2)	0 - 4 %volume	Carcinogen
Benzene (71-43-2)	0 - 4 %volume	Mutagen
Benzene, Methyl- (108-88-3)	0 - 25 %volume	
Cyclohexane (110-82-7)	0 - 1 %volume	
Ethylbenzene (0851)	0 - 3 %volume	
Methyl Tert-Butyl Ether (1634-04-4)	0 - 15 %volume	
Naphthalene (1322)	0 - 1 %volume	
Propane, 2,2'-oxybis- (108-20-3)	0 - 2 %volume	
Styrene (100-42-5)	0 - 4 %volume	Mutagen
Xylenes (1330-20-7)	0 - 25 %volume	

Pennsylvania Right-To-Know Chemical List:

Benzene (71-43-2)	0 - 4 %volume	Spec Haz Sub/Env Hazardous
Benzene, dimethyl- (1330-20-7)	0 - 25 %volume	Environmental Hazard
Benzene, ethenyl (100-42-5)	0 - 4 %volume	Environmental Hazard
Benzene, Ethyl- (100-41-4)	0 - 3 %volume	Environmental Hazard
Benzene, Methyl- (108-88-3)	0 - 25 %volume	Environmental Hazard
Cyclohexane (110-82-7)	0 - 1 %volume	Environmental Hazard
Methyl Tert-Butyl Ether (1634-04-4)	0 - 15 %volume	Environmental Hazard
Naphthalene (91-20-3)	0 - 1 %volume	Environmental Hazard
Propane, 2,2'-oxybis- (108-20-3)	0 - 2 %volume	

SECTION 16

OTHER INFORMATION

Revision#: 22

Revision Date: 10/13/2000

Revisions since last change (discussion): This Material Safety Data Sheet has been changed to include new information on the potential carcinogenicity of component Ethylbenzene and to add Diisopropyl Ether (DIPE) as a component. We encourage you to take the opportunity to reread the sheet and review the information contained. Changes have occurred in the following Sections: 2, 11, 15.

SECTION 17

LABEL INFORMATION

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER

RELATED REGULATORY REQUIREMENTS.

PRODUCT CODES: 00318, 00319, 00335, 00361, 00364, 01003, 01005, 01099, 01133, 01134, 01137, 01142, 01143, 01146, 01147, 01167, 01446, 01447, 01450, 01451, 01461, 01526, 02548, 02567, 02568, 02571, 02579, 02581, 02590, 02592, 02593, 02617, 02760, 02763, 02764, 06024, 07443, 07444, 07610, 07616, 07627, 07650, 07675, 07676, 07685, 07696, 08615, 08616, 26640, 26641, 26642, 26643, 26645, 26646, 26647, 26648, 26649, 26658, 26659, 26665, 26670, 26759, 26762, 26805, 26806, 26812, 26816, 26818, 26831, 26833, 26853, 26857, 26926, 26927, 27022, 27024

Premium Unleaded Gasoline (Conventional, CARB and RFG)

DANGER!

EXTREMELY FLAMMABLE. VAPORS MAY EXPLODE. OVEREXPOSURE TO VAPORS CAN CAUSE CNS DEPRESSION. MAY CAUSE SKIN AND EYE IRRITATION. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS BENZENE WHICH IS A CANCER HAZARD - LINKED TO DEVELOPMENT OF ACUTE MYELOGENOUS LEUKEMIA. LONG-TERM EXPOSURE TO GASOLINE VAPORS HAS CAUSED CANCER IN LABORATORY ANIMALS. PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE OIL ACNE OR DERMATITIS.

MAY CAUSE DAMAGE TO: Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver, Nervous System

This material and/or components may cause the following effects:
Developmental Toxicity, Genotoxicity, Immunotoxicity, Reproductive Toxicity

Precautionary Measures: Avoid heat, sparks, open flames and other ignition sources. Do not take internally. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Keep container closed when not in use. Wash thoroughly after handling.

FIRST AID

Inhalation: Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin Contact: Remove contaminated clothing. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye Contact: Flush eyes with large amounts of water for at least 15 minutes. If redness, burning, blurred vision or swelling persist, transport to nearest medical facility for additional treatment.

Ingestion: DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

FIRE

In case of fire, Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

SPILL OR LEAK

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

CONTAINS: Miscellaneous Hydrocarbons, Mixture; Xylene, mixed isomers, 1330-20-7; Toluene, 108-88-3; 1,2,4-Trimethyl Benzene (Pseudocumene), 95-63-6; Styrene, 100-42-5; Benzene, 71-43-2; Ethyl Benzene, 100-41-4; Hexane, 110-54-3; Cyclohexane, 110-82-7; Naphthalene, 91-20-3; Methyl Tert-Butyl Ether (MTBE), 1634-04-4; Ethyl Tert-Butyl Ether (ETBE), 637-92-3; Tert-Amyl Methyl Ether (TAME), 994-05-8; Diisopropyl Ether (DIPE), 108-20-3

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

TRANSPORTATION

US Department of Transportation Classification

Proper Shipping Name: Gasoline
Identification Number: UN1203
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II
Marine Pollutant % of Total: 100 %weight

Marine Pollutant: Marine Pollutant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.

Oil: Per 49 CFR 130.5, containers of 3500 gallon capacity or greater transported by road or rail are excepted from 49 CFR 172.303(L)(2) if shipping papers contain the word 'OIL'; exceptions are not applicable to shipments by water.

Emergency Response Guide # 128

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flames or heat. Keep container closed and drum bungs in place.

Name and Address

Motiva Enterprises LLC
P.O. Box 4540
Houston, TX 77210-4540

TRANSPORTATION EMERGENCY CHEMTEL (877) 276-7283

HEALTH EMERGENCY CHEMTEL (877) 276-7283

ADMINISTRATIVE INFORMATION

COMPANY ADDRESS: Motiva Enterprises LLC, P.O. Box 4540, Houston, TX. 77210-4540

Company Product Stewardship & Regulatory Compliance Contact: Ken Darmer

Phone Number: (281) 874-7982

MSDS FAX-BACK Phone Number: (877) 276-7285

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MATERIAL SAFETY DATA SHEET

MSDS Number: 51163M - 21

24 Hour Emergency Assistance: CHEMTEL (877) 276-7283

General Assistance Number: (877) 276-7285

SECTION 1

PRODUCT IDENTIFICATION

MATERIAL IDENTITY: Regular Unleaded Gasoline (Conventional, CARB and RFG)

PRODUCT CODES: 00315, 00330, 00337, 00351, 00371, 00478, 00781, 00782, 00783, 01002, 01004, 01136, 01141, 01145, 01149, 01182, 01418, 01449, 01453, 02570, 02574, 02583, 02595, 02610, 02616, 02632, 02635, 02738, 02751, 02752, 02754, 04976, 04977, 07437, 07438, 07644, 07671, 07672, 07687, 08601, 08602, 08603, 08604, 26603, 26609, 26614, 26615, 26616, 26619, 26620, 26671, 26720, 26770, 26777, 26808, 26814, 26844, 26846, 26847, 26848, 26858, 34212, 34215

COMPANY ADDRESS: Motiva Enterprises LLC, P.O. Box 4540, Houston, TX. 77210-4540

SECTION 2

PRODUCT/INGREDIENTS

INGREDIENTS

CAS#

CONCENTRATION

Gasoline (Conventional, CARB and RFG)	Mixture	100 %volume
Miscellaneous Hydrocarbons	Mixture	0 - 50 %volume
Xylene, mixed isomers	1330-20-7	0 - 25 %volume
Toluene	108-88-3	0 - 25 %volume
1,2,4-Trimethyl Benzene (Pseudocumene)	95-63-6	0 - 5 %volume
Styrene	100-42-5	0 - 4 %volume
Benzene	71-43-2	0 - 4 %volume
Ethyl Benzene	100-41-4	0 - 3 %volume
Hexane	110-54-3	0 - 3 %volume
Cyclohexane	110-82-7	0 - 1 %volume
Naphthalene	91-20-3	0 - 1 %volume
Methyl Tert-Butyl Ether (MTBE)	1634-04-4	0 - 15 %volume
Ethyl Tert-Butyl Ether (ETBE)	637-92-3	0 - 18.5 %volume
Tert-Amyl Methyl Ether (TAME)	994-05-8	0 - 18.6 %volume
Diisopropyl Ether (DIPE)	108-20-3	0 - 2 %volume

NOTE: Content of Gasoline components will vary; Individual components may be present from trace amounts up to the maximum shown.

SECTION 3

HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance & Odor: Bronze color, clear & bright liquid. Hydrocarbon odor.

Health Hazards: May be harmful or fatal if swallowed. Do not induce vomiting. May cause aspiration pneumonia. May cause CNS depression.

Physical Hazards: Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

Hazard Rating: Least - 0 Slight - 1 Moderate - 2 High - 3 Extreme - 4

Inhalation:

May cause irritation to the nose, throat and respiratory tract. Breathing of high vapor concentrations may cause CNS depression, evidenced by dizziness, light-headedness, headache, nausea, drowsiness, and loss of coordination. Continued inhalation may result in unconsciousness.

Eye Irritation:

May be irritating to the eyes causing a burning sensation, redness, swelling and/or blurred vision.

Skin Contact:

May be irritating to the skin causing a burning sensation, redness and/or swelling. Prolonged or repeated skin contact can cause defatting and drying of the skin which may result in a burning sensation and a dried, cracked appearance.

Ingestion:

This material may be harmful or fatal if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Generally considered to have a low order of acute oral toxicity.

Other Health Effects:

Carcinogenic in animal tests. Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant. It is probable that the material causes cancer in laboratory animals. Material may adversely effect male reproductive performance based on testing in laboratory animals.

This material and/or components may cause the following effects:

Developmental Toxicity, Genotoxicity, Immunotoxicity, Reproductive Toxicity

Primary Target Organs:

The following organs and/or organ systems may be damaged by overexposure to this material and/or its components.

Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver, Nervous System

Signs and Symptoms:

Irritation as noted above. Aspiration pneumonitis may be evidenced by coughing, labored breathing and cyanosis (bluish skin); in severe cases death may occur. Damage to blood-forming organs may be evidenced by: a) easy fatigability and pallor (RBC), b) decreased resistance to infection (WBC effect), c) excessive bruising and bleeding (platelet effect). Kidney damage may be indicated by changes in urine output or appearance, pain upon urination or in the lower back or general edema (swelling from fluid retention). Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye color), fatigue and sometimes pain and swelling in the upper right abdomen.

For additional health information, refer to section 11.

SECTION 4

FIRST AID MEASURES

Inhalation:

Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin:

Remove contaminated clothing. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye:

Flush eyes with large amounts of water for at least 15 minutes. If redness, burning, blurred vision or swelling persist, transport to nearest medical facility for additional treatment.

Ingestion:

DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Note to Physician:

If more than 2.0ml/kg body weight has been ingested and vomiting has not occurred, emesis should be induced with supervision. Keep victim's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions, or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

SECTION 5

FIRE FIGHTING MEASURES

Flash Point [Method]: -40 °F/-40 °C [Tagliabue Closed Cup]

Flammability in Air: 1.3 - 7.6 %volume

Extinguishing Media:

Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

Fire Fighting Instructions:

DANGER! EXTREMELY FLAMMABLE. Clear fire area of all non-emergency personnel. Only enter confined fire space with full bunker gear, including a positive pressure, NIOSH-approved, self-contained breathing apparatus. Cool surrounding equipment, fire-exposed containers and structures with water. Container areas exposed to direct flame contact should be cooled with large quantities of water (500 gallons water per minute flame impingement exposure) to prevent weakening of container structure.

Unusual Fire Hazards:

Vapors are heavier than air accumulating in low areas and traveling along the ground away from the handling site.

Do not weld, heat or drill on or near container. However, if emergency situations require drilling, only trained emergency personnel should drill.

SECTION 6

ACCIDENTAL RELEASE MEASURES

Protective Measures:

DANGER! EXTREMELY FLAMMABLE! Eliminate potential sources of ignition. Handling equipment must be bonded and grounded to prevent sparking.

Spill Management:

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

Reporting:

CERCLA: Product is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) petroleum exclusion. Releases to air, land, or water are not reportable under CERCLA (Superfund).

CWA: This product is an oil as defined under Section 311 of EPA's Clean Water Act (CWA). Spills into or leading to surface waters that cause a sheen must be reported to the National Response Center, 1-800-424-8802.

SECTION 7

HANDLING AND STORAGE

Precautionary Measures:

Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet. Launder contaminated clothing before reuse. Properly dispose of contaminated leather articles such as shoes or belts that

cannot be decontaminated. Avoid heat, open flames, including pilot lights, and strong oxidizing agents. Use explosion-proof ventilation to prevent vapor accumulation. Ground all handling equipment to prevent sparking. Do not siphon gasoline by mouth; harmful or fatal if swallowed. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

For use as a motor fuel only. Do not use as a cleaning solvent or for other non-motor fuel uses.

Handling:

Surfaces that are sufficiently hot may ignite liquid material. Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

Keep containers closed when not in use. **WARNING!** The flow of gasoline through the pump nozzle can produce static electricity, which may cause a fire if gasoline is pumped into an ungrounded container. To avoid static buildup, place approved container on the ground. Do not fill container in vehicle or truck bed. Keep nozzle in contact with container while filling. Do not use automatic pump handle (latch-open) device. Turn off all battery operated portable electronic devices (examples include: cellular phones, pagers and CD players) before operating gasoline pump. Use only with adequate ventilation.

Storage:

Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures.

Keep liquid and vapor away from heat, sparks and flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors have dissipated. Use explosion-proof ventilation to prevent vapor accumulation while in use.

Container Warnings:

Keep containers closed when not in use. Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

SECTION 8

EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical	Limit	TWA	STEL	Ceiling	Notation
Benzene	ACGIH TLV	0.5 ppmv	2.5 ppmv		Skin
Benzene	OSHA PEL	1 ppmv	5 ppmv		
Cyclohexane	ACGIH TLV	300 ppmv			
Cyclohexane	OSHA PEL	300 ppmv			
Ethyl Benzene	ACGIH TLV	100 ppmv	125 ppmv		
Ethyl Benzene	OSHA PEL	100 ppmv			
Ethyl Benzene	OSHA PEL - 1989(revoked)	100 ppmv	125 ppmv		
Gasoline	ACGIH TLV	300 ppmv	500 ppmv		
Gasoline	OSHA PEL - 1989(revoked)	300 ppmv	500 ppmv		
Isopropyl ether	ACGIH TLV	250 ppmv	310 ppmv		
Isopropyl ether	OSHA PEL	500 ppmv			
Methyl T-Butyl Ether	ACGIH TLV	40 ppmv			
N-Hexane	OSHA PEL	50 ppmv			
N-Hexane	OSHA PEL - 1989(revoked)	50 ppmv			
Naphthalene	ACGIH TLV	10 ppmm	15 ppmm		
Naphthalene	OSHA PEL	10 ppmv			
Naphthalene	OSHA PEL - 1989(revoked)	10 ppmv	15 ppmv		
Styrene	ACGIH TLV	20 ppmv	40 ppmv		
Styrene	OSHA PEL	100 ppmv		200 ppmv	

Styrene	OSHA PEL - 1989(revoked)	50 ppmv	100 ppmv		
Styrene, monomer	SHELL PEL - 1989(revoked)	50 ppmv	100 ppmv		Embryo-Fetus Policy
Toluene	ACGIH TLV	50 ppmv			Skin
Toluene	OSHA PEL	200 ppmv		300 ppmv	
Toluene	OSHA PEL - 1989(revoked)	100 ppmv	150 ppmv		
Toluene	SHELL SIS	50 ppmv			
Trimethyl Benzene	ACGIH TLV	25 ppmv			
Trimethyl Benzene	OSHA PEL - 1989(revoked)	25 ppmv			
Trimethyl Benzene	SHELL PEL - 1989(revoked)	25 ppmv			
xylene (o-, m-, p- isomers)	OSHA PEL	100 ppmv			
xylene (o-, m-, p- isomers)	OSHA PEL - 1989(revoked)	100 ppmv	150 ppmv		
Xylene (o-, m-, p-isomers)	ACGIH TLV	100 ppmv	150 ppmv		

Exposure Controls

Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.

Personal Protection

Personal protective equipment (PPE) selections vary based on potential exposure conditions such as handling practices, concentration and ventilation. Information on the selection of eye, skin and respiratory protection for use with this material is provided below.

Eye Protection:

Chemical Goggles - If liquid contact is likely.

Skin Protection:

Use protective clothing which is chemically resistant to this material. Selection of protective clothing depends on potential exposure conditions and may include gloves, boots, suits and other items. The selection(s) should take into account such factors as job task, type of exposure and durability requirements.

Published literature, test data and/or glove and clothing manufacturers indicate the best protection is provided by: Neoprene, or Nitrile Rubber, or Polyvinyl Alcohol (PVA)

Respiratory Protection:

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Types of respirator(s) to be considered in the selection process include:

Supplied-Air Respirator. Air-Purifying Respirator for Organic Vapors. Self-contained breathing apparatus.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Bronze color, clear & bright liquid. Hydrocarbon odor.

Substance Chemical Family: Hydrocarbon

Flammability in Air	1.3 - 7.6 %volume	Flash Point	-40 °F [Tagliabue Closed Cup]
Freezing Point	-72 °F	Solubility (In Water)	Negligible
Specific Gravity	0.72 - 0.76	Stability	Stable
Vapor Density	3.5	Vapor Pressure	7 - 14.5 psia [Reid]
Viscosity	< 1.4 cSt Typical @ 100 °F	Volatility	100 %volume

SECTION 10 REACTIVITY AND STABILITY

Stability:

Material is stable under normal conditions.

Conditions to Avoid:

Avoid heat, sparks, open flames and other ignition sources.

Materials to Avoid:

Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products:

Thermal decomposition products are highly dependent on combustion conditions. A complex mixture of airborne solids, liquids and gases will evolve when this material undergoes pyrolysis or combustion. Aldehydes, Carbon Monoxide, Carbon Dioxide, Peroxide, Styrene oxide and other unidentified organic compounds may be formed upon combustion.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute Toxicity

TEST	Result	OSHA Classification	Material Tested
Dermal LD50	>2 g/kg(Rabbit)	Non-Toxic	Based on similar material(s)
Eye Irritation	Moderate to Severe Irritation [Human]	Irritating	Based on similar material(s)
Oral LD50	>5 g/kg(Rat)	Non-Toxic	Based on similar material(s)
Skin Irritation Draize	0.98 [Rabbit, 24 HOUR(S)]	Irritating	Based on similar material(s)

Carcinogenicity:

Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant.

Carcinogenicity Classification

Chemical Name	NTP	IARC	ACGIH	OSHA
Gasoline (Conventional, CARB and RFG)		Possible Carcinogen (2B)	A3	Yes
Benzene	Yes	Carcinogen (1)	A1	Yes
Ethyl Benzene		Possible Carcinogen (2B)		
Methyl Tert-Butyl Ether (MTBE)			A3	
Naphthalene			A4	
Styrene		Possible Carcinogen (2B)	A4	

Toluene		Not Classifiable (3)	A4	
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Toxic Effects - Equiva Gasoline MSDS

Carcinogenicity	Chronic inhalation of wholly vaporized gasoline produced kidney tumors in male rats and liver tumors in female mice. The kidney tumors have been shown to develop through a unique mechanism involving Alpha-2u globulin. This protein is not present in humans making the kidney tumors irrelevant to potential human health risks. Origin of the female mouse liver tumors is less understood, leaving their significance for human risks uncertain. Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs, is associated with anemia (depletion of blood cells) and is linked to the later development of acute myelogenous leukemia (AML) in humans. A recent chronic bioassay of ethylbenzene by the NTP produced clear evidence of carcinogenicity in male rats based on kidney tumor increase. Other animal tumors possibly associated with ethylbenzene include testicular adenomas in male rats, kidney tumors in female rats, lung tumors in male mice and liver tumors in female mice. Toluene is not known to be mutagenic or carcinogenic although available human and experimental animal data are limited and insufficient to assess carcinogenic potential. Chronic inhalation of MTBE produced liver tumors in female mice and kidney tumors in male rats. These tumors are of questionable relevance to humans and further studies are being done to address their significance.
Cardiovascular System	While there is no evidence that workplace exposure to acceptable levels of toluene vapors (e.g., the TLV) have produced cardiac effects in humans, high concentrations may cause cardiac sensitization and sudden lethality has been reported from habitual sniffing of solvents or glue. Animal studies have confirmed the sensitizing effects. Sensitization may lead to fatal changes in heart rhythms. Hypoxia or injection of adrenalin-like agents may enhance this effect. Thickening of heart blood vessels has been reported in animals exposed to xylene.
Developmental Toxicity	Daily exposure of pregnant rats to unleaded gasoline vapor at concentrations up to 9000 ppm resulted in no detectable maternal or developmental toxicity. Numerous studies of benzene in experimental animals have failed to detect teratogenic effects (birth defects) even at doses of benzene toxic to the mothers. There is some evidence of fetal toxicity, but not malformations, in mice and rabbits exposed to 500 ppm and higher concentrations of benzene vapor during gestation. Ethylbenzene caused birth defects in rats but not rabbits at doses that produced toxic effects in the mothers. n-Hexane produced fetal toxicity, reduced fetal weight, in mice at maternally toxic doses. Developmental toxicity studies of xylenes showed embryo-lethal/toxic and teratogenic effects with maternal toxicity. Many case studies involving abuse during pregnancy implicate toluene as a developmental toxicant. Studies in laboratory animals have shown developmental effects comparable to those reported in humans, but the effects were generally associated with maternal toxicity. Exposing pregnant mice to maternally toxic MTBE levels greater than 1000 ppm produced adverse gestational and developmental effects including malformations. No developmental toxicity was seen in rabbits exposed to MTBE concentrations up to 8000 ppm. Birth defects in mice and fetotoxicity in both rats and mice were observed following maternally toxic TAME exposures. Exposure of pregnant rats to high concentrations of DiPE (3095 and 6745 ppm) by inhalation during pregnancy increased the frequency of rudimentary 14th ribs in the offspring. The effect was not seen following exposure to 430 ppm DiPE. The significance of this finding is not known.
Genotoxicity	Unleaded gasoline was tested for genetic activity in tests using microbial cells, cultured mammalian cells and rats (bone marrow) and was judged to be negative in every case. Benzene has been shown to be non-mutagenic or weakly mutagenic in a variety of in vitro (test tube) systems. It has, however, been found to cause other types of chromosome damage (micronuclei, chromosome breakage, non-dysjunctional events) in both laboratory animals and workers exposed to high doses of benzene. These effects appear to be related to one or more metabolites of benzene, possibly acting in combination. Benzene metabolites can also bind to proteins forming detectable complexes (adducts). There is limited evidence of binding to the genetic material (DNA) itself. The relationship of these effects to the causation of leukemia or tumors in experimental animals is unknown. Changes in chromosomes of lymphocytes have been identified in some studies of humans exposed to styrene. The significance of these changes is not known, and other such studies have produced negative results. Chromosomal breaks have been reported in the bone marrow cells of rats exposed to styrene by inhalation along with increased frequency of sister chromatid exchanges in alveolar macrophages, bone marrow cells and regenerating liver cells. Ethylbenzene was not mutagenic in a number of in vitro procedures. Naphthalene was negative in Ames mutagenicity and rat cell transformation assays. Cyclohexane and pseudocumene were also negative in Ames testing. Toluene was negative in the Ames assay and negative for chromosomal aberrations and sister-chromatid exchanges in human lymphocytes and in an in vitro test using hamster cells. Mouse lymphoma test results for toluene were inconclusive. MTBE was negative in several mutagenicity tests, but was positive in a mouse lymphoma test.
Blood/Blood Forming Organs	Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs and is associated with anemia (depletion of blood cells). Repeated exposure of rabbits to high cyclohexane vapor concentrations causes a slight increase in blood clotting time. Blood effects were seen in rats following prolonged and repeated oral exposure to a mixture of xylenes containing ethylbenzene.
Immunotoxicity	Various studies of workers exposed to high levels of benzene have found impairment of both humoral (antibody) and cellular immunity, most notably a decrease in levels of circulating leukocytes. Many of these exposures also involve other solvents and chemicals. Animal studies with high benzene doses have reported similar effects.

Kidney	Long-term inhalation of wholly vaporized gasoline caused increased kidney weight and progressive nephropathy (tissue damage) in male rats. In rats exposed orally to a xylene mixture also containing ethylbenzene, males developed hyaline droplet changes and females showed evidence of early chronic nephropathy. Intentional abuse of toluene vapors by 'glue-sniffers' has been associated with damage to the kidneys. Long term inhalation of up to 8000 ppm MTBE vapor produced a chronic, progressive nephropathy (kidney damage) in male rats. This effect may be related to the accumulation of alpha-2u globulin and therefore specific to the male rat. (See Carcinogenicity) Increased kidney weights without evidence of tissue injury were reported in rats exposed to high, inhaled doses of TAME. Prolonged inhalation of DIPE (90 days or longer) increased kidney weights in both male and female rats. In male rats exposed to the highest concentration (7100 ppm) there was also evidence of microscopic changes (hyaline droplets) in the kidney tubules resembling those produced by exposure to gasoline.
Liver	Inhalation of gasoline vapor increased liver weights, urinary excretion of ascorbic acid, and hepatic enzyme activity in male rats. Liver weight increases were seen in rats dosed orally for 90 days with a xylene mixture also containing ethylbenzene. Reversible liver damage has been reported in persons exposed to toluene by solvent abuse. Liver weight increases without evidence of tissue injury were seen in rats exposed to greater than 500 ppm TAME by inhalation for four weeks. Prolonged inhalation of DIPE (90 days or longer) increased liver weights in both rats and rabbits. In rabbits and in male rats exposed to 7100 ppm there was also evidence of microscopic changes in the liver tissue.
Nervous System	Inhalation of MTBE vapors at high concentrations (above 800 ppm) induced reversible central nervous system depression in rats. Inhalation of TAME at concentrations greater than 250 ppm produced reversible sedation in rats and mice.
Neurotoxicity	Inhalation exposure to high n-hexane concentrations has resulted in peripheral neuropathy in rodents and also in human workers. Rats receiving prolonged and repeated exposure to high doses of xylene have shown hearing loss. Prolonged and repeated exposures to high toluene concentrations (mixed solvent) have resulted in hearing loss in laboratory animals. There have also been reports of hearing damage in humans overexposed to toluene and other solvents, however, these effects and their possible relationship to noise exposure remain uncertain. Intentional inhalation ('glue-sniffing') and resulting overexposure to toluene vapors has been linked to brain injury. Rats exposed repeatedly to high concentrations of styrene vapor also developed hearing deficits.
Reproductive Toxicity	Inhalation of high n-hexane concentrations resulted in testicular and epididymal lesions in laboratory animals. Animal studies on benzene have shown testicular effects and alteration in reproductive cycles.
Sensitization	Gasoline and component petroleum streams blended to produce it were tested in animal studies and found not to cause skin sensitization.
Systemic Toxicity	Studies on n-hexane in laboratory animals have shown mild, transitory effects on the spleen and blood (white blood cells) and evidence of nasal tract and lung damage. Chronic exposure to vapors of a mixture containing 50% pseudocumene (and possibly contaminated with benzene) caused decreased weight gain and blood changes (lymphopenia and neutrophilia), liver, lung, spleen, kidney, and bone marrow effects in rats. Microscopic changes in the lung, including congestion, hemorrhage, edema, exudation, and leukocyte infiltration were observed in rats and guinea pigs following acute inhalation of styrene. In fatally exposed animals, pulmonary congestion, edema, and necrosis of the kidney and liver were reported. Repeated exposure to high vapor concentrations of cyclohexane caused minor microscopic liver and kidney changes in rabbits. Laboratory animals exposed to prolonged and repeated doses of xylenes by various routes have shown effects in liver, kidneys, lungs, spleen, heart, blood and adrenals.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Impact Summary:

There is no ecological data available for this product.

SECTION 13 DISPOSAL CONSIDERATIONS

RCRA Information:

If this material, as it is originally purchased, were subsequently DISCARDED as a waste, the waste would be a RCRA hazardous waste.

D001 (Ignitable Hazardous Waste) D018 (Toxicity, Benzene > 0.5 mg/l)

Under RCRA, it is the responsibility of the user of the material to determine, at the time of the disposal, whether

the material meets RCRA criteria for hazardous waste. This is because material uses, transformations, mixtures, processes, etc. may affect the classification. Refer to the latest EPA, state and local regulations regarding proper disposal.

SECTION 14**TRANSPORT INFORMATION****US Department of Transportation Classification**

Proper Shipping Name: Gasoline
Identification Number: UN1203
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II
Marine Pollutant % of Total: 100 %weight

Marine Pollutant: Marine Pollutant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.

Oil: Per 49 CFR 130.5, containers of 3500 gallon capacity or greater transported by road or rail are excepted from 49 CFR 172.303(L)(2) if shipping papers contain the word 'OIL'; exceptions are not applicable to shipments by water.

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SECTION 15**REGULATORY INFORMATION****Federal Regulatory Status****OSHA Classification:**

Product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 19.10.1200.

Ozone Depleting Substances (40 CFR 82 Clean Air Act):

This material does not contain nor was it directly manufactured with any Class I or Class II ozone depleting substances.

Superfund Amendment & Reauthorization Act (SARA) Title III:

There are no components in this product on the SARA 302 list.

SARA Hazard Categories (311/312):

Immediate Health	Delayed Health	Fire	Pressure	Reactivity
YES	YES	YES	NO	NO

SARA Toxic Release Inventory (TRI) (313):

Xylene (mixed isomers), Styrene, 1,2,4-Trimethylbenzene, Toluene, Naphthalene, Methyl Tert-Butyl Ether, N-Hexane, Ethylbenzene, Cyclohexane, Benzene

Toxic Substances Control Act (TSCA) Status:

All component(s) of this material is(are) listed on the EPA/TSCA Inventory of Chemical Substances.

Other Chemical Inventories:

Australian AICS, Chinese Inventory, European EINECS, Japan ENCS, Korean Inventory, Philippines PICCS

State Regulation

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65):

The chemical identified with this code, Reproductive Toxin is known to the state of California to cause birth defects or other reproductive harm. The chemical identified with this code, Carcinogen & Reproduction Toxin, is known to the state of California to cause both cancer and birth defects or other reproductive harm.

Benzene (71-43-2)	0 - 4 %volume	Carcinogen/Reproduction
Toluene (108-88-3)	0 - 25 %volume	Reproduction

New Jersey Right-To-Know Chemical List:

Benzene (71-43-2)	0 - 4 %volume	Carcinogen
Benzene (71-43-2)	0 - 4 %volume	Mutagen
Benzene, Methyl- (108-88-3)	0 - 25 %volume	
Cyclohexane (110-82-7)	0 - 1 %volume	
Ethylbenzene (0851)	0 - 3 %volume	
Methyl Tert-Butyl Ether (1634-04-4)	0 - 15 %volume	
Naphthalene (1322)	0 - 1 %volume	
Propane, 2,2'-oxybis- (108-20-3)	0 - 2 %volume	
Styrene (100-42-5)	0 - 4 %volume	Mutagen
Xylenes (1330-20-7)	0 - 25 %volume	

Pennsylvania Right-To-Know Chemical List:

Benzene (71-43-2)	0 - 4 %volume	Spec Haz Sub/Env Hazardous
Benzene, dimethyl- (1330-20-7)	0 - 25 %volume	Environmental Hazard
Benzene, ethenyl (100-42-5)	0 - 4 %volume	Environmental Hazard
Benzene, Ethyl- (100-41-4)	0 - 3 %volume	Environmental Hazard
Benzene, Methyl- (108-88-3)	0 - 25 %volume	Environmental Hazard
Cyclohexane (110-82-7)	0 - 1 %volume	Environmental Hazard
Methyl Tert-Butyl Ether (1634-04-4)	0 - 15 %volume	Environmental Hazard
Naphthalene (91-20-3)	0 - 1 %volume	Environmental Hazard
Propane, 2,2'-oxybis- (108-20-3)	0 - 2 %volume	

SECTION 16

OTHER INFORMATION

Revision#: 21

Revision Date: 10/13/2000

Revisions since last change (discussion): This Material Safety Data Sheet has been changed to include new information on the potential carcinogenicity of component Ethylbenzene and to add Diisopropyl Ether (DIPE) as a component. We encourage you to take the opportunity to reread the sheet and review the information contained. Changes have occurred in the following Sections: 2, 11, 15.

SECTION 17

LABEL INFORMATION

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER

RELATED REGULATORY REQUIREMENTS.

PRODUCT CODES: 00315, 00330, 00337, 00351, 00371, 00478, 00781, 00782, 00783, 01002, 01004, 01136, 01141, 01145, 01149, 01182, 01418, 01449, 01453, 02570, 02574, 02583, 02595, 02610, 02616, 02632, 02635, 02738, 02751, 02752, 02754, 04976, 04977, 07437, 07438, 07644, 07671, 07672, 07687, 08601, 08602, 08603, 08604, 26603, 26609, 26614, 26615, 26616, 26619, 26620, 26671, 26720, 26770, 26777, 26808, 26814, 26844, 26846, 26847, 26848, 26858, 34212, 34215

Regular Unleaded Gasoline (Conventional, CARB and RFG)

DANGER!

EXTREMELY FLAMMABLE. VAPORS MAY EXPLODE. OVEREXPOSURE TO VAPORS CAN CAUSE CNS DEPRESSION. MAY CAUSE SKIN AND EYE IRRITATION. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS BENZENE WHICH IS A CANCER HAZARD - LINKED TO DEVELOPMENT OF ACUTE MYELOGENOUS LEUKEMIA. LONG-TERM EXPOSURE TO GASOLINE VAPORS HAS CAUSED CANCER IN LABORATORY ANIMALS. PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE OIL ACNE OR DERMATITIS.

MAY CAUSE DAMAGE TO: Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver, Nervous System

This material and/or components may cause the following effects:
Developmental Toxicity, Genotoxicity, Immunotoxicity, Reproductive Toxicity

Precautionary Measures: Avoid heat, sparks, open flames and other ignition sources. Do not take internally. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Keep container closed when not in use. Wash thoroughly after handling.

FIRST AID

Inhalation: Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin Contact: Remove contaminated clothing. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye Contact: Flush eyes with large amounts of water for at least 15 minutes. If redness, burning, blurred vision or swelling persist, transport to nearest medical facility for additional treatment.

Ingestion: DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

FIRE

In case of fire, Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

SPILL OR LEAK

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in

non-leaking container and seal tightly for proper disposal.

CONTAINS: Miscellaneous Hydrocarbons, Mixture; Xylene, mixed isomers, 1330-20-7; Toluene, 108-88-3; 1,2,4-Trimethyl Benzene (Pseudocumene), 95-63-6; Styrene, 100-42-5; Benzene, 71-43-2; Ethyl Benzene, 100-41-4; Hexane, 110-54-3; Cyclohexane, 110-82-7; Naphthalene, 91-20-3; Methyl Tert-Butyl Ether (MTBE), 1634-04-4; Ethyl Tert-Butyl Ether (ETBE), 637-92-3; Tert-Amyl Methyl Ether (TAME), 994-05-8; Diisopropyl Ether (DIPE), 108-20-3

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

TRANSPORTATION

US Department of Transportation Classification

Proper Shipping Name: Gasoline
Identification Number: UN1203
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II
Marine Pollutant % of Total: 100 %weight

Marine Pollutant: Marine Pollutant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.

Oil: Per 49 CFR 130.5, containers of 3500 gallon capacity or greater transported by road or rail are excepted from 49 CFR 172.303(L)(2) if shipping papers contain the word 'OIL'; exceptions are not applicable to shipments by water.

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CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flames or heat. Keep container closed and drum bungs in place.

Name and Address

Motiva Enterprises LLC
P.O. Box 4540
Houston, TX 77210-4540

TRANSPORTATION EMERGENCY CHEMTEL (877) 276-7283

HEALTH EMERGENCY CHEMTEL (877) 276-7283

ADMINISTRATIVE INFORMATION

COMPANY ADDRESS: Motiva Enterprises LLC, P.O. Box 4540, Houston, TX. 77210-4540

Company Product Stewardship & Regulatory Compliance Contact: Ken Darner

Phone Number: (281) 874-7982

MSDS FAX-BACK Phone Number: (877) 276-7285

THE INFORMATION CONTAINED IN THIS DATA SHEET IS BASED ON THE DATA AVAILABLE TO US AT THIS TIME, AND IS BELIEVED TO BE ACCURATE BASED UPON THAT DATA. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT, FOR PURPOSE OF HAZARD COMMUNICATION. IT IS NOT INTENDED TO CONSTITUTE PRODUCT PERFORMANCE INFORMATION, AND NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND IS MADE WITH RESPECT TO THE PRODUCT, UNDERLYING DATA OR THE INFORMATION CONTAINED HEREIN. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE, AND ARE ENCOURAGED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

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MATERIAL SAFETY DATA SHEET

MSDS Number: 51036M - 10

24 Hour Emergency Assistance: CHEMTEL (877) 276-7283

General Assistance Number: (877) 276-7285

SECTION 1

PRODUCT IDENTIFICATION

MATERIAL IDENTITY: Mid Grade Unleaded Gasoline (Conventional, CARB and RFG)

PRODUCT CODES: 00317, 00331, 00367, 00483, 00768, 01008, 01009, 01135, 01139, 01144, 01148, 01181, 01419, 01436, 01448, 014501, 01452, 02569, 02573, 02582, 02594, 02757, 02772, 02775, 07440, 07441, 07647, 07648, 07673, 07674, 07686, 08611, 08612, 26630, 26631, 26632, 26633, 26634, 26635, 26636, 26637, 26663, 26760, 26771, 26773, 26776, 26807, 26813, 27025, 27033

COMPANY ADDRESS: Motiva Enterprises LLC, P.O. Box 4540, Houston, TX. 77210-4540

SECTION 2

PRODUCT/INGREDIENTS

INGREDIENTS

CAS#

CONCENTRATION

Gasoline (Conventional, CARB and RFG)	Mixture	100 %volume
Miscellaneous Hydrocarbons	Mixture	0 - 50 %volume
Xylene, mixed isomers	1330-20-7	0 - 25 %volume
Toluene	108-88-3	0 - 25 %volume
1,2,4-Trimethyl Benzene (Pseudocumene)	95-63-6	0 - 5 %volume
Styrene	100-42-5	0 - 4 %volume
Benzene	71-43-2	0 - 4 %volume
Ethyl Benzene	100-41-4	0 - 3 %volume
Hexane	110-54-3	0 - 3 %volume
Cyclohexane	110-82-7	0 - 1 %volume
Naphthalene	91-20-3	0 - 1 %volume
Methyl Tert-Butyl Ether (MTBE)	1634-04-4	0 - 15 %volume
Ethyl Tert-Butyl Ether (ETBE)	637-92-3	0 - 18.5 %volume
Tert-Amyl Methyl Ether (TAME)	994-05-8	0 - 18.6 %volume
Diisopropyl Ether (DIPE)	108-20-3	0 - 2 %volume

NOTE: Content of Gasoline components will vary; Individual components may be present from trace amounts up to the maximum shown.

SECTION 3

HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance & Odor: Bronze color, clear & bright liquid. Hydrocarbon odor.

Health Hazards: May be harmful or fatal if swallowed. Do not induce vomiting. May cause aspiration pneumonitis. May cause CNS depression.

Physical Hazards: Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

Hazard Rating: Least - 0 Slight - 1 Moderate - 2 High - 3 Extreme - 4

Inhalation:

May cause irritation to the nose, throat and respiratory tract. Breathing of high vapor concentrations may cause

CNS depression, evidenced by dizziness, light-headedness, headache, nausea, drowsiness, and loss of coordination. Continued inhalation may result in unconsciousness.

Eye Irritation:

May be irritating to the eyes causing a burning sensation, redness, swelling and/or blurred vision.

Skin Contact:

May be irritating to the skin causing a burning sensation, redness and/or swelling. Prolonged or repeated skin contact can cause defatting and drying of the skin which may result in a burning sensation and a dried, cracked appearance.

Ingestion:

This material may be harmful or fatal if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Generally considered to have a low order of acute oral toxicity.

Other Health Effects:

Carcinogenic in animal tests. Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant. It is probable that the material causes cancer in laboratory animals. Material may adversely effect male reproductive performance based on testing in laboratory animals.

This material and/or components may cause the following effects:

Developmental Toxicity, Genotoxicity, Immunotoxicity, Reproductive Toxicity

Primary Target Organs:

The following organs and/or organ systems may be damaged by overexposure to this material and/or its components.

Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver, Nervous System

Signs and Symptoms:

Irritation as noted above. Aspiration pneumonitis may be evidenced by coughing, labored breathing and cyanosis (bluish skin); in severe cases death may occur. Damage to blood-forming organs may be evidenced by: a) easy fatigability and pallor (RBC), b) decreased resistance to infection (WBC effect), c) excessive bruising and bleeding (platelet effect). Kidney damage may be indicated by changes in urine output or appearance, pain upon urination or in the lower back or general edema (swelling from fluid retention). Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye color), fatigue and sometimes pain and swelling in the upper right abdomen.

For additional health information, refer to section 11.

SECTION 4

FIRST AID MEASURES

Inhalation:

Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin:

Remove contaminated clothing. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye:

Flush eyes with large amounts of water for at least 15 minutes. If redness, burning, blurred vision or swelling persist, transport to nearest medical facility for additional treatment.

Ingestion:

DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to

prevent aspiration of liquid into lungs. Get medical attention. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Note to Physician:

If more than 2.0ml/kg body weight has been ingested and vomiting has not occurred, emesis should be induced with supervision. Keep victim's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions, or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

SECTION 5

FIRE FIGHTING MEASURES

Flash Point [Method]: -40 °F/-40 °C [Tagliabue Closed Cup]

Flammability in Air: 1.3 - 7.6 %volume

Extinguishing Media:

Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

Fire Fighting Instructions:

DANGER! EXTREMELY FLAMMABLE. Clear fire area of all non-emergency personnel. Only enter confined fire space with full bunker gear, including a positive pressure, NIOSH-approved, self-contained breathing apparatus. Cool surrounding equipment, fire-exposed containers and structures with water. Container areas exposed to direct flame contact should be cooled with large quantities of water (500 gallons water per minute flame impingement exposure) to prevent weakening of container structure.

Unusual Fire Hazards:

Vapors are heavier than air accumulating in low areas and traveling along the ground away from the handling site. Do not weld, heat or drill on or near container. However, if emergency situations require drilling, only trained emergency personnel should drill.

SECTION 6

ACCIDENTAL RELEASE MEASURES

Protective Measures:

DANGER! EXTREMELY FLAMMABLE! Eliminate potential sources of ignition. Handling equipment must be bonded and grounded to prevent sparking.

Spill Management:

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

Reporting:

CERCLA: Product is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) petroleum exclusion. Releases to air, land, or water are not reportable under CERCLA (Superfund).

CWA: This product is an oil as defined under Section 311 of EPA's Clean Water Act (CWA). Spills into or leading to surface waters that cause a sheen must be reported to the National Response Center, 1-800-424-8802.

SECTION 7

HANDLING AND STORAGE

Precautionary Measures:

Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet. Launder contaminated clothing before reuse. Properly dispose of contaminated leather articles such as shoes or belts that cannot be decontaminated. Avoid heat, open flames, including pilot lights, and strong oxidizing agents. Use

explosion-proof ventilation to prevent vapor accumulation. Ground all handling equipment to prevent sparking. Do not siphon gasoline by mouth; harmful or fatal if swallowed. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

For use as a motor fuel only. Do not use as a cleaning solvent or for other non-motor fuel uses.

Handling:

Surfaces that are sufficiently hot may ignite liquid material. Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

Keep containers closed when not in use. **WARNING!** The flow of gasoline through the pump nozzle can produce static electricity, which may cause a fire if gasoline is pumped into an ungrounded container. To avoid static buildup, place approved container on the ground. Do not fill container in vehicle or truck bed. Keep nozzle in contact with container while filling. Do not use automatic pump handle (latch-open) device. Turn off all battery operated portable electronic devices (examples include: cellular phones, pagers and CD players) before operating gasoline pump. Use only with adequate ventilation.

Storage:

Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures.

Keep liquid and vapor away from heat, sparks and flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors have dissipated. Use explosion-proof ventilation to prevent vapor accumulation while in use.

Container Warnings:

Keep containers closed when not in use. Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

SECTION 8

EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical	Limit	TWA	STEL	Ceiling	Notation
Benzene	ACGIH TLV	0.5 ppmv	2.5 ppmv		Skin
Benzene	OSHA PEL	1 ppmv	5 ppmv		
Cyclohexane	ACGIH TLV	300 ppmv			
Cyclohexane	OSHA PEL	300 ppmv			
Ethyl Benzene	ACGIH TLV	100 ppmv	125 ppmv		
Ethyl Benzene	OSHA PEL	100 ppmv			
Ethyl Benzene	OSHA PEL - 1989(revoked)	100 ppmv	125 ppmv		
Gasoline	ACGIH TLV	300 ppmv	500 ppmv		
Gasoline	OSHA PEL - 1989(revoked)	300 ppmv	500 ppmv		
Isopropyl ether	ACGIH TLV	250 ppmv	310 ppmv		
Isopropyl ether	OSHA PEL	500 ppmv			
Methyl T-Butyl Ether	ACGIH TLV	40 ppmv			
N-Hexane	OSHA PEL	50 ppmv			
N-Hexane	OSHA PEL - 1989(revoked)	50 ppmv			
Naphthalene	ACGIH TLV	10 ppmm	15 ppmm		
Naphthalene	OSHA PEL	10 ppmv			
Naphthalene	OSHA PEL - 1989(revoked)	10 ppmv	15 ppmv		
Styrene	ACGIH TLV	20 ppmv	40 ppmv		
Styrene	OSHA PEL	100 ppmv		200 ppmv	

Styrene	OSHA PEL - 1989(revoked)	50 ppmv	100 ppmv		
Styrene, monomer	SHELL PEL - 1989(revoked)	50 ppmv	100 ppmv		Embryo-Fetus Policy
Toluene	ACGIH TLV	50 ppmv			Skin
Toluene	OSHA PEL	200 ppmv		300 ppmv	
Toluene	OSHA PEL - 1989(revoked)	100 ppmv	150 ppmv		
Toluene	SHELL SIS	50 ppmv			
Trimethyl Benzene	ACGIH TLV	25 ppmv			
Trimethyl Benzene	OSHA PEL - 1989(revoked)	25 ppmv			
Trimethyl Benzene	SHELL PEL - 1989(revoked)	25 ppmv			
xylene (o-, m-, p- isomers)	OSHA PEL	100 ppmv			
xylene (o-, m-, p- isomers)	OSHA PEL - 1989(revoked)	100 ppmv	150 ppmv		
Xylene (o-, m-, p-isomers)	ACGIH TLV	100 ppmv	150 ppmv		

Exposure Controls

Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.

Personal Protection

Personal protective equipment (PPE) selections vary based on potential exposure conditions such as handling practices, concentration and ventilation. Information on the selection of eye, skin and respiratory protection for use with this material is provided below.

Eye Protection:

Chemical Goggles - If liquid contact is likely.

Skin Protection:

Use protective clothing which is chemically resistant to this material. Selection of protective clothing depends on potential exposure conditions and may include gloves, boots, suits and other items. The selection(s) should take into account such factors as job task, type of exposure and durability requirements.

Published literature, test data and/or glove and clothing manufacturers indicate the best protection is provided by: Neoprene, or Nitrile Rubber, or Polyvinyl Alcohol (PVA)

Respiratory Protection:

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Types of respirator(s) to be considered in the selection process include:

Supplied-Air Respirator. Air-Purifying Respirator for Organic Vapors. Self-contained breathing apparatus.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Bronze color, clear & bright liquid. Hydrocarbon odor.

Substance Chemical Family: Hydrocarbon

Flammability in Air	1.3 - 7.6 %volume	Flash Point	-40 °F [Tagliabue Closed Cup]
Freezing Point	-72 °F	Solubility (in Water)	Negligible
Specific Gravity	0.72 - 0.76	Stability	Stable
Vapor Density	3.5	Vapor Pressure	7 - 14.5 psia [Reid]
Viscosity	< 1.4 cSt Typical @ 100 °F	Volatility	100 %volume

SECTION 10

REACTIVITY AND STABILITY

Stability:

Material is stable under normal conditions.

Conditions to Avoid:

Avoid heat, sparks, open flames and other ignition sources.

Materials to Avoid:

Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products:

Thermal decomposition products are highly dependent on combustion conditions. A complex mixture of airborne solids, liquids and gases will evolve when this material undergoes pyrolysis or combustion. Aldehydes, Carbon Monoxide, Carbon Dioxide, Peroxide, Styrene oxide and other unidentified organic compounds may be formed upon combustion.

SECTION 11

TOXICOLOGICAL INFORMATION

Acute Toxicity

TEST	Result	OSHA Classification	Material Tested
Dermal LD50	>2 g/kg(Rabbit)	Non-Toxic	Based on similar material(s)
Eye Irritation	Moderate to Severe Irritation [Human]	Irritating	Based on similar material(s)
Oral LD50	>5 g/kg(Rat)	Non-Toxic	Based on similar material(s)
Skin Irritation Draize	0.98 [Rabbit, 24 HOUR(S)]	Irritating	Based on similar material(s)

Carcinogenicity:

Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant.

Carcinogenicity Classification

Chemical Name	NTP	IARC	ACGIH	OSHA
Gasoline (Conventional, CARB and RFG)		Possible Carcinogen (2B)	A3	Yes
Benzene	Yes	Carcinogen (1)	A1	Yes
Ethyl Benzene		Possible Carcinogen (2B)		
Methyl Tert-Butyl Ether (MTBE)			A3	
Naphthalene			A4	
Styrene		Possible Carcinogen (2B)	A4	

Toluene		Not Classifiable (3)	A4	
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Toxic Effects - Equiva Gasoline MSDS

Carcinogenicity	Chronic inhalation of wholly vaporized gasoline produced kidney tumors in male rats and liver tumors in female mice. The kidney tumors have been shown to develop through a unique mechanism involving Alpha-2u globulin. This protein is not present in humans making the kidney tumors irrelevant to potential human health risks. Origin of the female mouse liver tumors is less understood, leaving their significance for human risks uncertain. Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs, is associated with anemia (depletion of blood cells) and is linked to the later development of acute myelogenous leukemia (AML) in humans. A recent chronic bioassay of ethylbenzene by the NTP produced clear evidence of carcinogenicity in male rats based on kidney tumor increase. Other animal tumors possibly associated with ethylbenzene include testicular adenomas in male rats, kidney tumors in female rats, lung tumors in male mice and liver tumors in female mice. Toluene is not known to be mutagenic or carcinogenic although available human and experimental animal data are limited and insufficient to assess carcinogenic potential. Chronic inhalation of MTBE produced liver tumors in female mice and kidney tumors in male rats. These tumors are of questionable relevance to humans and further studies are being done to address their significance.
Cardiovascular System	While there is no evidence that workplace exposure to acceptable levels of toluene vapors (e.g., the TLV) have produced cardiac effects in humans, high concentrations may cause cardiac sensitization and sudden lethality has been reported from habitual sniffing of solvents or glue. Animal studies have confirmed the sensitizing effects. Sensitization may lead to fatal changes in heart rhythms. Hypoxia or injection of adrenalin-like agents may enhance this effect. Thickening of heart blood vessels has been reported in animals exposed to xylene.
Developmental Toxicity	Daily exposure of pregnant rats to unleaded gasoline vapor at concentrations up to 9000 ppm resulted in no detectable maternal or developmental toxicity. Numerous studies of benzene in experimental animals have failed to detect teratogenic effects (birth defects) even at doses of benzene toxic to the mothers. There is some evidence of fetal toxicity, but not malformations, in mice and rabbits exposed to 500 ppm and higher concentrations of benzene vapor during gestation. Ethylbenzene caused birth defects in rats but not rabbits at doses that produced toxic effects in the mothers. n-Hexane produced fetal toxicity, reduced fetal weight, in mice at maternally toxic doses. Developmental toxicity studies of xylenes showed embryolethal/toxic and teratogenic effects with maternal toxicity. Many case studies involving abuse during pregnancy implicate toluene as a developmental toxicant. Studies in laboratory animals have shown developmental effects comparable to those reported in humans, but the effects were generally associated with maternal toxicity. Exposing pregnant mice to maternally toxic MTBE levels greater than 1000 ppm produced adverse gestational and developmental effects including malformations. No developmental toxicity was seen in rabbits exposed to MTBE concentrations up to 8000 ppm. Birth defects in mice and fetotoxicity in both rats and mice were observed following maternally toxic TAME exposures. Exposure of pregnant rats to high concentrations of DIPE (3095 and 6745 ppm) by inhalation during pregnancy increased the frequency of rudimentary 14th ribs in the offspring. The effect was not seen following exposure to 430 ppm DIPE. The significance of this finding is not known.
Genotoxicity	Unleaded gasoline was tested for genetic activity in tests using microbial cells, cultured mammalian cells and rats (bone marrow) and was judged to be negative in every case. Benzene has been shown to be non-mutagenic or weakly mutagenic in a variety of in vitro (test tube) systems. It has, however, been found to cause other types of chromosome damage (micronuclei, chromosome breakage, non-dysjunctional events) in both laboratory animals and workers exposed to high doses of benzene. These effects appear to be related to one or more metabolites of benzene, possibly acting in combination. Benzene metabolites can also bind to proteins forming detectable complexes (adducts). There is limited evidence of binding to the genetic material (DNA) itself. The relationship of these effects to the causation of leukemia or tumors in experimental animals is unknown. Changes in chromosomes of lymphocytes have been identified in some studies of humans exposed to styrene. The significance of these changes is not known, and other such studies have produced negative results. Chromosomal breaks have been reported in the bone marrow cells of rats exposed to styrene by inhalation along with increased frequency of sister chromatid exchanges in alveolar macrophages, bone marrow cells and regenerating liver cells. Ethylbenzene was not mutagenic in a number of in vitro procedures. Naphthalene was negative in Ames mutagenicity and rat cell transformation assays. Cyclohexane and pseudocumene were also negative in Ames testing. Toluene was negative in the Ames assay and negative for chromosomal aberrations and sister-chromatid exchanges in human lymphocytes and in an in vitro test using hamster cells. Mouse lymphoma test results for toluene were inconclusive. MTBE was negative in several mutagenicity tests, but was positive in a mouse lymphoma test.
Blood/Blood Forming Organs	Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs and is associated with anemia (depletion of blood cells). Repeated exposure of rabbits to high cyclohexane vapor concentrations causes a slight increase in blood clotting time. Blood effects were seen in rats following prolonged and repeated oral exposure to a mixture of xylenes containing ethylbenzene.
Immunotoxicity	Various studies of workers exposed to high levels of benzene have found impairment of both humoral (antibody) and cellular immunity, most notably a decrease in levels of circulating leukocytes. Many of these exposures also involve other solvents and chemicals. Animal studies with high benzene doses have reported similar effects.

Kidney	Long-term inhalation of wholly vaporized gasoline caused increased kidney weight and progressive nephropathy (tissue damage) in male rats. In rats exposed orally to a xylene mixture also containing ethylbenzene, males developed hyaline droplet changes and females showed evidence of early chronic nephropathy. Intentional abuse of toluene vapors by 'glue-sniffers' has been associated with damage to the kidneys. Long term inhalation of up to 8000 ppm MTBE vapor produced a chronic, progressive nephropathy (kidney damage) in male rats. This effect may be related to the accumulation of alpha-2u globulin and therefore specific to the male rat. (See Carcinogenicity) Increased kidney weights without evidence of tissue injury were reported in rats exposed to high, inhaled doses of TAME. Prolonged inhalation of DIPE (90 days or longer) increased kidney weights in both male and female rats. In male rats exposed to the highest concentration (7100 ppm) there was also evidence of microscopic changes (hyaline droplets) in the kidney tubules resembling those produced by exposure to gasoline.
Liver	Inhalation of gasoline vapor increased liver weights, urinary excretion of ascorbic acid, and hepatic enzyme activity in male rats. Liver weight increases were seen in rats dosed orally for 90 days with a xylene mixture also containing ethylbenzene. Reversible liver damage has been reported in persons exposed to toluene by solvent abuse. Liver weight increases without evidence of tissue injury were seen in rats exposed to greater than 500 ppm TAME by inhalation for four weeks. Prolonged inhalation of DIPE (90 days or longer) increased liver weights in both rats and rabbits. In rabbits and in male rats exposed to 7100 ppm there was also evidence of microscopic changes in the liver tissue.
Nervous System	Inhalation of MTBE vapors at high concentrations (above 800 ppm) induced reversible central nervous system depression in rats. Inhalation of TAME at concentrations greater than 250 ppm produced reversible sedation in rats and mice.
Neurotoxicity	Inhalation exposure to high n-hexane concentrations has resulted in peripheral neuropathy in rodents and also in human workers. Rats receiving prolonged and repeated exposure to high doses of xylene have shown hearing loss. Prolonged and repeated exposures to high toluene concentrations (mixed solvent) have resulted in hearing loss in laboratory animals. There have also been reports of hearing damage in humans overexposed to toluene and other solvents, however, these effects and their possible relationship to noise exposure remain uncertain. Intentional inhalation ('glue-sniffing') and resulting overexposure to toluene vapors has been linked to brain injury. Rats exposed repeatedly to high concentrations of styrene vapor also developed hearing deficits.
Reproductive Toxicity	Inhalation of high n-hexane concentrations resulted in testicular and epididymal lesions in laboratory animals. Animal studies on benzene have shown testicular effects and alteration in reproductive cycles.
Sensitization	Gasoline and component petroleum streams blended to produce it were tested in animal studies and found not to cause skin sensitization.
Systemic Toxicity	Studies on n-hexane in laboratory animals have shown mild, transitory effects on the spleen and blood (white blood cells) and evidence of nasal tract and lung damage. Chronic exposure to vapors of a mixture containing 50% pseudocumene (and possibly contaminated with benzene) caused decreased weight gain and blood changes (lymphopenia and neutrophilia), liver, lung, spleen, kidney, and bone marrow effects in rats. Microscopic changes in the lung, including congestion, hemorrhage, edema, exudation, and leukocyte infiltration were observed in rats and guinea pigs following acute inhalation of styrene. In fatally exposed animals, pulmonary congestion, edema, and necrosis of the kidney and liver were reported. Repeated exposure to high vapor concentrations of cyclohexane caused minor microscopic liver and kidney changes in rabbits. Laboratory animals exposed to prolonged and repeated doses of xylenes by various routes have shown effects in liver, kidneys, lungs, spleen, heart, blood and adrenals.

SECTION 12

ECOLOGICAL INFORMATION

Environmental Impact Summary:

There is no ecological data available for this product.

SECTION 13

DISPOSAL CONSIDERATIONS

RCRA Information:

If this material, as it is originally purchased, were subsequently DISCARDED as a waste, the waste would be a RCRA hazardous waste.

D001 (Ignitable Hazardous Waste) D018 (Toxicity, Benzene > 0.5 mg/l)

Under RCRA, it is the responsibility of the user of the material to determine, at the time of the disposal, whether

the material meets RCRA criteria for hazardous waste. This is because material uses, transformations, mixtures, processes, etc. may affect the classification. Refer to the latest EPA, state and local regulations regarding proper disposal.

SECTION 14**TRANSPORT INFORMATION****US Department of Transportation Classification**

Proper Shipping Name: Gasoline
Identification Number: UN1203
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II
Marine Pollutant % of Total: 100 %weight
Marine Pollutant: Marine Pollutant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.
Oil: Per 49 CFR 130.5, containers of 3500 gallon capacity or greater transported by road or rail are excepted from 49 CFR 172.303(L)(2) if shipping papers contain the word 'OIL'; exceptions are not applicable to shipments by water.
Emergency Response Guide # 128

SECTION 15**REGULATORY INFORMATION****Federal Regulatory Status****OSHA Classification:**

Product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 19.10.1200.

Ozone Depleting Substances (40 CFR 82 Clean Air Act):

This material does not contain nor was it directly manufactured with any Class I or Class II ozone depleting substances.

Superfund Amendment & Reauthorization Act (SARA) Title III:

There are no components in this product on the SARA 302 list.

SARA Hazard Categories (311/312):

Immediate Health	Delayed Health	Fire	Pressure	Reactivity
YES	YES	YES	NO	NO

SARA Toxic Release Inventory (TRI) (313):

Xylene (mixed isomers), Styrene, 1,2,4-Trimethylbenzene, Toluene, Naphthalene, Methyl Tert-Butyl Ether, N-Hexane, Ethylbenzene, Cyclohexane, Benzene

Toxic Substances Control Act (TSCA) Status:

All component(s) of this material is(are) listed on the EPA/TSCA Inventory of Chemical Substances.

Other Chemical Inventories:

Australian AICS, Chinese Inventory, European EINECS, Japan ENCS, Korean Inventory, Philippines PICCS

State Regulation

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65):

The chemical identified with this code, Reproductive Toxin is known to the state of California to cause birth defects or other reproductive harm. The chemical identified with this code, Carcinogen & Reproduction Toxin, is known to the state of California to cause both cancer and birth defects or other reproductive harm.

Benzene (71-43-2)	0 - 4 %volume	Carcinogen/Reproduction
Toluene (108-88-3)	0 - 25 %volume	Reproduction

New Jersey Right-To-Know Chemical List:

Benzene (71-43-2)	0 - 4 %volume	Carcinogen
Benzene (71-43-2)	0 - 4 %volume	Mutagen
Benzene, Methyl- (108-88-3)	0 - 25 %volume	
Cyclohexane (110-82-7)	0 - 1 %volume	
Ethylbenzene (0851)	0 - 3 %volume	
Methyl Tert-Butyl Ether (1634-04-4)	0 - 15 %volume	
Naphthalene (1322)	0 - 1 %volume	
Propane, 2,2'-oxybis- (108-20-3)	0 - 2 %volume	
Styrene (100-42-5)	0 - 4 %volume	Mutagen
Xylenes (1330-20-7)	0 - 25 %volume	

Pennsylvania Right-To-Know Chemical List:

Benzene (71-43-2)	0 - 4 %volume	Spec Haz Sub/Env Hazardous
Benzene, dimethyl- (1330-20-7)	0 - 25 %volume	Environmental Hazard
Benzene, ethenyl (100-42-5)	0 - 4 %volume	Environmental Hazard
Benzene, Ethyl- (100-41-4)	0 - 3 %volume	Environmental Hazard
Benzene, Methyl- (108-88-3)	0 - 25 %volume	Environmental Hazard
Cyclohexane (110-82-7)	0 - 1 %volume	Environmental Hazard
Methyl Tert-Butyl Ether (1634-04-4)	0 - 15 %volume	Environmental Hazard
Naphthalene (91-20-3)	0 - 1 %volume	Environmental Hazard
Propane, 2,2'-oxybis- (108-20-3)	0 - 2 %volume	

SECTION 16

OTHER INFORMATION

Revision#: 10

Revision Date: 10/11/2000

Revisions since last change (discussion): This Material Safety Data Sheet has been changed to include new information on the potential carcinogenicity of component Ethylbenzene and to add Diisopropyl Ether (DIPE) as a component. We encourage you to take the opportunity to reread the sheet and review the information contained. Changes have occurred in the following Sections: 2, 11, 15.

SECTION 17

LABEL INFORMATION

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT

CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

PRODUCT CODES: 00317, 00331, 00367, 00483, 00768, 01008, 01009, 01135, 01139, 01144, 01148, 01181, 01419, 01436, 01448, 014501, 01452, 02569, 02573, 02582, 02594, 02757, 02772, 02775, 07440, 07441, 07647, 07648, 07673, 07674, 07686, 08611, 08612, 26630, 26631, 26632, 26633, 26634, 26635, 26636, 26637, 26663, 26760, 26771, 26773, 26776, 26807, 26813, 27025, 27033

Mid Grade Unleaded Gasoline (Conventional, CARB and RFG)

DANGER!

EXTREMELY FLAMMABLE. VAPORS MAY EXPLODE. OVEREXPOSURE TO VAPORS CAN CAUSE CNS DEPRESSION. MAY CAUSE SKIN AND EYE IRRITATION. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS BENZENE WHICH IS A CANCER HAZARD - LINKED TO DEVELOPMENT OF ACUTE MYELOGENOUS LEUKEMIA. LONG-TERM EXPOSURE TO GASOLINE VAPORS HAS CAUSED CANCER IN LABORATORY ANIMALS. PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE OIL ACNE OR DERMATITIS.

MAY CAUSE DAMAGE TO: Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver, Nervous System

This material and/or components may cause the following effects:
Developmental Toxicity, Genotoxicity, Immunotoxicity, Reproductive Toxicity

Precautionary Measures: Avoid heat, sparks, open flames and other ignition sources. Do not take internally. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Keep container closed when not in use. Wash thoroughly after handling.

FIRST AID

Inhalation: Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin Contact: Remove contaminated clothing. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye Contact: Flush eyes with large amounts of water for at least 15 minutes. If redness, burning, blurred vision or swelling persist, transport to nearest medical facility for additional treatment.

Ingestion: DO NOT take internally. DO NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

FIRE

In case of fire, Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

SPILL OR LEAK

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in

ATTACHMENT E
Pre-Entry Meeting Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.

ATTACHMENT F

Sign Off Sheet

SIGN OFF SHEET

All site personnel have read this Site-Specific Health and Safety Plan and are familiar with its provision:

NAME _____

SIGNATURE

DATE _____

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

APPENDIX B

Standard Operating Procedures (QA/QC)

LETTERLE & ASSOCIATES, LLC
STANDARD OPERATING PROCEDURE
SOIL BORING / MONITORING WELL INSTALLATION

Personnel Requirements:

All personnel will be familiar with the site-specific health and safety plan. Field personnel involved in soil boring or monitoring well installation will have completed the OSHA 40-Hour HAZWOPER training, and annual 8-hour refresher courses, as required.

Instruments and Supplies for Soil Boring/Monitor Well Installation:

Electronic oil/water interface probe, air monitoring device (PID), survey wheel and transit, decontamination supplies (Liquinox®, deionized-distilled water, appropriate containers, scrub brush, and sorbent pads or paper towels), and general tools.

Health and Safety Requirements:

Ambient air monitoring is performed during drilling and well installation to determine the level of personal protection equipment (PPE) to be worn by employees working on-site. Level "D" PPE will be worn at a minimum during drilling and will include, hard hats, steel toe boots, and safety glasses. Utility clearance will be conducted prior to any drilling activities. All required permits (if applicable) will be obtained prior to the drilling program.

Decontamination Requirements:

In order to prevent cross-contamination during the drilling process, all tools, including augers and other drilling components, will be cleaned within a designated area prior to advancing to the next borehole or drilling location. The decontamination process will involve complete washing of drilling equipment with high-pressure water to remove debris, followed by a thorough steam cleaning of the same equipment. The split-spoon sampling device will be thoroughly washed with a Liquinox®/distilled-deionized water solution and double rinsed with distilled-deionized water prior to each use.

Procedures:

During drilling, each borehole will be field logged using drill cuttings and split-spoon soil samples. Cuttings and samples will be scanned in the field with a PID to determine the presence (or absence) and relative concentration of volatile organic compounds (VOCs). Material composition, including the color and moisture content, will be recorded in the field book.

All drill cuttings that exhibit contamination based upon field PID readings or from visual observation will be retained on-site. Disposal of drill cuttings will be made with an appropriate facility in accordance with all applicable regulations.

Soil samples to be submitted for laboratory analysis will immediately be placed into laboratory-supplied containers, sealed and labeled. The labels will include the project name and the sampling person, the date and time of collection, and the borehole number.

Monitoring wells may be constructed after completion of a soil-boring program (or after individual boreholes are drilled). Well construction is completed according to project specifications as well as site-specific conditions. The monitor wells are typically constructed

with 4-inch diameter PVC (Schedule 40) pipe, 0.020-inch slot screen, with flush-threaded joints. Each well is constructed so that the screened interval intercepts the water table, while allowing for water level fluctuation. Solid PVC riser casing will be used above the screen, to bring each well up to the existing surface grade. A properly sized gravel pack is used to pack each well annulus to a minimum of one foot above the screened interval. A one-foot thick (at a minimum) bentonite seal will be placed above the gravel pack, while the remaining well annulus will be grouted to grade. All wells are completed with a steel protective casing and locking cap or flush-mounted manhole covers and locking caps.

Field Activity Documentation:

All soil boring and monitor well installation activities are recorded in the field book. The notes shall include the date and time, project name and number, persons present on-site, task description, weather conditions, and applicable health and safety information.

**LETTERLE & ASSOCIATES, LLC
STANDARD OPERATING PROCEDURE
MONITORING EQUIPMENT CALIBRATION**

Materials and Equipment Necessary for Task Completion:

Instrument to be calibrated: PID, vacuum gauges, air flow meter, manometer, pH meters, specific conductivity meters. Equipment necessary for calibration: calibration gases, Tedlar® bags.

Health and Safety Requirements:

Personnel performing in-field calibration checks must adhere to the Site Specific Health and Safety Plan.

Methodology:

Field Instrumentation:

Field instruments requiring calibration on a regular basis include organic vapor analyzers, pH meters, specific conductivity meters, explosimeters, oxygen meters, and decimeters utilized in the Health and Safety Monitoring Program. Calibration and maintenance procedures are derived from the manufacturer's instruction manuals.

Instrument Calibration:

All instruments used by Letterle & Associates, LLC (Letterle) are calibrated according to the manufacturer's operation/instruction manual by Letterle's Equipment Coordinator. Prior to each use, the calibration of the instruments is checked and, if needed, adjustments are made. A running record is kept on "Equipment Calibration" sheets for each instrument.

In order to obtain the most precise analyses, commercial standard gases, buffers and solutions are employed in instrument calibration procedures. Calibration gases are obtained by L&A from the instrument manufacturer or other supplier. All field instruments are calibrated daily prior to use in the field.

Periodic calibration checks are to be made during instrument operation, as necessary, including a final calibration check at the end of daily use. Calibration checks during instrument use are to be recorded in the operator's field book. Equipment malfunctions or significant calibration deviations noted during use are to be reported to Letterle.

No instrument shall be used unless calibration can be obtained to within tolerances specified by manufacturer. Malfunctioning instruments must be clearly be labeled as such and are to be repaired or replaced prior to assignment for use.

pH/Conductivity Meter:

For field analyses of pH and specific conductance for surface and groundwater samples Letterle personnel utilize a DspH-1 meter manufactured by Davis Instrument Manufacturing Company, Inc. or equivalent meter. The meter is pre-calibrated prior to shipment, the manufacturer suggests that calibration should be performed periodically fresh pH buffers and known conductivity solutions. Letterle personnel calibrate the meter at least twice daily while in the

field. The pH buffer and conductivity solutions are purchased from either the meter manufacturer or from a chemical supply company and the calibration liquids are not used past the expiration date on the container.

LETTERLE & ASSOCIATES, LLC
STANDARD OPERATING PROCEDURE
WELL SURVEYING

Personnel Requirements:

All personnel will be familiar with the site-specific health and safety plan. In addition, employees conducting the well surveys will be familiar with the procedures used in the performance of the surveys, with at least one employee (involved with surveying) having extensive experience with the collection and preparation of survey data.

Instruments and Supplies for Well Surveying:

All survey equipment including transit, tripod, and stadia rod; and general tools for opening the monitor wells.

Health and Safety Requirements:

Ambient air monitoring will be performed during well surveying to determine the level of personal protective equipment (PPE) to be worn by employees working on-site. Level "D" PPE will be worn at a minimum. Traffic control devices such as safety cones or barricades, will be used as needed to protect the work area.

Procedures:

The monitoring wells are surveyed relative to a local datum point (usually an on-site location), which is assigned a relative elevation, and recorded in the field book. The survey point location for each monitor well is the top-of-casing (TOC), and is permanently marked on each monitoring well. Once the transit is leveled, the first sighting is to the benchmark. For relative elevations the benchmark is given the arbitrary value of 100.00 feet. All subsequent elevations are collected in reference to the benchmark.

Field Activity Documentation:

All well surveying activities are recorded in the field book. The notes shall include the date and time, project name and number, persons present on-site, task description, weather conditions, and applicable health and safety information.

LETTERLE & ASSOCIATES, LLC
STANDARD OPERATING PROCEDURE
WELL DEVELOPMENT

Personnel Requirements:

All personnel will be familiar with the site-specific health and safety plan. In addition, employees conducting well development will be familiar with the procedures used to develop monitor wells.

Instruments and Supplies for Well Development:

Electronic oil/water interface probe, bailers, or pump with polyethylene hose, decontamination supplies (Liquinox®, deionized-distilled water, appropriate containers, scrub brush, and sorbent pads or paper towels), general tools, and air monitoring device (PID).

Health and Safety Requirements:

Ambient air monitoring is performed during well development to determine the level of personal protection equipment (PPE) to be worn by employees working on-site. Level "D" PPE will be worn at a minimum.

Decontamination Requirements:

To eliminate the possibility of cross contamination, clean unused bailers, or unused purge hose will be dedicated to each well. Standard decontamination procedures for the interface probe or other equipment entering a well, will be performed in accordance with the following schedule:

- A clean tap water rinse to remove excess materials
- Equipment scrubbing in a distilled water/Liquinox® solution
- Thorough rinsing with deionized/distilled water

Procedures:

Monitor well development is performed to remove drill cuttings, drilling-related fluids, and general sediment from the monitor well and screen sand pack. Well development can increase the well yield, while further insuring the collection of representative groundwater quality samples.

The monitor well development process consists of surging the well to remove sediment and suspended solids from the well screen and pack. As sediment is brought into the well, it is removed either by mechanically pumping the water/sediment, or by direct bailing methods. The development process is typically performed until the discharge no longer contains sediment, or is as sediment-free as possible.

Field Activity Documentation:

All well development activities are recorded in the field book. The notes shall include the date and time, project name and number, persons present on-site, task description, weather conditions, and applicable health and safety information.

LETTERLE & ASSOCIATES, LLC
STANDARD OPERATING PROCEDURE
SAMPLE HANDLING

Personnel Requirements:

All personnel will be familiar with the site-specific health and safety plan. In addition, employees conducting soil and groundwater sampling activities will be familiar with the procedures used in the collection and preservation of all samples.

Procedures:

Soil samples are to be collected using a disposable polyethylene t-handle sampling device. Water samples will be collected using disposable polyethylene bailers or through remedial system sample ports. After collection into the appropriate preserved bottleware, the samples will be wrapped in bubble packing to minimize the potential for breakage during shipment.

All samples will be placed on ice to maintain a temperature of 4°C. A chain of custody will be maintained from sample collection in the field to delivery to the appropriate laboratory personnel.

Health and Safety Requirements:

Ambient air monitoring will be performed to determine the necessity of PPE upgrade. At a minimum, level "D" attire will be worn. Gloves will be used throughout the soil and water sampling activities.

**LETTERLE & ASSOCIATES, LLC
STANDARD OPERATING PROCEDURE
GROUNDWATER MONITORING**

Personnel Requirements:

All personnel will be familiar with the site-specific health and safety plan. In addition, employees conducting groundwater monitoring activities will be familiar with the procedures used in the collection of groundwater samples, with at least one employee (involved with the sampling) having extensive experience with the performance of the slug tests. The employee actually collecting groundwater samples will have completed the OSHA 40-Hour HAZWOPER training, and annual 8-hour refresher courses, as required.

Instruments and Supplies for Groundwater Monitoring:

A list of equipment required to access, gauge, purge, and sample site monitoring wells is listed below. Also listed are materials necessary to store, label, preserve, and transport groundwater samples.

- Current site map detailing well locations
- Optical interface probe, conductivity / temperature meter
- General tools for well access
- Monitor well purging materials / equipment
- Disposable polypropylene bottom-loading bailer(s) and new nylon or polypropylene bailer cord
- Disposable sampling gloves
- Decontamination supplies
- Sample containers and labels
- Purge water treatment system (carbon filtration system)
- Traffic control devices (cones, barricades, etc.)

Health and Safety Requirements:

Ambient air monitoring will be performed to determine the necessity of PPE upgrade. At a minimum, level "D" attire will be worn. Gloves will be used whenever throughout the monitoring program. Traffic control devices will be positioned as necessary to protect the work area. Monitoring wells located in roadways may require an additional employee to provide for traffic redirection and / or protection.

Decontamination Requirements:

To the extent practical, disposable items will be used for well purging and sampling, including but not limited to sampling gloves, disposable bailers and bailing cord. Other equipment such as monitoring instruments (Interface probe, temperature / conductivity meter) will be decontaminated between wells. Procedures for decontamination will include the following:

- Initial rinse with clean tap water to remove excess residuals
- Scrub equipment with sponge or clean, soft cloth in a distilled water/Liquinox® (or equivalent non-phosphate detergent) solution
- Double rinse with deionized/distilled water

Procedures:

Groundwater elevation data (or product if encountered) is obtained from the monitoring wells to aid in the determination of both the groundwater flow direction and for determining the volume of water necessary for purging. The standard procedures performed for obtaining liquid level data from monitor wells is as follows:

- Wells will be gauged in order of increasing contaminant concentrations based upon the most recent available analytical data. Well which have historically contained free product will be gauged last
- Wells will be gauged with an optical interface or conductivity probe, which will be decontaminated in accordance with applicable procedures prior to gauging each well
- The condition of the well will be noted, including the presence or absence of surface intrusion within the manhole.
- The groundwater or product level will be measured and recorded
- The locking well cap will be re-installed or replaced if damaged
- The interface probe will be decontaminated in accordance with applicable procedures

As with the gauging data, the sequence for collecting groundwater samples will be based upon historical groundwater quality data. The wells will be sampled in order from the lowest to highest concentration of the contaminants present in the water, to reduce the potential for sample cross-contamination.

Once the gauging data is collected, each well will be purged a minimum of three well volumes, except in well where the groundwater does not recharge and is bailed dry. Well purging removes stagnant water from the well casing and induces flow from outside the well. This allows for the collection of a representative water sample from the aquifer for analysis of the required parameters. In cases where a well is bailed dry, the well will be evacuated once prior to sample procurement.

Purging volume calculations will be based on the total depth of the well, as determined during depth-to-water measurements obtained prior to sampling. Calculations will be recorded in the field book. All groundwater removed during purging will be treated using granular activated carbon and discharged on-site.

Field Activity Documentation:

All well development activities are recorded in the field book. The notes shall include the date and time, project name and number, persons present on-site, task description, weather conditions, and applicable health and safety information.

**LETTERLE & ASSOCIATES, LLC
STANDARD OPERATING PROCEDURE
WASTE MANAGEMENT**

Typical Wastes at Environmental Investigation and Remediation Sites:

- Petroleum Impacted Groundwater
- Petroleum Impacted Soil
- Investigation Derived Wastes
- Sediment Filters

Personnel Requirements:

All personnel will be familiar with the site-specific health and safety plan. In addition, employees will be familiar with the procedures used in the management of all wastes generated at the site.

Procedures:

Groundwater

Petroleum-impacted groundwater generated during monitor well development or groundwater sampling will be placed into appropriately labeled 55-gallon drums and stored in a secure location on-site or will be routed through granular activated carbon (GAC) drums before being discharged to the ground surface. A representative water sample (from either the drum or from the monitor wells) will be submitted to a certified laboratory for analysis. The specific laboratory analyses will be based upon the type of petroleum product released at the site and the requirements of the disposal facility. After the laboratory results are received, the results will be submitted to the disposal facility for approval and a waste transporter will be contacted to coordinate the drum removal and disposal.

Petroleum-impacted groundwater generated during pilot testing or remediation activities will be routed through granular activated carbon (GAC) drums before being discharged to a sanitary or storm sewer or to a surface water body. An appropriate discharge permit (i.e., NPDES or municipal authority) must be obtained prior to discharge. A representative water sample must be collected from the final effluent of the GAC unit and submitted to a certified laboratory for analysis. The specific laboratory analyses will be based upon the requirements of the permit. After the laboratory results are received, the results and the total amount of water discharges will be reported to the PADEP (for NPDES) or the municipal authority (sanitary sewer discharges) in a Discharge Monitoring Report (DMR) or a letter.

Petroleum Impacted Soil

Petroleum-impacted soil generated during monitor well installation or soil boring completion will be placed into appropriately labeled 55-gallon drums and stored in a secure location on-site. A representative soil sample will be collected from the drum and submitted to a certified laboratory for analysis. The specific laboratory analyses will be based upon the type of petroleum product released at the site and the requirements of the disposal facility. After the

laboratory results are received, the results will be submitted to the disposal facility for approval and a waste transporter will be contacted to coordinate the drum removal and disposal.

Petroleum-impacted soil generated during tank excavation or soil removal activities will be stored on and within thick plastic at a secure location on-site. A representative soil sample will be collected from the soil pile and submitted to a certified laboratory for analysis. The specific laboratory analyses will be based upon the type of petroleum product released at the site and the requirements of the disposal facility. The number of samples will be based upon the volume of soil in the soil pile as detailed in the FC-1 form or the requirements of the disposal facility. After the laboratory results are received, the results will be submitted to the disposal facility for approval and a waste transporter will be contacted to coordinate the soil removal and disposal.

Investigation Derived Wastes

Investigation derived waste such as used latex gloves, bailers, paper towels, bailing cord, etc will be discarded in garbage at the site unless grossly contaminated. Grossly contaminated materials will be placed into appropriately labeled 55-gallon drums and stored in a secure location on-site pending disposal as indicated above.

Sediment Filters

Used sediment filters from the remediation system will be discarded in the garbage at the site. First, accumulated sediment will be removed from the filters and placed into an appropriately labeled 55-gallon drum and stored in a secure location on-site pending disposal as indicated above.

Health and Safety Requirements:

Ambient air monitoring will be performed to determine the necessity of PPE upgrade. At a minimum, level "D" attire will be worn. Gloves will be used throughout the waste disposal activities.

LETTERLE & ASSOCIATES, LLC
STANDARD OPERATING PROCEDURE
SLUG TESTS

Personnel Requirements:

All personnel will be familiar with the site-specific health and safety plan. In addition, employees conducting the slug tests will be familiar with the procedures used in the performance of the slug tests, with at least one employee (involved with the tests) having extensive experience with the performance of the slug tests.

Instruments and Supplies for Slug Testing:

Interface probe, solid PVC slug (for water displacement), 5-gallon pail, traffic cones or barricades, decontamination supplies.

Health and Safety Requirements:

Ambient air monitoring is performed during slug testing to determine the level of personal protection equipment (PPE) to be worn by employees working on-site. Level "D" PPE will be worn at a minimum.

Decontamination Requirements:

To eliminate the possibility of cross contamination, any item entering the well (interface probe, PVC slug), must be cleaned withalconox and distilled water prior to use, and between each well monitoring well to be slug tested.

Procedures:

Slug tests are used to evaluate general aquifer performance coefficients. The tests are performed by monitoring water level response immediately following a displacement change (in the water level), until the water has returned to approximately 90% of its original static level. Field data from slug tests performed by Letterle & Associates, LLC is analyzed using the Super Slug computer program. Slug tests performed in water table formations are usually reduced using the Bouwer & Rice method.

Field Activity Documentation:

All slug-testing activities are recorded in the field book. The notes shall include the date and time, project name and number, persons present on-site, task description, weather conditions, and applicable health and safety information.

APPENDIX C

Chambers Analytical Data - Soil (SCR)

Table 1
Soil Quality Analytical Results
May 15, 1997

Sample/ Analyte	MTBE	Benzene	Toluene	Ethyl- benzene	Xylenes (total)	Isopropyl- benzene	Naphth- alene	Benzo-a anthracene	Benzo-a pyrene
A1-F	26.9	9.14	13.7	4.69	12.4	<2.50	49.8	102	62.3
A1-B	196	137	110	330	572	49.3	265	<20.0	<20.0
A2-F	26.3	2.66	38.5	3.45	21.5	<2.50	20.7	<20.0	<20.0
A2-B	66.3	13.9	110	6.21	43.0	<2.50	54.0	<20.0	<20.0
A3-F	47.5	7.26	84.2	4.47	65.5	<2.50	43.4	<20.0	<20.0
A3-6.5'	93.3	20.9	213	16.5	101	<2.50	2.65	<20.0	<20.0
A4-4'	760	202	439	47.9	272	<2.50	5.85	<20.0	<20.0
A4-6.5'	79.3	32.2	174	22.1	52.0	4.08	3.08	<20.0	<20.0
A5-4'	205	450	317	281	594	21.2	51.1	<20.0	<20.0
A5-6.5'	258	268	102	279	259	18.2	16.2	<20.0	<20.0
A6-F	1,840	732	383	497	614	140	187	62.2	58.2
A6-6.5'	125	215	227	356	779	62.3	465	<20.0	<20.0
A7-4'	3,450	38.0	662	433	2,032	78.5	1,140	<20.0	<20.0
A7-6.5'	2,980	823	2,210	1,370	4,510	975	1,920	<20.0	<20.0
A8-4'	3,380	22.6	4,590	4,010	12,840	1,990	6,000	269	49.9
A8-7'	1,590	313	846	413	1,430	137	706	60.1	52.9
A9-4'	8,540	43.7	5,030	3,300	11,510	1,100	6,510	<20.0	<20.0
A9-6'	1,430	351	579	424	1,420	111	681	63.0	58.7
A10-4'	51.6	8.24	175	25.2	218	<2.50	34.0	<20.0	<20.0
A10-7'	75.8	319	360	489	1,125	107	240	129	112
A11-F	138	351	4,110	5,430	14,910	4,050	7,360	86.1	62.9
A11-6'	116	321	454	431	1,607	148	718	<20.0	<20.0
A12-10'	21.9	209	601	449	1,148	191	641	<20.0	43.9
USUAL (R)	2,000	500	100,000	70,000	1,000,000	10,000	5,000	25,000	2,500

USUAL(NR) = Unsaturated Soil Standard/Action Level (Residential) from PADEP Technical Document, Closure Requirements
For USTs, effective April 1, 1998.

Note: Boldface concentrations indicate exceedance of USUAL(N).

Note: All concentrations in above table in parts per billion (ppb) ug/kg.

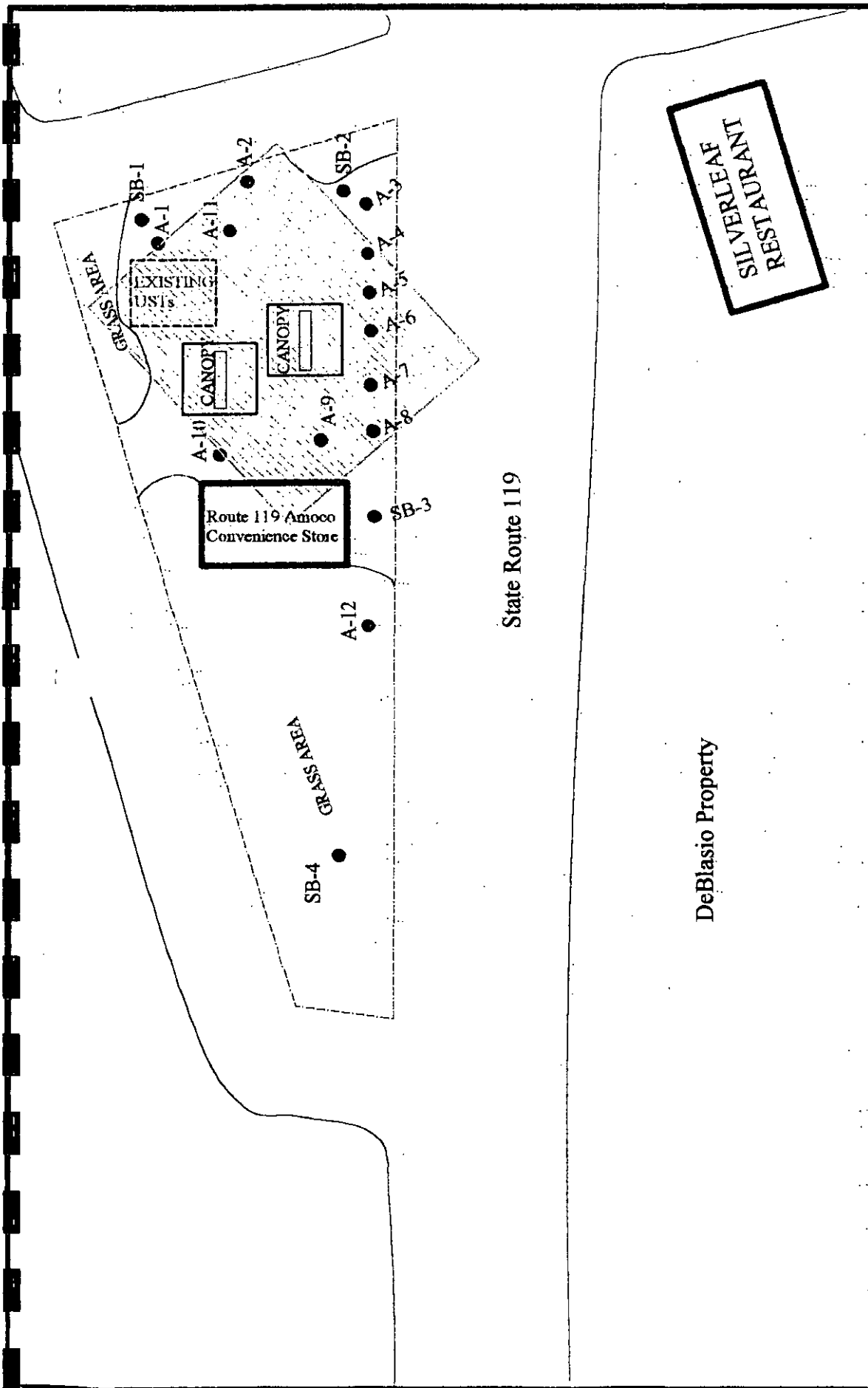
Table 2
Soil Quality Analytical Results
August 28, 1997

Sample/ Analysis	MTBE	Benzene	Toluene	Ethyl- benzene	Xylenes (total)	Isopropyl benzene	Naphth- alene	Benzo- anthracene	Benzo- pyrene
SB1-6'	<2.50	<2.50	2.72	<2.50	<5.00	<2.50	2.53	<20.0	<20.0
SB2-3'	10.6	6.87	18.0	78.8	185.9	7.68	5.94	<20.0	<20.0
SB4-6'	12.23	8.16	9.06	<2.50	<5.00	<2.50	17.0	<20.0	<20.0
SB4-8.9'	7.50	5.38	<2.50	<2.50	<5.00	<2.50	18.7	16.8	27.6
USS/AL (R)	1,000	500	100,000	70,000	1,000,000	10,000	5,000	25,000	2,500

USS/AL(R) = Unsaturated Soil Standard/Action Level (Residential) from PADLP Technical Document, Closure Requirements For USTs, effective April 1, 1998.

Note: Boldface concentrations indicate exceedance of SSS(UA).

Note: All concentrations in above table in parts per billion (ppb) ug/kg



<p>CHAMBERS ENVIRONMENTAL GROUP, INC. 485 E. COLLEGE AVE. PLEASANT GAP, PA</p>	<p>APPENDIX A, FIGURE 18 ADSORBED-PHASE IMPACTED AREA (DEPTH 3'-8")</p> <p>● SOIL BORING LOCATION SCALE: 1"=50'</p> <p>N</p>	<p>ROUTE 119 AMOCO STATE ROUTE 119 CONNELLSVILLE, PA DUNBAR TWP., FAYETTE CO. CEG PROJECT #96-05413-B</p>
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APPENDIX D

Chambers Analytical Data – Groundwater (SCR)

Table 5
Groundwater Quality Results

Analyte		Benzene	Toluene	Ethylbenzene	Xylenes (total)	MTBE	Naphthalene	Isopropylbenzene (Cumene)
PADEP Water Standard/ Action Level	Date	5	1,000	700	10,000	20	20	25
MW-1	8 Sept. 97	NS	NS	NS	NS	NS	NS	—
	1 Oct. 97	24,500	317,000	264,000	767,000	11,900	141,000	—
	4 Nov. 97	NS	NS	NS	NS	NS	NS	—
	27 Jan. 98	1,780	22,200	10,600	33,100	4,140	9,030	—
	23 April 98	1,350	9,770	1,330	5,150	16,300	483	125
MW-2	8 Sept. 97	4.61	56.1	11.7	71.2	0.44	5.07	—
	1 Oct. 97	12.3	163	74.7	339	20.2	26.9	—
	4 Nov. 97	22.0	40.8	47.7	168	49.3	0.92	—
	27 Jan. 98	39.2	67.7	30.4	206	1,280	1.35	—
	23 April 98	1.89	9.43	6.05	27.6	185	2.43	1.34
MW-3	8 Sept. 97	371	649	298	916	597	54.2	—
	1 Oct. 97	5,120	14,000	4,230	19,050	21,600	629	—
	4 Nov. 97	6,770	24,400	5,390	32,300	34,300	1,150	—
	27 Jan. 98	2,760	13,200	2,050	14,810	49,900	649	—
	23 April 98	1,460	2,380	4,100	7,450	7,050	205	81.1
MW-4	8 Sept. 97	4.46	43.4	55.8	120	1.12	5.45	—
	1 Oct. 97	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	—
	4 Nov. 97	<0.50	<0.50	<0.50	<1.0	1.63	<0.50	—
	27 Jan. 98	<0.50	<0.50	<0.50	<1.0	87.1	<0.50	—
	23 April 98	0.75	<0.50	<0.50	2.66	8.79	<0.50	<0.50
MW-5	4 Nov. 97	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	—
	27 Jan. 98	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	—
	23 April 98	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50
MW-6	4 Nov. 97	<0.50	<0.50	<0.50	<1.0	2.71	<0.50	—
	27 Jan. 98	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	—
	23 April 98	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50
RW-1	4 Nov. 97	1.29	3.93	16.4	64.5	3.23	6.34	—
	27 Jan. 98	0.53	0.97	1.02	6.01	6.68	3.51	—
	23 April 98	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50
RW-2	4 Nov. 97	5.75	24.6	54.3	237	335	21.0	—
	27 Jan. 98	125	159	838	128	2,800	<1.00	—
	23 April 98	115	320	14.9	354	1,420	5.56	<0.50

Well not sampled.

Historical Groundwater Quality Data 119 Amoco--Project #96-05413-B

Well	Date	Compound						
		MTBE	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	Cumene	Napthalene
PADEP WSJAL		20	5	1000	700	10000	25	20
MW-1	19-Jun-98	7190	1710	11000	2090	13170	5400	1820
	12-Oct-98	NS	NS	NS	NS	NS	NS	NS
	9-Nov-98	276	875	5260	1380	9820	176	404
	18-Dec-98	<100	1020	108	5240	245820	582	170
	16-Feb-99	9410	248	330	<25.0	939	<25.0	163
	19-Apr-99	1290	409	195	382	1446	<100	<500
	3-Jun-99	1880	453	52.1	389	1260	45	165
	23-Jul-99	49.2	19	12.8	196	786	39.1	94
	31-Aug-99	16.2	5.75	<4.00	48.1	53.6	11.8	33.2
	23-Sep-99	NS	NS	NS	NS	NS	NS	NS
	29-Dec-99	14.4	14.7	15.3	43.7	54.1	13.6	27.9
	27-Jan-00	9.03	5.25	<4.00	58.7	31.2	23.1	37
	22-Feb-00	<4.00	8.8	<4.00	13.7	17.3	4.78	<20
	21-Mar-00	992	369	55	426	623	40.7	219
	28-Apr-00	1210	435	56.6	175	231	18.2	55
MW-2	19-Jun-98	791	6.67	2.24	<0.50	5.5	<0.50	5.33
	12-Oct-98	227	5.37	<0.50	4.31	<1.00	<0.50	10.2
	9-Nov-98	NS	NS	NS	NS	NS	NS	NS
	18-Dec-98	49.5	3.95	<1.00	2.46	<2.00	2.84	4.82
	16-Feb-99	12.1	0.75	1.08	<0.50	<1.00	<0.50	<0.50
	19-Apr-99	1370	<20.0	<20.0	<20.0	<40.0	<20.0	<100
	3-Jun-99	131	<4.00	<4.00	<4.00	<8.00	<4.00	<20.0
	23-Jul-99	44	<10	<10	<10	<20	<10	<50
	31-Aug-99	11.3	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	23-Sep-99	11.8	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	29-Dec-99	<2.00	<2.00	<2.00	<2.00	<4.00	<2.00	<10
	27-Jan-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	22-Feb-00	5.22	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	21-Mar-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	28-Apr-00	16.6	<4.00	<4.00	<4.00	<8.00	<4.00	<20.0
MW-3	19-Jun-98	4,200	1,950	7,790	1,420	7,420	2,440	458
	12-Oct-98	6,660	1,240	7,640	975	12,190	<50.0	671
	9-Nov-98	1,670	796	25,400	13,100	77,200	2,230	3,530
	18-Dec-98	SPH	SPH	SPH	SPH	SPH	SPH	SPH
	16-Feb-99	3,310	923	6860	1640	12,910	<250	1330
	19-Apr-99	1,660	286	495	2140	3083	<100	<500
	3-Jun-99	1,900	472	443	241	1710	<20.0	128
	14-Jun-99	3,900	1020	1100	1470	4320	87.1	321
	23-Jul-99	188	136	876	531	3,900	77	204
	31-Aug-99	122	23.5	110	86.4	684	20	44
	23-Sep-99	62.2	29	4,938	62.8	491	16.5	37.4
	29-Dec-99	147	88.7	434	556	3,400	130	237
	27-Jan-00	216	60.5	432	502	2,990	92.9	<200
	22-Feb-00	407	16.2	<10	<10	39.5	<10	<50
	21-Mar-00	<4.00	<4.00	<4.00	9.93	19	<4.00	<20
	28-Apr-00	3400	466	202	216	1250	18.2	85.7

Note: BOLD indicates that the value exceeds the PADEP Statewide Health Standard.

Historical Groundwater Quality Data **119 Amoco--Project #96-05413-B**

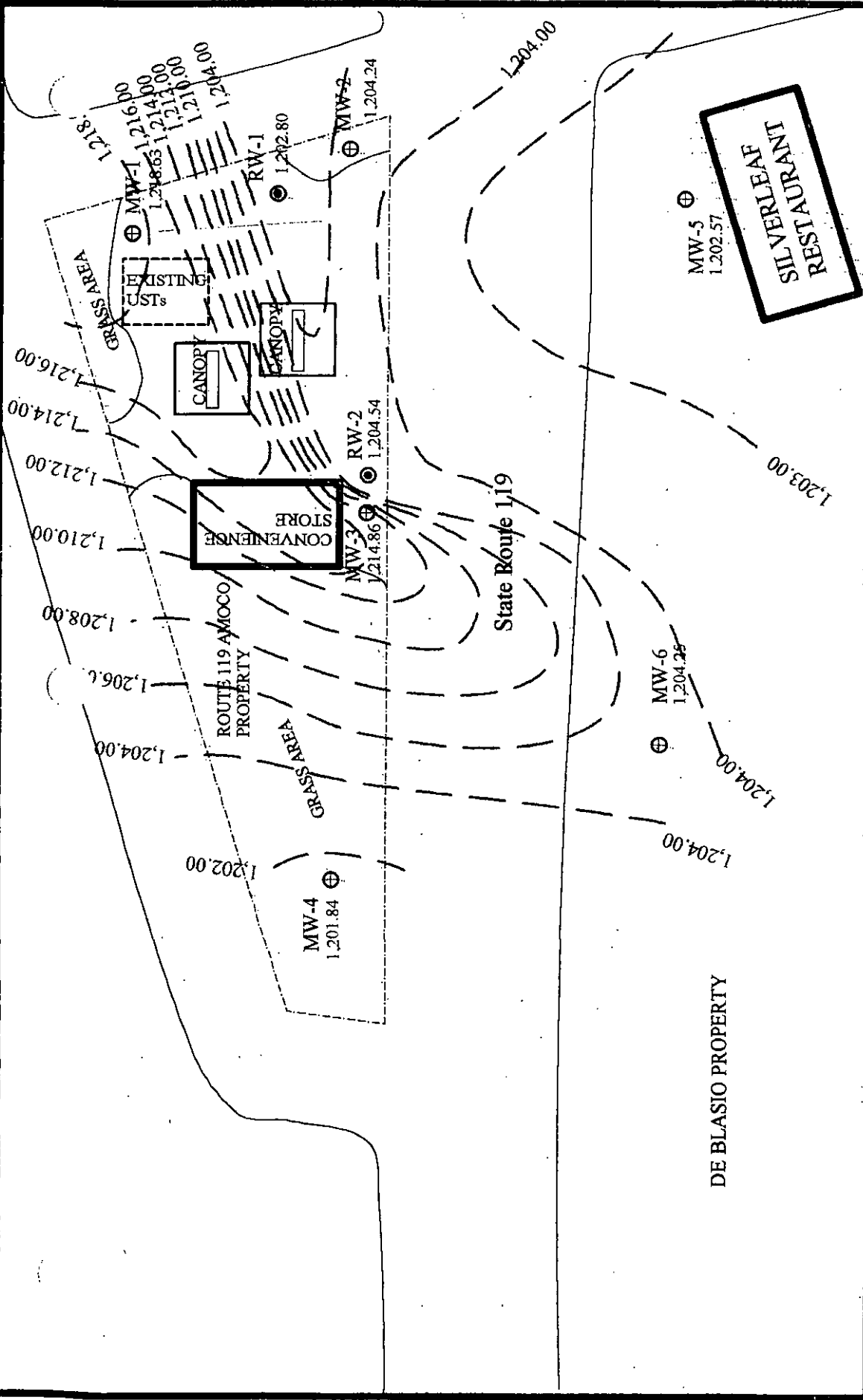
Well	Date	Compound						
		MTBE	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	Cumene	Naphthalene
PADEP WS/AL		20	5	1000	700	10000	25	20
MW-4	19-Jun-98	40.3	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	12-Oct-98	23.5	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	9-Nov-98	21.1	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	18-Dec-98	22.6	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	16-Feb-99	12	0.71	<0.50	<0.50	0.5	<0.50	<0.50
	19-Apr-99	31.9	<1.00	<1.00	<1.00	<2.00	<1.00	<5.00
	3-Jun-99	21.2	<2.00	<2.00	<2.00	<4.0	<2.00	<10.0
	23-Jul-99	26.7	<2.00	<2.00	<2.00	<4.00	<2.00	<10
	31-Aug-99	20.5	<2.00	<2.00	<2.00	<4.00	<2.00	<10
	23-Sep-99	21	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	29-Dec-99	11.9	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	27-Jan-00	17	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	22-Feb-00	15.4	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	21-Mar-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	28-Apr-00	44.6	<4.00	<4.00	<4.00	<8.00	<4.00	<20.0
MW-5	19-Jun-98	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	12-Oct-98	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	9-Nov-98	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	18-Dec-98	<1.00	<1.00	<1.00	<1.00	<2.00	<0.50	<0.50
	16-Feb-99	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	19-Apr-99	<1.00	<1.00	<1.00	<1.00	<2.00	<1.00	<5.00
	3-Jun-99	<2.00	<2.00	<2.00	<2.00	<4.00	<2.00	<10.0
	23-Jul-99	<2.00	<2.00	<2.00	<2.00	<4.00	<2.00	<10
	31-Aug-99	<2.00	<2.00	2.31	<2.00	4.25	<2.00	<10
	23-Sep-99	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	29-Dec-99	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	27-Jan-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	22-Feb-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	21-Mar-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	28-Apr-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20.0
MW-6	19-Jun-98	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50	6.77
	12-Oct-98	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	9-Nov-98	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	18-Dec-98	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	16-Feb-99	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	19-Apr-99	<1.00	<1.00	<1.00	<1.00	<2.00	<1.00	<5.00
	3-Jun-99	<2.00	<2.00	<2.00	<2.00	<4.00	<2.00	<10.0
	23-Jul-99	<2.00	<2.00	<2.00	<2.00	<4.00	<2.00	<10.0
	31-Aug-99	<2.00	<2.00	<2.00	<2.00	<4.00	<2.00	<10.0
	23-Sep-99	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	29-Dec-99	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	27-Jan-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	22-Feb-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	21-Mar-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	9-May-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20.0

Historical Groundwater Quality Data **119 Amoco--Project #96-05413-B**

Well	Date	Compound						
		MTBE	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	Cumene	Napthalene
PADEP WS/AL		20	5	1000	700	10000	25	20
RW-1	19-Jun-98	4.82	6.28	<0.50	<0.50	<1.00	<0.50	<0.50
	12-Oct-98	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	9-Nov-98	4.14	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50
	18-Dec-98	1.51	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00
	16-Feb-99	1.83	1.72	1.88	1.21	3.18	<0.50	<0.50
	19-Apr-99	7.65	<1.00	<1.00	<1.00	<2.00	<1.00	<5.00
	3-Jun-99	5.39	<4.00	<4.00	<4.00	<8.00	<4.00	<20.0
	23-Sep-99	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	29-Dec-99	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20
RW-2	9-May-00	<4.00	<4.00	<4.00	<4.00	<8.00	<4.00	<20.0
	19-Jun-98	9,980	1,480	4,620	247	4,530	4	186
	12-Oct-98	1,120	493	358	179	4,710	49.1	248
	9-Nov-98	231	<50.0	941	1,040	8,820	289	2,950
	18-Dec-98	SPH	SPH	SPH	SPH	SPH	SPH	SPH
	16-Feb-99	3180	122	906	368	3,790	88.2	958
	19-Apr-99	1200	186	<100	206	604	<100	<500
	3-Jun-99	1320	53.2	15.8	<10.0	304	13.4	87.3
	14-Jun-99	4010	287	177	39.4	554	4.07	28.8
SVE-1	23-Sep-99	111	15.5	<10	10.7	22.2	<10	<50
	29-Dec-99	45.3	15.9	28.4	45.8	388	<10.0	191
	9-May-00	2840	42	<10.0	<10.0	<20.0	<10.0	<50.0
	19-Jun-98	885	40.5	23.4	9.52	304	811	115
	12-Oct-98	NS	NS	NS	NS	NS	NS	NS
	9-Nov-98	NS	NS	NS	NS	NS	NS	NS
	18-Dec-98	NS	NS	NS	NS	NS	NS	NS
	16-Feb-99	NS	NS	NS	NS	NS	NS	NS
	19-Apr-99	2270	495	134	289	1270	<50.0	<250
SVE-2	3-Jun-99	1590	536	<100	459	877	<100	<500
	23-Sep-99	NS	NS	NS	NS	NS	NS	NS
	29-Dec-99	NS	NS	NS	NS	NS	NS	NS
	9-May-00	2890	502	<100	180	251	<100	<500
	19-Jun-98	17,000	3,850	16,800	1,930	10,480	2,780	1,050
	12-Oct-98	13,100	1,910	28,300	2,660	23,840	187	289
	9-Nov-98	NS	NS	NS	NS	NS	NS	NS
	18-Dec-98	NS	NS	NS	NS	NS	NS	NS
	16-Feb-99	8,430	551	232	1810	6960	235	690
SVE-3	19-Apr-99	2,990	681	844	419	2,377	<100	<500
	3-Jun-99	4,560	858	1,010	556	3,430	<200	<1,000
	23-Sep-99	11,100	939	498	108	1,500	22.1	144
	29-Dec-99	35,100	4,580	6,470	699	8,260	<200	<1,000
	9-May-00	33,400	3,780	6,580	750	6,700	<200	<1,000
	19-Jun-98	11,700	3,030	10,900	1,970	13,600	147	549
	12-Oct-98	SPH	SPH	SPH	SPH	SPH	SPH	SPH
	9-Nov-98	SPH	SPH	SPH	SPH	SPH	SPH	SPH
	18-Dec-98	SPH	SPH	SPH	SPH	SPH	SPH	SPH
SVE-3	16-Feb-99	18,500	14,000	3,960	1,220	9,020	<500	690
	19-Apr-99	4,840	1,530	1,710	1,560	4,770	<500	<2500
	3-Jun-99	NS	NS	NS	NS	NS	NS	NS
	14-Jun-99	5,600	1,310	594	776	3,000	<400	<2000
	23-Sep-99	2,900	744	289	333	1,450	<200	<1000
	29-Dec-99	1,100	1,560	275	668	1,630	<100	<1000
	9-May-00	252	814	<100	377	364	<100	<500

Historical Groundwater Quality Data **119 Amoco--Project #96-05413-B**

		Compound						
Well	Date	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	Cumene	Napthalene
PADEP WS/AL		20	5	1000	700	10000	25	20
AS-1	19-Jun-98	489	4,550	4,130	1,830	9,840	2,980	877
	12-Oct-98	<0.40	2.85	27.1	111	481	20.9	34.2
	9-Nov-98	NS	NS	NS	NS	NS	NS	NS
	18-Dec-98	NS	NS	NS	NS	NS	NS	NS
	16-Feb-99	10,200	9,080	11,300	30,700	124,300	3470	23,800
	19-Apr-99	<500	<500	<500	1,720	4910	<500	<2500
	3-Jun-99	NS	NS	NS	NS	NS	NS	NS
	23-Sep-99	NS	NS	NS	NS	NS	NS	NS
	29-Dec-99	5.45	9.96	20.1	53	175	12.1	20.8
	9-May-00	508	<4.00	<4.00	<4.00	<8.00	<4.00	<20.0
AS-2	19-Jun-98	1,480	146	78.1	22.6	192.8	<2.50	13
	12-Oct-98	6,060	37.7	6.68	<2.50	<5.00	<2.50	<2.50
	9-Nov-98	2,270	13.4	5.19	5.58	9.43	2.91	3.25
	18-Dec-98	NS	NS	NS	NS	NS	NS	NS
	16-Feb-99	104,000	34.6	24.5	33.5	76.9	<2.50	137
	19-Apr-99	1,000	<10.0	<10.0	<10.0	<20.0	<10.0	<50
	3-Jun-99	914	4.08	<2.00	<2.00	<4.00	<2.00	<10
	23-Sep-99	610	12.4	8.37	<4.00	20.2	<4.00	<20
	29-Dec-99	334	<4.00	<4.00	<4.00	<8.00	<4.00	<20
	9-May-00	<4.00	<4.00	<4.00	6.09	<8.00	<4.00	<20.0



CHAMBERS
ENVIRONMENTAL GROUP, INC.
 485 E. COLLEGE AVE.
 PLEASANT GAP, PA

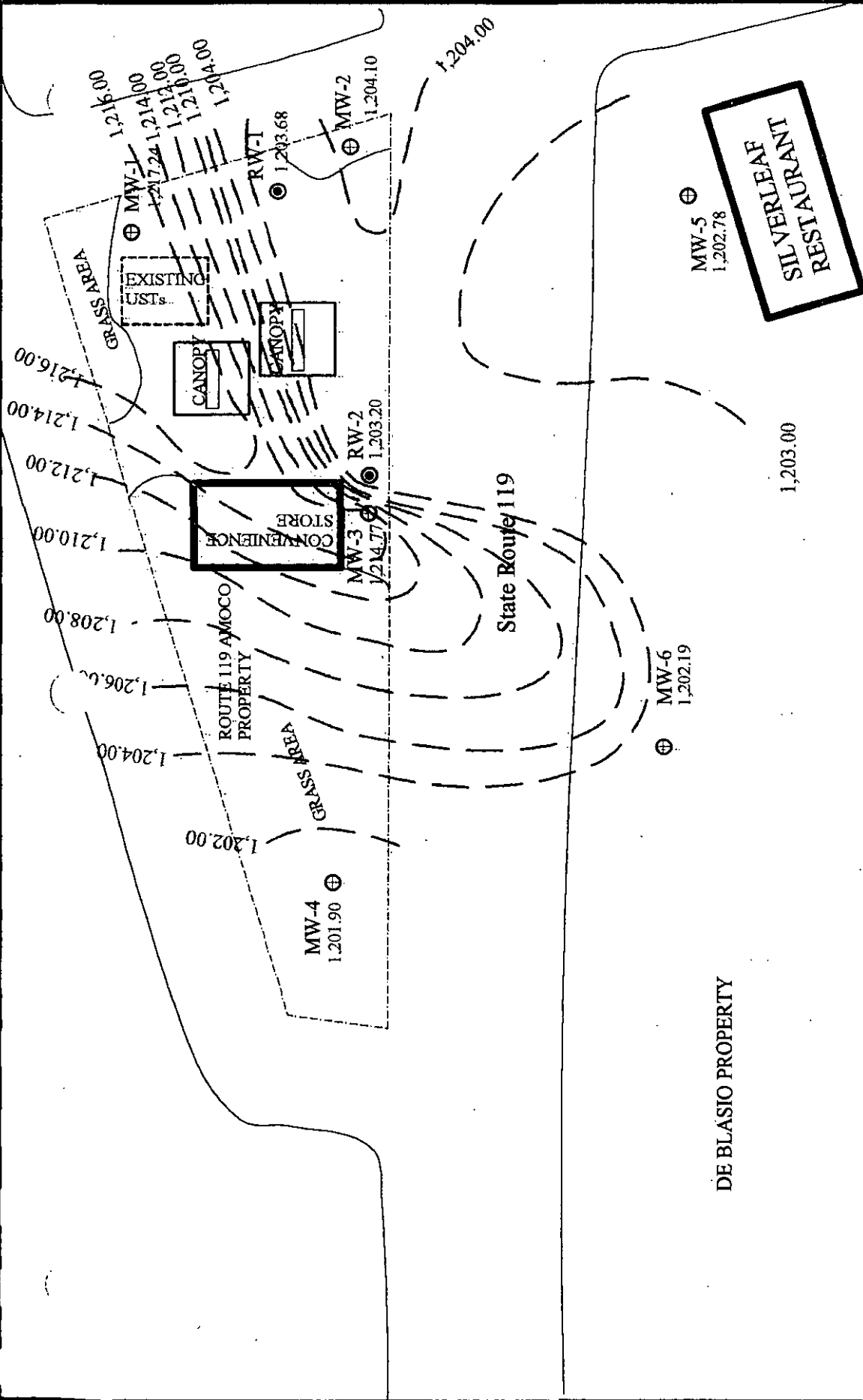
APPENDIX A, FIGURE 6
GROUNDWATER ELEVATION MAP
JANUARY 27, 1998

⊕ MONITORING WELL
 ⊙ RECOVERY WELL
 SCALE: 1"=50'

N

ROUTE 119 AMOCO
STATE ROUTE 119
CONNELLSVILLE, PA
DUNBAR TWP., FAYETTE CO.

CEG PROJECT #96-05413-B

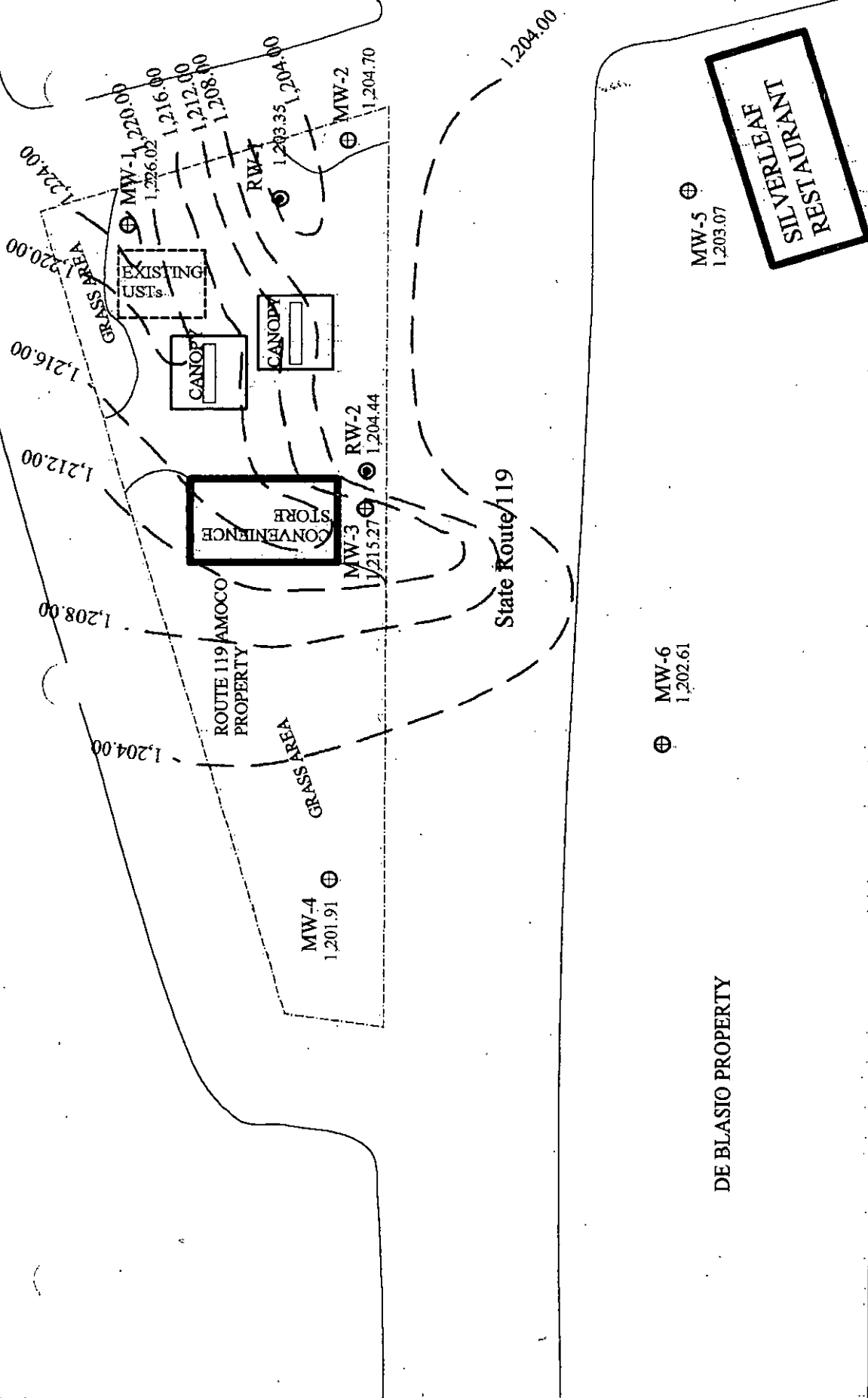


CHAMBERS
ENVIRONMENTAL GROUP, INC.
 485 E. COLLEGE AVE.
 PLEASANT GAP, PA

APPENDIX A, FIGURE 7
GROUNDWATER ELEVATION MAP
FEBRUARY 25, 1998

⊕ MONITORING WELL
 ⊙ RECOVERY WELL
 SCALE: 1"=50'

ROUTE 119 AMOCO
STATE ROUTE 119
CONNELLSVILLE, PA
DUNBAR TWP., FAYETTE CO.
CEG PROJECT #96-05413-B

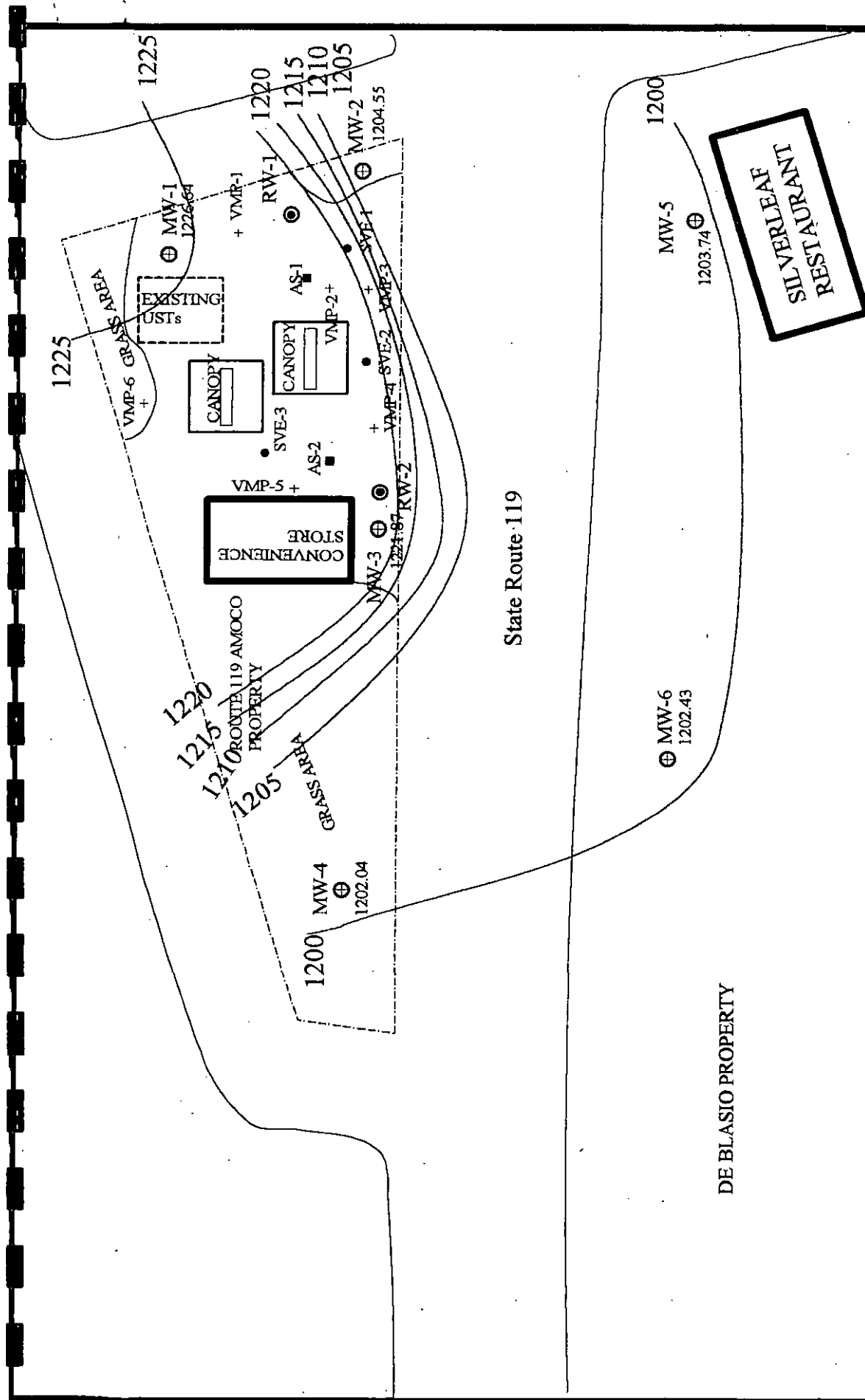


CHAMBERS
ENVIRONMENTAL GROUP, INC.
 485 E. COLLEGE AVE.
 PLEASANT GAP, PA

APPENDIX A, FIGURE 8
GROUNDWATER ELEVATION MAP
 APRIL 23, 1998

⊕ MONITORING WELL
 ⊙ RECOVERY WELL
 SCALE: 1"=50'

ROUTE 119 AMOCO
STATE ROUTE 119
CONNELLSVILLE, PA
DUNBAR TWP., FAYETTE CO.
CEG PROJECT #96-05413-B



CHAMBERS
ENVIRONMENTAL GROUP, INC.
629 East Rolling Ridge Drive
Penn Eagle Industrial Park
Bellefonte, Pa 16823

APPENDIX A FIGURE 3
GROUNDWATER ELEVATION MAP
April 27, 2000

● SOIL VAPOR EXTRACTION WELL
 SVE-2
 ⊕ MONITORING WELL
 + VAPOR MONITORING PROBE
 VMP-4
 ■ AIR SPARGE WELL
 AS-2
 --- GW Contour (feet)

SCALE: 1"=50'

ROUTE 119 AMOCO
STATE ROUTE 119
CONNELLSVILLE, PA
DUNBAR TWP., FAYETTE CO

CEG PROJECT #96-05413-B

APPENDIX E
RETTEW Groundwater Data

Table 1
PA Route 119 Amoco Groundwater Sampling Analytical Results

Act 2 Statewide Health Standard		5	1,100	700	20	100	1,000	10,000	
MW-No.	Date	Benzene	Cumene	Ethylbenzene	MTBE	Naphthalene	Toluene	Total Xylenes	Dissolved Oxygen (mg/l)
MW-1	8/24/2000	19	32	255	74	7.6	7.9	36	1.2
	7/24/2001	80	19	124	63	2.5	8.6	32	0.29
	11/26/2001	35	3.3	12	26	2.3	16	19	1.28
	2/18/2002	20	5.4	2.5	45	4.0	3.9	19	3.18
	5/15/2002	30	9.2	40	43	14	12	86	NA
	9/16/2002	118	9.2	41	87	18	22	129	2.14
	12/4/2002	898	16	96	1440	33	115	285	NA
	9/16/2003	7.6	5.2	22.0	5.0	13.4	6.7	73.1	NA
	12/4/2003	29	1.5	10.2	64	<2.0	3.2	5.5	NA
	4/9/2004	36.5	<1.0	1.2	17.4	2.6	<1.0	3.3	
	7/7/2004	<1.0	<1.0	<1.0	13.8	<2.0	<1.0	<3.0	
	12/8/2004	32.2	<1.0	3.1	14.7	<2.0	<1.0	<3.0	
MW-2	8/23/2000	<1	<1	<1	<1	<2	<1	<3	3.7
	7/24/2001	<1	<1	<1	93	<2	<1	<3	0.59
	11/26/2001	<1	<1	<1	1.3	<2	<1	<3	NA
	2/18/2002	<1	<1	<1	<1	<2	<1	<3	NA
MW-3	7/24/2001	485	35	390	1950	155	152	1490	NA
	11/26/2001	<1	<1	<1	<1	<2	<1	<3	6.65
	2/18/2002	127	2.2	17	768	9.2	34	407	1.55
	12/4/2003	352	7.1	26.7	524	8.8	6.2	26.6	1.65
	4/9/2004	7.7	<1.0	1.0	12.0	<2.0	<1.0	5.4	
	7/7/2004	26.2	2.2	3.9	338	3.8	3.1	19.6	
	12/8/2004	39.1	3.2	5.5	63.7	2.3	1.0	3.9	
	3/24/2005	<1.0	<1.0	<1.0	28.2	<2.0	<1.0	<3.0	
	7/6/2005	51.4	<1.0	3.8	140	9.1	19.6	38.3	
MW-4	8/23/2000	<1	<1	<1	11	<2	<1	<3	3.7
	7/23/2001	<1	<1	<1	14	<2	<1	<3	1.92
	11/26/2001	<1	<1	<1	6.7	<2	<1	<3	0.67
	2/18/2002	<1	<1	<1	4.0	<2	<1	<3	
	5/15/2002	<1	<1	<1	13	<2	<1	<3	1.78
	9/16/2002	<1	<1	<1	8.8	<2	<1	<3	NA
	12/4/2002	<1	<1	<1	<1	<2	<1	<3	NA
	4/29/2003	<1	<1	<1	4.3	<2	<1	<3	4.6
	9/16/2003	<1	<1	<1	3.1	<2	<1	<3	NA
	12/4/2003	<1	<1	<1	<1	<2	<1	<3	1.50
	4/9/2004	<1.0	<1.0	<1.0	7.4	<2.0	<1.0	<3.0	
	7/7/2004	<1.0	<1.0	<1.0	5.6	<2.0	<1.0	<3.0	
	12/8/2004	<1.0	<1.0	<1.0	6.8	<2.0	<1.0	<3.0	
	3/24/2005	3.5	<1.0	7.5	6.7	3.3	30.8	42	
	7/6/2005	<1.0	<1.0	2.1	3.9	<2.0	10.4	15.6	

NOTES: All results reported in micrograms per liter (µg/l), unless stated otherwise.
 NA = The parameter was not included in the sampling.
 Shaded numbers represent analytical results, which exceed Act 2 Statewide Health Standards for groundwater.
 Sampling locations not sampled on a specific sampling date are omitted from the Table.

Table 1 (Continued)
PA Route 119 Amoco Groundwater Sampling Analytical Results

Act 2 Statewide Health Standard		5	1,100	700	20	100	1,000	10,000	
MW-No.	Date	Benzene	Cumene	Ethylbenzene	MTBE	Naphthalene	Toluene	Total Xylenes	Dissolved Oxygen (mg/l)
MW-5	8/23/2000	<1	<1	<1	<1	<2	<1	<3	2.99
	7/23/2001	<1	<1	<1	<1	<2	<1	<3	0.68
	11/26/2001	<1	<1	<1	<1	<2	<1	<3	1.5
	2/18/2002	<1	<1	<1	<1	<2	<1	<3	4.43
	5/15/2002	<1	<1	<1	<1	<2	<1	<3	NA
	9/16/2002	<1	<1	<1	<1	<2	<1	<3	NA
	12/4/2002	<1	<1	<1	<1	<2	<1	<3	NA
	4/29/2003	<1	<1	<1	<1	<2	<1	<3	3.6
MW-6	8/23/2000	<1	<1	<1	<1	<2	<1	<3	3.20
	7/23/2001	<1	<1	<1	<1	<2	<1	<3	0.58
	11/26/2001	<1	<1	<1	<1	<2	<1	<3	1.7
	2/18/2002	<1	<1	<1	<1	<2	<1	<3	NA
	5/15/2002	<1	<1	<1	<1	<2	<1	<3	0.76
	9/16/2002	<1	<1	<1	<1	<2	<1	<3	0.83
	12/4/2002	<1	<1	<1	2.2	<2	<1	<3	NA
	4/29/2003	<1	<1	<1	<1	<2	<1	<3	0.5
	12/4/2003	<1	<1	<1	<1	<2	<1	<3	1.70
	4/9/2004	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<3.0	
	7/7/2004	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<3.0	
	12/8/2004	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<3.0	
	3/24/2005	<1.0	<1.0	<1.0	<1.0	<2.0	1.5	<3.0	
	7/6/2005	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<3.0	

NOTES: All results reported in micrograms per liter (µg/l), unless stated otherwise.
Sampling locations not sampled on a specific sampling date are omitted from the Table, with the exception of AS-1; NS = The well was not sampled.
NA = The parameter was not included in the sampling.
Shaded numbers represent analytical results, which exceed Act 2 Statewide Health Standards for groundwater.

Table 1 (Continued)
PA Route 119 Amoco Groundwater Sampling Analytical Results

Act 2 Statewide Health Standard		5	1,100	700	20	100	1,000	10,000	
MW-No.	Date	Benzene	Cumene	Ethylbenzene	MTBE	Naphthalene	Toluene	Total Xylenes	Dissolved Oxygen (mg/l)
RW-1	8/24/2000	<1	<1	<1	1.8	<2	<1	<3	2.17
	7/23/2001	<1	<1	<1	2.5	<2	<1	<3	0.72
	11/16/2001	<1	<1	<1	1.1	<2	<1	<3	3.15
	2/18/2002	<1	<1	<1	<1	<2	<1	<3	NA
	12/4/2003	1.8	<1	<1	0.9	<2	<1	<3	3.48
	4/9/2004	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<3.0	
	7/7/2004	10.7	<1.0	<1.0	36.7	<2.0	<1.0	<3.0	
	12/8/2004	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<3.0	
	3/24/2005	14.4	<1.0	14.4	1.9	3.8	78.4	87.2	
	7/6/2005	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<3.0	
RW-2	8/24/2000	5.3	<5	23	1930	<10	<5	22	1.61
	7/24/2001	30	<1	6.8	714	<2	2.8	33	4.62
	11/16/2001	2.0	1.2	2.2	39	19	<1	37	0.45
	2/18/2002	<1	<1	<1	7.6	<2	<1	<3	1.3
	5/15/2002	320	<10	15	2380	43	<10	93	NA
	9/16/2002	66	<5.0	14	488	<10	7.8	66	NA
	12/4/2002	95	4.6	24	195	11	10	96	NA
	12/4/2003	1.8	<1	<1	105	<2	<1	<3	1.80
	7/7/2004	1.9	<1.0	<1.0	737	<2.0	<1.0	<3.0	
	12/8/2004	76.8	<1.0	<1.0	133	<2.0	<1.0	<3.0	
	3/24/2005	<1.0	<1.0	<1.0	10.8	<2.0	2.8	5.2	
	7/6/2005	324	2.9	15.7	174	10.3	4.8	6.6	

NOTES: All results reported in micrograms per liter (µg/l), unless stated otherwise.
Sampling locations not sampled on a specific sampling date are omitted from the Table, with the exception of
AS-1; NS = The well was not sampled.
NA = The parameter was not included in the sampling.
Shaded numbers represent analytical results, which exceed Act 2 Statewide Health Standards for groundwater.

Table 1 (Continued)
PA Route 119 Amoco Groundwater Sampling Analytical Results

Act 2 Statewide Health Standard		5	1,100	700	20	100	1,000	10,000	
MW-No.	Date	Benzene	Cumene	Ethylbenzene	MTBE	Naphthalene	Toluene	Total Xylenes	Dissolved Oxygen (mg/l)
DW-1	8/28/2001	3.2	<1	<1	<1	2.0	3.9	14	NA
	11/26/2001	2.9	<1	<1	<1	2.0	<1	<3	0.56
	2/18/2002	2.2	<1	7.0	<1	<2	1.6	3.4	1.84
	5/15/2002	<1	<1	2.5	<1	<2	<1	<3	1.81
	9/16/2002	<1	<1	<1	<1	<2	<1	<3	NA
	12/4/2003	<1	<1	<1	<1	<2	<1	<3	NA
	4/9/2004	<1	<1	<1	<1	<2	<1	<3	
	7/7/2004	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<3.0	

NOTES: All results reported in micrograms per liter ($\mu\text{g/l}$), unless stated otherwise.
 NA = The parameter was not included in the sampling.
 Shaded numbers represent analytical results, which exceed Act 2 Statewide Health Standards for groundwater.
 Sampling locations not sampled on a specific sampling date are omitted from the Table.

Table 1 (Continued)
PA Route 119 Groundwater Sampling Analytical Results

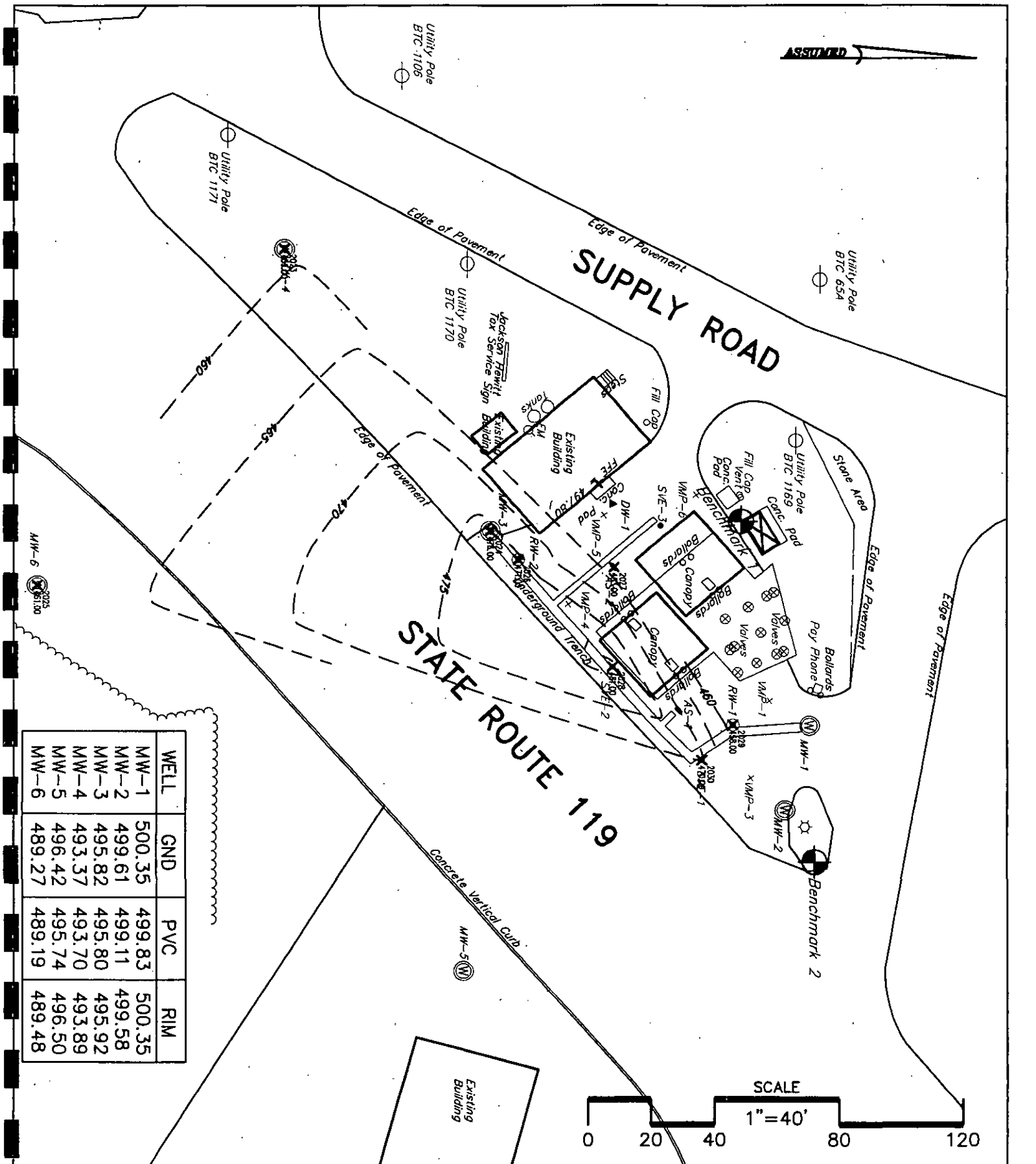
Act 2 Statewide Health Standard		5	1,100	700	20	100	1,000	10,000	
MW-No.	Date	Benzene	Camene	Ethylbenzene	MTBE	Naphthalene	Toluene	Total Xylenes	Dissolved Oxygen (ml/l)
SVE-1	9/16/2003	4.2	2.3	<1	2.5	<2	2.5	21.8	NA
	12/4/2003	3.1	1.6	18.9	2.7	3.4	7.2	11.0	NA
	4/9/2004	1.1	8.8	27.0	2.0	26.6	16.6	78.5	
	12/8/2004	3.2	4.3	50.0	1.3	12.9	16.3	49.7	
	3/24/2005	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<3.0	
SVE-2	8/24/2000	3890	60	266	28900	268	1840	7750	2.20
	7/24/2001	25	17	117	1740	27	57	325	NA
	11/26/2001	<1	<1	<1	6.2	<2	<1	<3	1
	2/18/2002	575	3.1	47	2400	15	119	532	NA
	5/15/2002	350	27	182	2320	60	196	783	NA
	9/16/2002	719	<20	65	1900	41	82	290	0.77
	12/4/2002	1490	<20	144	3450	48	243	453	NA
	4/29/2003	263	5.5	54.7	403	17.2	16.7	55.5	<0.5
	9/16/2003	39	2.3	<1	4.7	<2	3.6	21.7	NA
	12/4/2003	85	2.3	23.4	22	7.7	66.2	135	1.41
	4/9/2004	56	7.6	42.6	279	19.4	41.6	126	
	7/7/2004	414	<1.0	2.5	536	<2.0	3.2	10.0	
	12/8/2004	304	4.4	63.8	13	15.0	22.6	82.6	
	3/24/2005	1.3	<1.0	1.5	<1.0	2.2	3.1	7.0	
	7/6/2005	622	9.4	180	225	35.4	10.5	36.7	
SVE-3	8/24/2000	671	26	416	140	138	47	547	2.90
	11/26/2001	78	<20	<20	770	<40	<20	135	0.51
	2/18/2002	39	3.5	11	109	30	11	106	0.55
	5/15/2002	214	14	60	515	75	26	200	NA
	9/16/2002	1920	22	216	3480	146	207	847	0.82
	12/4/2002	94	14	107	36	36	166	337	NA
	4/29/2003	258	8.8	89.6	356	32.3	29.3	102	0.35
	9/16/2003	315	3.1	17.3	41	<2	4.5	29.4	NA
	12/4/2003	200	3.9	43.8	173	14.8	18.6	50.6	1.00
	4/9/2004	630	15.4	145	118	53.2	77.8	239	
	7/7/2004	196	<1.0	6.1	258	2.4	9.4	12.6	
	12/8/2004	579	10.9	136	190	38.6	58.0	226	
	3/24/2005	<1.0	<1.0	<1.0	<1.0	<2.0	1.4	3.6	

NOTES: All results reported in micrograms per liter (µg/l), unless stated otherwise.
Sampling locations not sampled on a specific sampling date are omitted from the Table, with the exception of
AS-1; NS = The well was not sampled.
NA = The parameter was not included in the sampling.
Shaded numbers represent analytical results, which exceed Act 2 Statewide Health Standards for groundwater.

Table 1 (Continued)
PA Route 119 Amoco Groundwater Sampling Analytical Results

Act 2 Statewide Health Standard		5	1,100	700	20	100	1,000	10,000	
MW-No.	Date	Benzene	Cumene	Ethylbenzene	MTBE	Naphthalene	Toluene	Total Xylenes	Dissolved Oxygen (mg/l)
AS-1	8/23/2000	NS	NS	NS	NS	NS	NS	NS	NA
AS-2	8/24/2000	<1	<1	<1	22.55	<2	<1	<3	2.1
	7/7/2004	5.57	<1.0	<1.0	15.4	<2.0	1.1	<3.0	
	7/6/2005	<1.0	<1.0	<1.0	15.5	<2.0	<1.0	<3.0	

NOTES: All results reported in micrograms per liter (µg/l), unless stated otherwise.
Sampling locations not sampled on a specific sampling date are omitted from the Table, with the exception of
AS-1; NS = The well was not sampled.
NA = The parameter was not included in the sampling.
Shaded numbers represent analytical results, which exceed Act 2 Statewide Health Standards for groundwater.



WELL	GND	PVC	RIM
MW-1	500.35	499.83	500.35
MW-2	499.61	499.11	499.58
MW-3	495.82	495.80	495.92
MW-4	493.37	493.70	493.89
MW-5	496.42	495.74	496.50
MW-6	489.27	489.19	489.48

GROUNDWATER CONTOUR MAP (JULY 2005)
FOR
ROUTE 119 AMOCO

RETTEW
ASSOCIATES, INC.
3020 Columbia Ave., Lancaster, PA 17603
TEL (717) 394-3721 • FAX (717) 394-1063

DRAWN BY: T. BASS
DATE: 8/30/05
SCALE: 1"=40'
DWG. NO. 02-03964-001

03/05/05

Utility Pole
BTC 1105

Utility Pole
BTC 65A

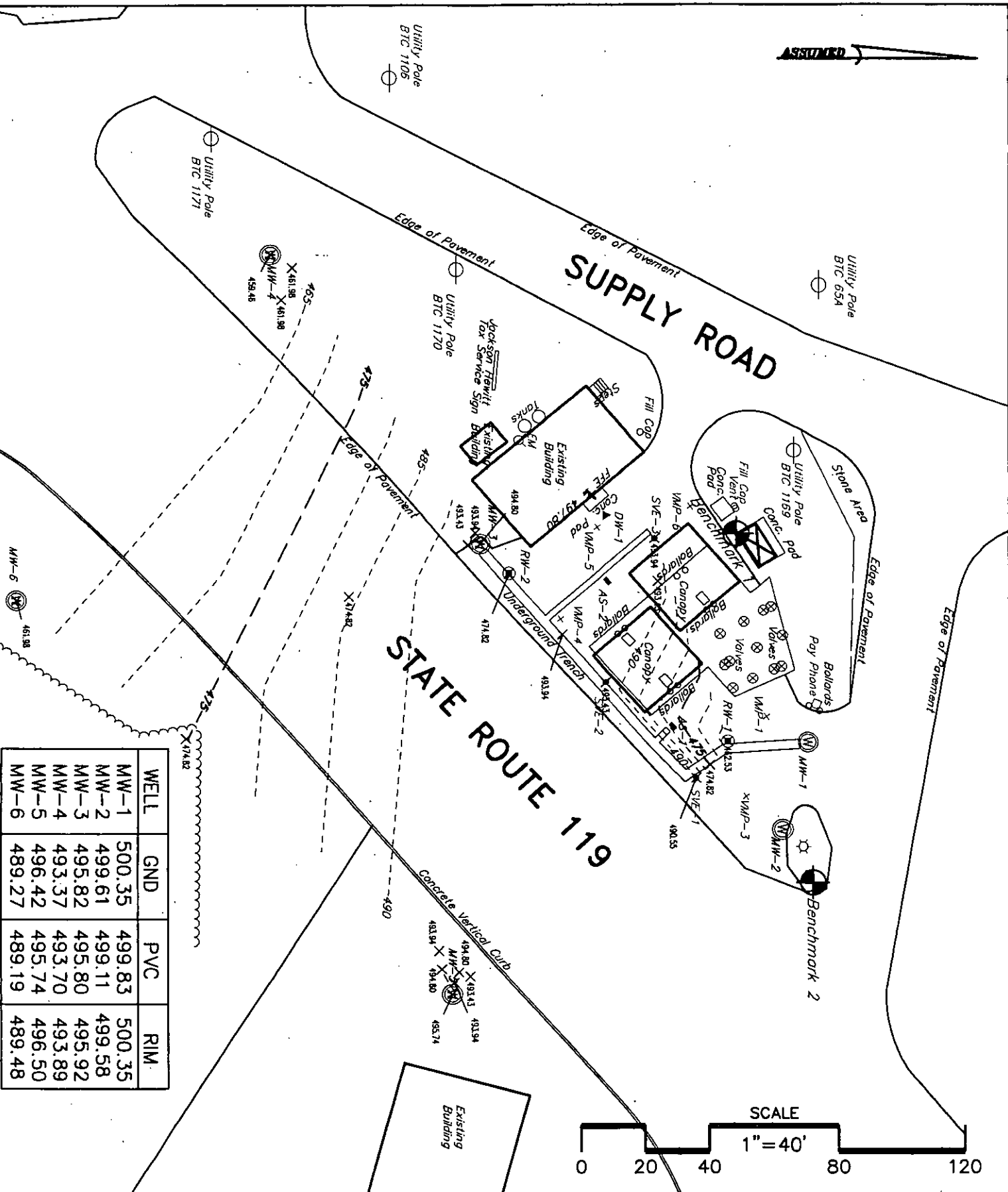
Utility Pole
BTC 1171

Utility Pole
BTC 1170

SUPPLY ROAD

STATE ROUTE 119

WELL	GND	PVC	RIM
MW-1	500.35	499.83	500.35
MW-2	499.61	499.11	499.58
MW-3	495.82	495.80	495.92
MW-4	493.37	493.70	493.89
MW-5	496.42	495.74	496.50
MW-6	489.27	489.19	489.48



APPENDIX F
PTM UST Closure Report

ATTACHMENT 4

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENTUNDERGROUND STORAGE TANK SYSTEM
CLOSURE REPORT FORM26-18711

Facility I.D.

DunbarFayette

Municipality

County

2-28-05

Date Prepared

Donald J. maughanName of Person Submitting Report
(Please Print)Precise Tank Modifications, Inc.Company Name
(If Applicable)Rt. 119 Amoco Tank Removal

Title

Closure Method (Check all that apply):

- ☒ Removal
- ☐ Closure-In-Place
- ☐ Change-In-Service

Site Assessment Results (Check all that apply):

- ☐ No Obvious Contamination - Sample Results Meet Standards/Levels
- ☐ No Obvious Contamination - Sample Results Do Not Meet Standards/Levels
- ☐ Obvious, Localized Contamination - Sample Results Meet Standards/Levels
- ☒ Obvious, Localized Contamination - Sample Results Do Not Meet Standards/Levels
- ☐ Obvious, Extensive Contamination

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

DATE RECEIVED: _____

UNDERGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

Owners who are permanently closing underground storage tanks may use this form to demonstrate that an underground storage tank closure was performed in accordance with the "Closure Requirements for Underground Storage Tank Systems" document. PLEASE PRINT OR TYPE. COMPLETE ALL QUESTIONS.

SECTION I. Owner/Facility/Tank/Waste Management and Disposal Information

1. Facility ID Number 26-18711
2. Facility Name Rt. 119 Amoco
3. Facility County Fayette
4. Facility Municipality Dunbar
5. Facility Address Rt. 119 & University Drive Dunbar, PA.
6. Facility Contact Person Michelle Shell
7. Facility Telephone Number () N/A
8. Owner Name Michelle Shell
9. Owner Mailing Address 925 Morrell Ave. Connellsville, PA 15425
10. Description of Underground Storage Tanks (Complete for each tank closed)

DATE OF TANK CLOSURE (Month/Day/Year)		1/25/05	1/25/05	1/25/05	1/25/05
Tank Registration Number		001	002	003	004
Estimated Total Capacity (Gallons)					
Substance(s) Stored Throughout Operating Life of Tank (Check All That Apply)	a. Petroleum				
	Unleaded Gasoline	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Leaded Gasoline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Aviation Gasoline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Kerosene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Jet Fuel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Diesel Fuel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel Oil No. 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel Oil No. 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel Oil No. 4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel Oil No. 5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel Oil No. 6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	New Motor Oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Used Motor Oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Other, Please Specify				
NOTE: If Hazardous Substance Block is Checked, Attach Material Safety Data Sheets (MSDS)	b. Hazardous Substance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Name of Principal CERCLA Substance				
	AND Chemical Abstract Service (CAS) No.	NO	NO	NO	NO
	c. Unknown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Closure Method (Check Only One)	a. Removal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. Closure-in-Place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. Change-In-Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Partial System Closure (Yes or No)					

DATE OF TANK CLOSURE (Month/Day/Year)					
Tank Registration Number					
Estimated Total Capacity (Gallons)					
Substance(s) Stored Throughout Operating Life of Tank (Check All That Apply)	a. Petroleum				
	Unleaded Gasoline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Leaded Gasoline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Aviation Gasoline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Kerosene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Jet Fuel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Diesel Fuel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel Oil No. 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel Oil No. 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel Oil No. 4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel Oil No. 5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel Oil No. 6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	New Motor Oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Used Motor Oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, Please Specify					
NOTE: If Hazardous Substance Block is Checked, Attach Material Safety Data Sheets (MSDS)	b. Hazardous Substance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Name of Principal CERCLA Substance				
	AND Chemical Abstract Service (CAS) No.				
	c. Unknown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Closure Method (Check Only One)	a. Removal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. Closure-in-Place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. Change-In-Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Partial System Closure (Yes or No)					

Yes N/A

11. Briefly describe the storage tank facility and the nature of the operations which were conducted at the facility (both historical and present) including use of tanks: The Site was a
Convenience Store/ Gas Station

- ☐ 12. A site location and sampling map of the site, drawn to scale, is attached. See page 11 of 11.
YES
- ☐ 13. Original, color photographs of the closure process are attached (i.e., inside of excavation/piping runs, pit water, tanks showing condition). YES
- ☐ 14. An amended "Registration of Storage Tanks" form was submitted to the DEP, Bureau of Watershed Conservation, Division of Storage Tanks, P.O. Box 8762, Harrisburg, PA 17105-8762.
Date: 2/4/05
- ☐ ☐ 15. If a reportable release was confirmed, the appropriate regional office of DEP was notified by the owner or operator.
Date: 1/20/05 Office: Southwest

Yes N/A

☒ 16. If tanks were cleaned on-site:

- a. Briefly describe the disposition of usable product: None
- b. Briefly describe the disposal of unusable product, sludges, sediments, and wastewater generated during cleaning. Provide the name and permit number of the processing, treatment, storage or disposal facility. (Attach documentation of proper disposal): United Environmental Group dispose of drums at their site.
- c. If tank contents were determined/deemed to be hazardous waste, provide:
- (1) Generator ID Number: _____
- (2) Licensed Hazardous Waste Transporter Name and ID Number: _____

☐ ☒ 17. If tanks were removed from the site for cleaning:

- a. Provide the name and permit number of the processing, treatment, storage or disposal facility performing the tank cleaning: _____
- b. If tank contents were determined/deemed to be hazardous waste, provide:
- (1) Generator ID Number: _____
- (2) Licensed Hazardous Waste Transporter Name and ID Number: _____

18. Briefly describe the disposition of tanks/piping (Attach documentation of proper disposal):

Tanks and piping were cleaned and sent to a scrap yard.☒ ☐ 19. If contaminated soil is excavated:

- a. Briefly describe the disposition and amount 60 to 85 (tons) of contaminated soil. Provide the name and permit number of the processing, treatment, storage or disposal facility. (Attach documentation of proper disposal):
- The Shell's are in the process of having the soil landfilled.
- b. If contaminated soil is determined/deemed to be hazardous waste, provide:
- (1) Generator ID Number: N/A
- (2) Licensed Hazardous Waste Transporter Name and ID Number: N/A

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENTUNDERGROUND STORAGE TANK SYSTEM
CLOSURE REPORT FORM

SECTION II. Tank Handling Information

Facility ID Number 26-18711

Yes N/A

1. Briefly describe the excavation and initial on-site staging of uncontaminated/contaminated soil:
The soil excavated had an odor and was considered
contaminated.
2. Briefly describe the method of piping system closure and the closure of the piping systems including the quantity and condition of the piping:
All piping was removed, approximately 100' in good
condition.
3. Briefly describe the condition of the tanks and any problems encountered during tank removal:
The tanks seemed to be in good condition, no problems.
4. Briefly describe the method used to purge the tanks of and monitor for explosive vapors: _____
We used an air eductor with an L.E.L.
- ☒ ☐ 5. If tanks were cleaned on-site:
 - a. Briefly describe the tank cleaning process: The ends were opened and
the tanks were scraped clean.
 - b. If subcontracted, name and address of company that performed the tank cleaning N/A
- ☐ ☒ 6. If tanks were closed-in-place, briefly describe the tank fill material: _____
- ☒ ☐ 7. If contamination was suspected or observed, the "Notification of Contamination" form was submitted.

SECTION II. (continued)

I, Donald J. Maughan, hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn falsification to authorities) that I am the owner of the above referenced storage tank(s) and that the information provided by me in this closure report (Section I) is true, accurate and complete to the best of my knowledge and belief.


Signature of Certified Installer

1402

Installer Certification Number

2/28/05

Date

1163

Company Certification Number

Precise Tank Modifications, Inc.

Company Name

274 Heplers Circle

Street

Madison, PA. 15663

City/Town, State, Zip

(724) 446-3516

Phone

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

UNDERGROUND STORAGE TANK CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 001 (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 26-18711

- A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A" if NOT encountered).

Bedrock N/A feet below land surface

Water 6" feet below land surface

- B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND

- 1). Was obvious contamination observed while excavating?

☐ NO ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records ———→ Do not complete item C.2. below.

☒ YES ———→ Report release to DEP within 2 hours ———→ Describe contamination observed and likely source(s) tank, piping, dispenser, spills, overfills): Contamination was Found in the water, not sure where it came from.

————→ Complete item C.2. below.

- 2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

☐ YES ———→ Remove or remediate contaminated soil ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

☒ NO ———→ Continue interim remedial actions ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

☐ NO ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records.

☐ YES ———→ Report release to DEP within 2 hours ———→ Describe contamination observed and likely source(s) tank, piping, dispenser, spills, overfills): _____

Continue with corrective action ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

UNDERGROUND STORAGE TANK CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 002 (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 26-18711

- A. Provide depth of **BEDROCK** and **WATER** IF encountered during excavation or soil boring (write "N/A: if NOT encountered).

Bedrock N/A feet below land surface

Water 6" feet below land surface

- B. Provide Length of **PIPING** IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND

- 1). Was obvious contamination observed while excavating?

☐ NO ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records ———→ Do not complete item C.2. below.

☒ YES ———→ Report release to DEP within 2 hours ———→ Describe contamination observed and likely source(s) tank, piping, dispenser, spills, overfills): Contamination was
Found in the water, not sure where it came from.

————→ Complete item C.2. below.

- 2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

☐ YES ———→ Remove or remediate contaminated soil ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

☒ NO ———→ Continue interim remedial actions ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

☐ NO ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records.

☐ YES ———→ Report release to DEP within 2 hours ———→ Describe contamination observed and likely source(s) tank, piping, dispenser, spills, overfills): _____

Continue with corrective action ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

UNDERGROUND STORAGE TANK CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 003 (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 26-18711

- A. Provide depth of **BEDROCK** and **WATER** IF encountered during excavation or soil boring (write "N/A: if NOT encountered).

Bedrock N/A feet below land surface

Water 6" feet below land surface

- B. Provide Length of **PIPING** IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND

- 1). Was obvious contamination observed while excavating?

☐ NO ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records ———→ Do not complete item C.2. below.

☒ YES ———→ Report release to DEP within 2 hours ———→ Describe contamination observed and likely source(s) tank, piping, dispenser, spills, overfills): Contamination was
Found in the water, not sure where it came from.

————→ Complete item C.2. below.

- 2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

☐ YES ———→ Remove or remediate contaminated soil ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

☒ NO ———→ Continue interim remedial actions ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

☐ NO ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records.

☐ YES ———→ Report release to DEP within 2 hours ———→ Describe contamination observed and likely source(s) tank, piping, dispenser, spills, overfills): _____

Continue with corrective action ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

UNDERGROUND STORAGE TANK
CLOSURE REPORT FORM

SECTION III. Site Assessment Information
Tank Registration # 004 (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 26-18711

- A. Provide depth of *BEDROCK* and *WATER* IE encountered during excavation or soil boring (write "N/A" if NOT encountered).

Bedrock N/A feet below land surface

Water 6" feet below land surface

- B. Provide Length of *PIPING* IE piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND

- 1). Was obvious contamination observed while excavating?

☐ NO ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records ———→ Do not complete item C.2. below.

☒ YES ———→ Report release to DEP within 2 hours ———→ Describe contamination observed and likely source(s) tank, piping, dispenser, spills, overfills: Contamination was Found in the water, not sure where it came from.

—————→ Complete item C.2. below.

- 2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

☐ YES ———→ Remove or remediate contaminated soil ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

☒ NO ———→ Continue interim remedial actions ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

☐ NO ———→ Conduct confirmatory sampling ———→ See end of this section for options on submission and maintenance of closure records.

☐ YES ———→ Report release to DEP within 2 hours ———→ Describe contamination observed and likely source(s) tank, piping, dispenser, spills, overfills: _____

Continue with corrective action ———→ See end of this section for options on submission and maintenance of closure records ———→ Call Indemnification Fund (717-787-0763).

- E. If the answer to C.1. is "no", the answer to C.2. if "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

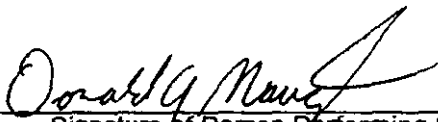
- (a) By the owners and operators who took the UST system out of service;
- (b) By the current owners and operators of the UST system site; or
- (c) By mailing these records to the implementing agency if they cannot be maintained at the closed facility.

At least one option must be chosen. If option (c) is chosen, the closure report form should be sent to the DEP regional office responsible for the county in which the tank is located.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the CAP regulation requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Donald J. Maughan, hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn
(Print Name)
falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

President

Title of Person Performing Site Assessment

2/28/05

Date

Precise Tank Modifications, Inc.

Name of Company Performing Site Assessment

Laboratory Results

Q Chem Labs

Date: 2/14/2005

CLIENT: PRECISE TANK MODIFICATIONS

Client Sample ID: PL-1

Lab Order: Q0501346

Project:

Client PO#:

Lab ID: Q0501346-001A

Collection Date: 1/26/2005 8:07:00 AM

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS						
Transit Temperature	-5			°C	0	Analyst: 1/26/2005 8:07:00 AM
MOISTURE						
Moisture	16.7			%	1	Analyst: BLC 1/31/2005
VOLATILE ORGANIC COMPOUNDS						
						Analyst: SUB
Benzene	13000	520		ug/Kg	1	2/2/2005
Ethylbenzene	48000	520		ug/Kg	1	2/2/2005
Isopropylbenzene	11000	520		ug/Kg	1	2/2/2005
m,p-Xylene	120000	250		ug/Kg	1	2/2/2005
Methyl-tert-butyl ether	<525	520		ug/Kg	1	2/2/2005
Naphthalene	18000	520		ug/Kg	1	2/2/2005
o-Xylene	99000	520		ug/Kg	1	2/2/2005
Toluene	1000000	520		ug/Kg	1	2/2/2005
Total Xylene	220000	1000		ug/Kg	1	2/2/2005

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits

Laboratory Results

Q Chem Labs

Date: 2/14/2005

CLIENT: PRECISE TANK MODIFICATIONS

Client Sample ID: D-3

Lab Order: Q0501346

Project:

Client PO#:

Lab ID: Q0501346-002A

Collection Date: 1/26/2005 8:28:00 AM

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS						
Transit Temperature	-5			°C	0	Analyst: 1/26/2005 8:28:00 AM
MOISTURE						
Moisture	14.3	ASTM D4959 0.01		%	1	Analyst: BLC 1/31/2005
VOLATILE ORGANIC COMPOUNDS						
Benzene	<49	49		ug/Kg	1	Analyst: SUB 2/2/2005
Ethylbenzene	<49	49		ug/Kg	1	2/2/2005
Isopropylbenzene	<50	50		ug/Kg	1	2/2/2005
m,p-Xylene	700	49		ug/Kg	1	2/2/2005
Methyl-tert-butyl ether	<49	49		ug/Kg	1	2/2/2005
Naphthalene	350	50		ug/Kg	1	2/2/2005
o-Xylene	<49	49		ug/Kg	1	2/2/2005
Toluene	<49	49		ug/Kg	1	2/2/2005
Total Xylene	700	98		ug/Kg	1	2/2/2005

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits

Laboratory Results

Q Chem Labs

Date: 2/14/2005

CLIENT: PRECISE TANK MODIFICATIONS

Client Sample ID: D-2

Lab Order: Q0501346

Project:

Client PO#:

Lab ID: Q0501346-003A

Collection Date: 1/26/2005 8:37:00 AM

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS						
Transit Temperature	-5	FLD		°C	0	Analyst: 1/26/2005 8:37:00 AM
MOISTURE						
Moisture	14.6	ASTM D4959		%	1	Analyst: BLC 1/31/2005
VOLATILE ORGANIC COMPOUNDS						
		EPA 8260B				Analyst: SUB
Benzene	<51.5	52		ug/Kg	1	2/2/2005
Ethylbenzene	1400	52		ug/Kg	1	2/2/2005
Isopropylbenzene	360	52		ug/Kg	1	2/2/2005
m,p-Xylene	1100	52		ug/Kg	1	2/2/2005
Methyl-tert-butyl ether	<51.5	52		ug/Kg	1	2/2/2005
Naphthalene	1700	52		ug/Kg	1	2/2/2005
o-Xylene	360	52		ug/Kg	1	2/2/2005
Toluene	360	52		ug/Kg	1	2/2/2005
Total Xylene	1400	100		ug/Kg	1	2/2/2005

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits

Laboratory Results

Q Chem Labs

Date: 2/14/2005

CLIENT: PRECISE TANK MODIFICATIONS

Client Sample ID: D-1

Lab Order: Q0501346

Project:

Client PO#:

Lab ID: Q0501346-004A

Collection Date: 1/25/2005 1:47:00 AM

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS		FLD				Analyst:
Transit Temperature	-5			°C	0	1/25/2005 1:47:00 AM
MOISTURE		ASTM D4959				Analyst: BLC
Moisture	14.8	0.01		%	1	1/31/2005
VOLATILE ORGANIC COMPOUNDS		EPA 8260B				Analyst: SUB
Benzene	<45.5	46		ug/Kg	1	2/2/2005
Ethylbenzene	<45.5	46		ug/Kg	1	2/2/2005
Isopropylbenzene	<45.5	46		ug/Kg	1	2/2/2005
m,p-Xylene	<45.5	46		ug/Kg	1	2/2/2005
Methyl-tert-butyl ether	<45.5	46		ug/Kg	1	2/2/2005
Naphthalene	<45.5	46		ug/Kg	1	2/2/2005
o-Xylene	<45.5	46		ug/Kg	1	2/2/2005
Toluene	<45.5	46		ug/Kg	1	2/2/2005
Total Xylene	<91.0	91		ug/Kg	1	2/2/2005

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits

Laboratory Results

Q Chem Labs

Date: 2/14/2005

CLIENT: PRECISE TANK MODIFICATIONS

Client Sample ID: W-2

Lab Order: Q0501299

Project:

Client PO#: SHELL PROJEC

Lab ID: Q0501299-004A

Collection Date: 1/21/2005 9:05:00 AM

Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOC'S BY GC/MS		EPA 8260B				Analyst: SUB
Benzene	422	200		µg/L	1	2/1/2005
Ethylbenzene	1470	200		µg/L	1	2/1/2005
Methyl-tert-butyl ether	630	200		µg/L	1	2/1/2005
Naphthalene	580	200		µg/L	1	2/1/2005
Toluene	2790	200		µg/L	1	2/1/2005
Total Xylene	4320	400		µg/L	1	2/1/2005

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits

Laboratory Results

Q Chem Labs

Date: 2/14/2005

CLIENT: PRECISE TANK MODIFICATIONS

Client Sample ID: W-1

Lab Order: Q0501299

Project:

Client PO#: SHELL PROJEC

Lab ID: Q0501299-003A

Collection Date: 1/21/2005 9:02:00 AM

Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOC'S BY GC/MS		EPA 8260B				Analyst: SUB
Benzene	508	200		µg/L	1	2/1/2005
Ethylbenzene	1730	200		µg/L	1	2/1/2005
Methyl-tert-butyl ether	770	200		µg/L	1	2/1/2005
Naphthalene	2140	200		µg/L	1	2/1/2005
Toluene	3260	200		µg/L	1	2/1/2005
Total Xylene	4960	400		µg/L	1	2/1/2005

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits

Sample/Analysis Information
(Attachment for Section III.)
Facility ID Number _____

P - Samples placed in a soil sample vial with a preservative present.
E - Samples collected and stored in a soil collection device which is airtight and affords little to no headspace.
N - Samples placed in soil sample vial without a preservative present.

Laboratory Results

Q Chem Labs

Date: 2/14/2005

CLIENT: PRECISE TANK MODIFICATIONS

Client Sample ID: SW-1

Lab Order: Q0501299

Project:

Client PO#: SHELL PROJEC

Lab ID: Q0501299-001A

Collection Date: 1/21/2005 9:10:00 AM

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		EPA 8260B				Analyst: SUB
Benzene	< 10	10		mg/Kg	1	2/2/2005
Ethylbenzene	53	10		mg/Kg	1	2/2/2005
Isopropylbenzene	< 50	50		mg/Kg	1	2/2/2005
m,p-Xylene	100	30		mg/Kg	1	2/2/2005
Methyl-tert-butyl ether	<0.5	10		mg/Kg	1	2/2/2005
Naphthalene	< 50	50		mg/Kg	1	2/2/2005
o-Xylene	< 10	10		mg/Kg	1	2/2/2005
Toluene	< 10	10		mg/Kg	1	2/2/2005
Total Xylene	100	30		mg/Kg	1	2/2/2005

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits

Laboratory Results

Q Chem Labs

Date: 2/14/2005

CLIENT: PRECISE TANK MODIFICATIONS

Client Sample ID: SW-2

Lab Order: Q0501299

Project:

Client PO#: SHELL PROJEC

Lab ID: Q0501299-002A

Collection Date: 1/21/2005 9:15:00 AM

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		EPA 8260B		Analyst: SUB		
Benzene	< 10	10		mg/Kg	1	2/2/2005
Ethylbenzene	36	10		mg/Kg	1	2/2/2005
Isopropylbenzene	< 50	50		mg/Kg	1	2/2/2005
m,p-Xylene	74	30		mg/Kg	1	2/2/2005
Methyl-tert-butyl ether	<0.5	10		mg/Kg	1	2/2/2005
Naphthalene	< 50	50		mg/Kg	1	2/2/2005
o-Xylene	< 10	10		mg/Kg	1	2/2/2005
Toluene	< 10	10		mg/Kg	1	2/2/2005
Total Xylene	77	30		mg/Kg	1	2/2/2005

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits

K 117 100
 Rt. 119 & University Ave.
 Dunbar Pa. 15431
 ID# 2618711

Scale 1" = 20'

Hi-Way Supply RD.

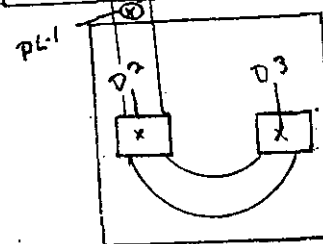
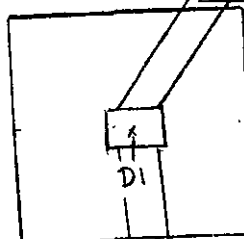
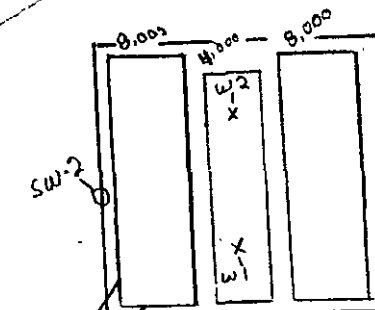
Building

Contaminated Soil

KERO

SW-2

SW-1



← To Uniontown

RT. 119

To NEW STANTON →

**TUBE CITY, LLC**

We Create Value

TUBE CITY, LLC HIFTLIN YARD
 516 DELMAR RD.
 ALLEGHENY COUNTY
 WEST HIFTLIN, PA 15238

Vehicle #1: PRED

Supp. Rate: Scale Payment: 80%

SHIPMENT#	COMMODITY	GROSS	TARE	NET	ADJ. REASON	POINT OF
851240	HEAVY MELT (H)	42760	34240	8520		8520 U
87	551028011					

Ticket Comments: 980 PRECISE TANK

ALL WEIGHTS ARE REPORTED IN POUNDS UNLESS OTHERWISE INDICATED

M = MANUAL ENTRY

WEIGHMASTER SIGNATURE: JOHN MACZUZAY

CUSTOMER SIGNATURE

WEIGHMASTER CERTIFICATE

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy.

Gross Date: 01/25/05
 Gross Time: 14:57
 Tare Date: 01/25/05
 Tare Time: 18:31

GROSS TONS
 3.0033

VAL SW 51

TICKET #: 0804954


TUBE CITY, LLC
 We Create Value®

 TUBE CITY, LLC - MIFFLIN YARD
 516 DELMAR RD
 ALLEGHENY COUNTY
 WEST MIFFLIN, PA 15236

LIER

DTM

Supp Ref: Scale Payment

ROL:

COMMODITY

GROSS

TARE

NET

ADJ-REASON

PD.WT ST

 HEAVY MELT.#1
 551030012

 42260
 H

34460

7800

7800 U

Ticket Comments: PRECIS TANK

ALL WEIGHTS ARE REPORTED IN POUNDS UNLESS OTHERWISE INDICATED

MANUAL ENTRY

WEIGHMASTER SIGNATURE JOHN MACZUZAK

CUSTOMER SIGNATURE

WEIGHMASTER CERTIFICATE

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy.

 Gross Date: 01/21/05
 Gross Time: 14:00
 Tare Date: 01/21/05
 Tare Time: 14:35

 GROSS TONS
 3.4821

SR/CB ID: 01

te: 01/20/05

 20*
 050336
 \$361.34
 \$361.34

proof and

Us!

CHECK NO. 21265

 Check Number: 21265
 Check Date: 25-JAN-2005

 Price UOM Frt Ext Total Amount
 75.0000 01 361.34

Amount Due Supplier: 361.34

CHECK NO. 21265

DATE

25-JAN-2005

\$

361.34

CITY OF MIFFLIN

Treasury Dept.

 SIXTY-ONE DOLLARS AND THIRTY-FOUR CENTS
 FOR AVOIDING OVER \$7000.00

557866

AT THE OFFICE OF THE

JAN 20 2005

1/23/07/2008

TICKET #: 0804645

TUBE CITY, LLC
518 DELMAR RD
ALLEGHENY COUNTY
WEST NITLIN, PA 15233

WITLIN YARD

Supplier: _____

ITEM	QTY	GROSS	TARE	NET	ADJ. REASON	POINT
HEAVY MELT #1 551030012	17	36900	34760	2140		2140 U

Ticket Comments: PRECISE TANK

ALL WEIGHTS ARE REPORTED IN POUNDS UNLESS OTHERWISE INDICATED

MANUAL ENTRY

Gross Date: 01/21/05
Gross Time: 10:09
Tare Date: 01/21/05
Tare Time: 10:30

GROSS TONS
0.9554

WEIGHMASTER SIGNATURE JOHN MACZUZAK

CUSTOMER SIGNATURE
WEIGHMASTER CERTIFICATE

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster whose signature is on this certificate, who is a recognized authority of accuracy.

7866"

EXTY-ONE DOLLARS AND SIXTY-FOUR CENTS

CITIZENS BANK

JAN-2005

DATE
AMOUNT
\$ 261.24

Int Due Supplier:

CHECK NO. 212657

261.24

Price UOM 10000 01
Frt Ext
Total Amount 261.24

Check Number: 212657
Check Date: 25 JAN 2005

CHECK NO.

212657

019657

TUBE CITY, LLC
516 DELWAR ROAD • PITTSBURGH, PA 15236

Phone: (412) 885-3600

CHECK NO. 212566

PRECISE TANK

Check Number: 212566
Check Date: 21-JAN-2005

Ticket	Description	Gross	Tare	Gross	Adj Reason	Price UOM	Frt Ext	Total Amount
804954	HEAVY MELT, #1	42260	34460	7800		95.0000 GT		330.80

42260 34460 7800

Total Amount Due Supplier: 330.80

DETACH BEFORE DEPC SITING

TUBE CITY, LLC
516 DELWAR ROAD
PITTSBURGH, PA 15236

CHECK NO. 212566

DATE
21-JAN-2005

AMOUNT
\$ 330.80

PAY TO THE
ORDER OF

PRECISE TANK
1, PA 1

CITIZENS BANK
THREE HUNDRED THIRTY DOLLARS AND EIGHTY CENTS
FOR AMOUNTS OVER \$7000.00

AUTHORIZED SIGNATURE

John D. Mazzella

⑈212566⑈ ⑆036076150⑆ 6203557866⑈

TUBE CITY, LLC
516 DELWAR ROAD • PITTSBURGH, PA 15236

Phone: (412) 485-3600

CHECK NO. 212545

PRECISE TANK

Check Number: 212545
Check Date: 21-JAN-2005

Item	Description	Gross	Tare	Gross	Adj Reason	Price UOM	Frt Ext	Total Amount
4445	HEAVY MELT, #1	36900	34760	2140		95.0000 OT		90.76

36900 34760 2140

Total Amount Due Supplier: 90.76

DETACH BEFORE DEPOSITING

DETACH BEFORE DEPOSITING

TUBE CITY, LLC
516 DELWAR ROAD
PITTSBURGH, PA 15236

CHECK NO. 212545

DATE
21-JAN-2005

AMOUNT
\$ 90.76

PAY TO THE
ORDER OF

PRECISE TANK
1, PA 1

NINETY DOLLARS AND SEVENTY-SIX
CENTS

CITIZENS BANK
Pittsburgh, PA

TWO SIGNATURES REQUIRED
FOR AMOUNTS OVER \$10,000

AUTHORIZED SIGNATURE

AUTHORIZED SIGNATURE

⑈ 212545 ⑆ ⑆ 036076150 ⑆ 6203557866 ⑆

NO # GREENRIDGE
R R 1 BOX 716
SCOTTDALE PA 15688

Ticket:01 533910

020122

Weighmaster: DENISE RUGG

Date / Time:

000030 - 0017
117 AMDCO
117 UNIVERISTY DR
117 UNIVERISTY DR

23 March 2005 2:27 pm

2:45 pm

Vehicle: FTM1
Origin: FAYETTE CO.

DUNBAR, PA 15421
Contract: 01132
Reference: 62731

02 Gross Weight 60,460.00 LB
Tare Weight 23,650.00 LB
Net Weight 36,750.00 LB 18.39 TN

Rate

Total

18.39 T R4 12680 1 Soil

1.00 LB C3 ENVIRONMENTAL FEE

SAFETY MEMOS:

- Hard hats MUST be worn.
- Passengers MUST remain in vehicles at all time.
- ANSI Class II vests MUST be worn.

SIGNATURE:

Denise Rugg

Greenridge Reclamation
R.D. 1, Box 716
Scottdale, Pennsylvania 15683
724/887-9400
FAX: 724/887-6558

NON-HAZARDOUS WASTE MANIFEST

☐ Municipal ☐ Residual ☐ Special Handling

Site Permit No. 100281

1. Generator Name: (Print or Type) Roe Hall & Tom Smith
Pick-up Address: 119 Greenridge Drive Dunmore Pa 15431
(No.) (Street) (City) (State) (Zip Code)
Telephone Number: 724-438-5470
Generator of Waste (must be filled in by producer) EPA I.D. No. 100081
Waste Stream Identification: This manifest represents a non-hazardous waste as per E.P.A. and P.A.D.E.P. regulations
Asbestos: Friable _____ Non-Friable _____ Contaminated Soil ☒
Volume: 600 TNS. Cubic Yards: _____ Other (Specify): _____
Special Handling Instructions, if any: _____

GENERATOR'S SPECIAL WASTE PROFILE SHEET CODE NO.

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I certify that the foregoing is true and correct to the best of my knowledge.

Date: 3-23-05 Signature: Randy Smith
Print: Randy Smith
(Name and Title)

2. Hauler of Waste (must be filled-in by hauler) EPA I.D. No. _____
COMPANY NAME: Pacific Tank Mfg
ADDRESS: Box 214 Marion Pa 15003 724-44-63516
Street City State Zip Code Phone Number
Pick-up Date: 3-23-05 Truck No.: 10 Vehicle Lic. No.: AE 95058

The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify under penalty of perjury that the foregoing is true and correct.

Signature of authorized agent and title: Randy Smith Driver

3. Disposer of Waste (must be filled-in by disposer)
Company Name: (Print or Type): Greenridge Reclamation
Site Location: R.D. 1, Box 716, Landfill Road, Scottdale, PA 15683 724-887-9400
Waste subject to this manifest was delivered by the above hauler to this disposal facility and accepted on 3-23-05 (DISPOSAL DATE)
Signature of authorized agent and title: Daniel Rugg

Copies of this manifest will be furnished on request.

Manifest Discrepancies and/or Comments:

1839ton

Name and Address of Responsible Agency
Commonwealth of Pennsylvania
Department of Environmental Protection
Southwest Region - Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

White — Landfill

Canary — Acknowledgement

Pink — Transporter

Goldenrod — Generator

NO. 7 EASENFLOSE
A R I 607 114
BLUETDALE PA 15689

Pictorial 533910
Warehousemaster: DENISE HUGB

020122

000030 - 0017
119 AMMAN
119 UNIVERSITY DR
119 UNIVERSITY DR

Date / Time: 22 March 2005 8:45 PM

Vehicle: ATM1
Origin: FAYETTE CO.

DUNBAR, PA 15481
Contract: 01132
Reference: 43781

DE Gross Weight 10,400.00 LB
Tare Weight 28,580.00 LB
Net Weight 38,980.00 LB 15.34 TM

Rate

Total

15.37 1 PA 12289 1 1011

1.00 10 ENVIRONMENTAL, EEE

SAFETY MEMOS:

- Hard hats **MUST** be worn.
- Passengers **MUST** remain in vehicles at all time.
- ANSI Class II vests **MUST** be worn.

SIGNATURE: *Denise Smith*

Greenridge Reclamation

A.D. 1, Box 716
 Scottdale, Pennsylvania 15683
 724/887-9400
 FAX: 724/887-6558

NON-HAZARDOUS WASTE MANIFEST

☐ Municipal ☐ Residual ☐ Special Handling

Site Permit No. 100281

1. Generator Name: (Print or Type) _____
Pick-up Address: _____
(No.) (Street) (City) (State) (Zip Code)
Telephone Number: _____
Generator of Waste (must be filled in by producer) EPA I.D. No. _____
Waste Stream Identification: This manifest represents a non-hazardous waste as per E.P.A. and P.A.D.E.P. regulations
Asbestos: Friable _____ Non-Friable _____ Contaminated Soil _____
Volume: _____ Cubic Yards: _____ Other (Specify): _____
Special Handling Instructions, if any: _____

GENERATOR'S SPECIAL WASTE PROFILE SHEET CODE NO.

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I certify that the foregoing is true and correct to the best of my knowledge.

Signature: [Signature]

Date: _____

Print: 4/20/2014 2:29:16 PM

(Name and Title)

2. Hauler of Waste (must be filled-in by hauler) EPA I.D. No. _____

COMPANY NAME: _____

ADDRESS: _____

Street	City	State	Zip Code	Phone Number
--------	------	-------	----------	--------------

Pick-up Date: _____ Truck No.: _____ Vehicle Lic. No.: _____

The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify under penalty of perjury that the foregoing is true and correct.

Signature of authorized agent and title: John J. [illegible]

3. Disposer of Waste (must be filled-in by disposer)

Company Name: (Print or Type): Greenridge Reclamation

Site Location: R.D. 1, Box 716, Landfill Road, Scottdale, PA 15683 724-887-9400

Waste subject to this manifest was delivered by the above hauler to this disposal facility and accepted on
03-20-2011 (DISPOSAL DATE)

Signature of authorized agent and title: John A. Anderson

Copies of this manifest will be furnished on request.

Manifest Discrepancies and/or Comments:

Name and Address of Responsible Agency

Commonwealth of Pennsylvania
Department of Environmental Protection
Southwest Region - Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

White — Landfill

Canary — Acknowledgement

Pink — Transporter

Goldenrod,—Generator

Ticket: 01 593856

020068

NO 9 GREENRIDGE
R R 1 BOX 716
SCOTSDALE PA 15468

Weighmaster: DENISE RUGG

Date / Time:

23 March 2005 12:20 pm

12:34 pm

000030 - 0017
117 ANODG
117 UNIVERISTY DR
117 UNIVERISTY DR

Vehicle: PTM1
Origin: FAYETTE CO.

DUNBAR, PA 15401
Contract: 01132
Reference: 62911

02 Gross Weight 58,300.00 LB
Tare Weight 23,720.00 LB
Net Weight 34,580.00 LB 17.29 TN

Rate

Total

17.29 T R4 15468 1 Soil
1.00 LD 0 ENVIRONMENTAL FEE

SAFETY MEMOS:

- Hard hats **MUST** be worn.
- Passengers **MUST** remain in vehicles at all time.
- ANSI Class II vests **MUST** be worn.

SIGNATURE:

Ruby Smith

Greenridge Reclamation
R.D. 1, Box 716
Scottsdale, Pennsylvania 15683
724/887-9400
FAX: 724/887-6558

NON-HAZARDOUS WASTE MANIFEST

☐ Municipal ☐ Residual ☐ Special Handling

Site Permit No. 100281

1. Generator Name: (Print or Type) Row Hall & Tim Shelly
Pick-up Address: 925 Merrill Ave Cornellville PA 15425
(No.) (Street) (City) (State) (Zip Code)
Telephone Number: 724-438-4472
Generator of Waste (must be filled in by producer) EPA I.D. No. _____
Waste Stream Identification: This manifest represents a non-hazardous waste as per E.P.A. and P.A.D.E.P. regulations
Asbestos: Friable _____ Non-Friable _____ Contaminated Soil ☒
Volume: 60 Yards Cubic Yards: _____ Other (Specify): _____
Special Handling Instructions, if any: _____

GENERATOR'S SPECIAL WASTE PROFILE SHEET CODE NO.

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I certify that the foregoing is true and correct to the best of my knowledge.

Date: 3-23-05 Signature: R. M. Smith
Print: R. M. Smith
(Name and Title)

2. Hauler of Waste (must be filled-in by hauler) EPA I.D. No. _____
COMPANY NAME: Prosize Tank Mfg Co
ADDRESS: Box 274 Madison PA 15603-0274 724-446-3516
Street City State Zip Code Phone Number
Pick-up Date: 3-23-05 Truck No.: 15 Vehicle Lic. No.: _____

The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify under penalty of perjury that the foregoing is true and correct.

Signature of authorized agent and title: R. M. Smith Driver

3. Disposer of Waste (must be filled-in by disposer)
Company Name: (Print or Type): Greenridge Reclamation
Site Location: R.D. 1, Box 716, Landfill Road, Scottsdale, PA 15683 724-887-9400
Waste subject to this manifest was delivered by the above hauler to this disposal facility and accepted on
3-23-05 (DISPOSAL DATE)
Signature of authorized agent and title: Alvin R. Ruggs

Copies of this manifest will be furnished on request.

Manifest Discrepancies and/or Comments:

1729 Ton

Name and Address of Responsible Agency
Commonwealth of Pennsylvania
Department of Environmental Protection
Southwest Region - Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

White — Landfill

Canary — Acknowledgement

Pink — Transporter

Goldenrod — Generator

DU W GREENHILL
K A L BOX 115
SCOTTDALE PA 11588

11/11/11 330856
National Transportation Agency
Data / Times

020068

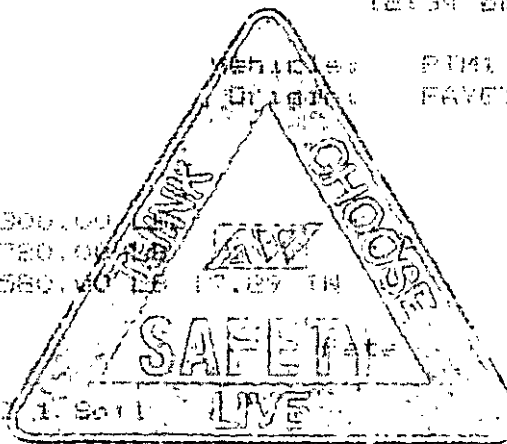
000020 - 0017
117 AMUCC
119 UNIVERSITY OF
119 UNIVERSITY OF

23 March 2007 12:20 pm
12:34 pm

GUNBER, PA 15431
Contract: 01182
Reference: 60911

Vehicle: PUM
Origin: FAYETTE CO.

LE Gross Weight 58,500.00
Tare Weight 58,780.00
Net Weight 24,580.00



Total

11.24 T H4 12:34 1.501
1.00 LP 13 ENVIRONMENTAL

SAFETY MEMOS:

- Hard hats **MUST** be worn.
- Passengers **MUST** remain in vehicles at all time.
- ANSI Class II vests **MUST** be worn.

SIGNATURE: John Smith

Greenridge Reclamation
R.D. 1, Box 716
Scottdale, Pennsylvania 15683
724/887-9400
FAX: 724/887-6558

NON-HAZARDOUS WASTE MANIFEST

☐ Municipal ☐ Residual ☐ Special Handling

Site Permit No. 100281

1. Generator Name: (Print or Type) Row Hall & Tim Smith
Pick-up Address: 925 Market Ave Scottdale PA 15135
(No.) (Street) (City) (State) (Zip Code)
Telephone Number: 724-887-9400
Generator of Waste (must be filled in by producer) EPA I.D. No. _____
Waste Stream Identification: This manifest represents a non-hazardous waste as per E.P.A. and P.A.D.E.P. regulations
Asbestos: Friable _____ Non-Friable _____ Contaminated Soil ☒
Volume: 6.00 Cubic Yards: _____ Other (Specify): _____
Special Handling Instructions, if any: _____

GENERATOR'S SPECIAL WASTE PROFILE SHEET CODE NO.

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I certify that the foregoing is true and correct to the best of my knowledge.

Date: 12-30-08 Signature: Tim Smith
Print: Tim Smith
(Name and Title)

2. Hauler of Waste (must be filled-in by hauler) EPA I.D. No. _____
COMPANY NAME: Tim Smith
ADDRESS: 925 Market Ave Scottdale PA 15135 724-887-9400
Street City State Zip Code Phone Number
Pick-up Date: 12-30-08 Truck No.: 15 Vehicle Lic. No.: _____
The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify under penalty of perjury that the foregoing is true and correct.
Signature of authorized agent and title: Tim Smith Driver

3. Disposer of Waste (must be filled-in by disposer)
Company Name: (Print or Type): Greenridge Reclamation
Site Location: R.D. 1, Box 716, Landfill Road, Scottdale, PA 15683 724-887-9400
Waste subject to this manifest was delivered by the above hauler to this disposal facility and accepted on _____ (DISPOSAL DATE)
Signature of authorized agent and title: Tim Smith Driver

Copies of this manifest will be furnished on request.

Manifest Discrepancies and/or Comments:

Name and Address of Responsible Agency
Commonwealth of Pennsylvania
Department of Environmental Protection
Southwest Region - Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

White — Landfill

Canary — Acknowledgement

Pink — Transporter

Goldenrod — Generator

020011

Re: 070600Z JAN 68 FL 65

$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

FILED 1967 JUL 10 PM 4 44

9-30 5:01

Wanted: FTM
 Origin: FAYETTE CO.

DUNFAS, HA 15431
 DUNFAS, HA 15432
 DUNFAS, HA 15433

OG Gross Weight	29,150.00 LB
Tare Weight	29,500.00 LB
Net Weight	32,540.00 LB 19.27 TN

10-1-68

100 60 10

ENTROPIESIMILAR *Reef* *1940*

175

SAFETY MEMOS:

Hard hats MUST be worn.

Passengers MUST remain in vehicles at all time

מחלקת המחקר והפיתוח

12/30/2008

Greenridge Reclamation
R.D. 1, Box 716
Scottdale, Pennsylvania 15683
724/887-9400
FAX: 724/887-6558

NON-HAZARDOUS WASTE MANIFEST

☐ Municipal ☐ Residual ☐ Special Handling

Site Permit No. 100281

1. Generator Name: (Print or Type) R. D. 1, Box 716, Scottdale, PA
Pick-up Address: 119 Scottdale Dr PA 15101
(No.) (Street) (City) (State) (Zip Code)
Telephone Number: 724-158-0112
Generator of Waste (must be filled in by producer) EPA I.D. No. 100281
Waste Stream Identification: This manifest represents a non-hazardous waste as per E.P.A. and P.A.D.E.P. regulations
Asbestos: Friable _____ Non-Friable _____ Contaminated Soil ☒
Volume: 0.5 TONS Cubic Yards: _____ Other (Specify): _____
Special Handling Instructions, if any: _____

GENERATOR'S SPECIAL WASTE PROFILE SHEET CODE NO.

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I certify that the foregoing is true and correct to the best of my knowledge.

Signature: [Signature]

Date: _____

Print: [Name]

(Name and Title)

2. Hauler of Waste (must be filled-in by hauler) EPA I.D. No. _____
COMPANY NAME: Pro-Tek Tank & Truck
ADDRESS: 1000 Alison Dr 15005 724-110-5116
Street City State Zip Code Phone Number
Pick-up Date: 1-23-03 Truck No.: 15 Vehicle Lic. No.: 22-11

The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify under penalty of perjury that the foregoing is true and correct.

Signature of authorized agent and title: [Signature]

3. Disposer of Waste (must be filled-in by disposer)
Company Name: (Print or Type): Greenridge Reclamation
Site Location: R.D. 1, Box 716, Landfill Road, Scottdale, PA 15683 724-887-9400
Waste subject to this manifest was delivered by the above hauler to this disposal facility and accepted on _____ (DISPOSAL DATE)
Signature of authorized agent and title: _____

Copies of this manifest will be furnished on request.

Manifest Discrepancies and/or Comments:

Name and Address of Responsible Agency
Commonwealth of Pennsylvania
Department of Environmental Protection
Southwest Region - Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

White — Landfill

Canary — Acknowledgement

Pink — Transporter

Goldenrod — Generator

Ticket: 01 583799

020011

NO 6 GREENRIDGE
R R 1 BOX 716
SCOTTDALE PA 15288

Weighmaster: DENISE RUSG

Date / Time:

29 March 2005 9:04 am

000080 - 0017
119 AMOCO
119 UNIVERISTY DR
119 UNIVERISTY DR

9:30 am

Vehicle: PTM1
Origin: FAYETTE CO.

DUNBAR, PA 15431
Contract: 01132
Reference: 4091E

02 Gross Weight 56,120.00 LB
Tare Weight 23,580.00 LB
Net Weight 32,540.00 LB 16.27 TN

Rate

Total

16.27 T R4 LEASE: 1 Soil

1.00 LB 00 ENVIRONMENTAL FEE

SAFETY MEMOS:

Hard hats **MUST** be worn.

Passengers **MUST** remain in vehicles at all time.

ANSI Class II vests **MUST** be worn.

SIGNATURE: Randy Smith

Greenridge Reclamation
R.D. 1, Box 716
Scottsdale, Pennsylvania 15683
724/887-9400
FAX: 724/887-6558

Document No. 63912

NON-HAZARDOUS WASTE MANIFEST

☐ Municipal ☐ Residual ☐ Special Handling

Site Permit No. 100281

1. Generator Name: (Print or Type) RON HALL P T M Shell
Pick-up Address: 119 UNIVERSITY DR DUBAO PA 15431
(No.) (Street) (City) (State) (Zip Code)
Telephone Number: 724-438-2472
Generator of Waste (must be filled in by producer) EPA I.D. No. 100281
Waste Stream Identification: This manifest represents a non-hazardous waste as per E.P.A. and P.A.D.E.P. regulations
Asbestos: Friable _____ Non-Friable _____ Contaminated Soil ☒
Volume: 60 TONS Cubic Yards: _____ Other (Specify): _____
Special Handling Instructions, if any: _____

GENERATOR'S SPECIAL WASTE PROFILE SHEET CODE NO.

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I certify that the foregoing is true and correct to the best of my knowledge.

Signature: X Ron Hall Smith

Date: _____

Print: X Ron Hall Smith
(Name and Title)

2. Hauler of Waste (must be filled-in by hauler) EPA I.D. No. _____
COMPANY NAME: PRECISE TANK MODS
ADDRESS: Box 274 Madison Pa 15663 724-416-3516
Street City State Zip Code Phone Number
Pick-up Date: 3-23-05 Truck No.: 15 Vehicle Lic. No.: AE-93658

The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify under penalty of perjury that the foregoing is true and correct.

Signature of authorized agent and title: X Ron Hall Smith

3. Disposer of Waste (must be filled-in by disposer)
Company Name: (Print or Type): Greenridge Reclamation
Site Location: R.D. 1, Box 716, Landfill Road, Scottsdale, PA 15683 724-887-9400
Waste subject to this manifest was delivered by the above hauler to this disposal facility and accepted on 3/23/05 (DISPOSAL DATE)
Signature of authorized agent and title: Monica Kapp

Copies of this manifest will be furnished on request.

Manifest Discrepancies and/or Comments:

16.2 Tons

Name and Address of Responsible Agency
Commonwealth of Pennsylvania
Department of Environmental Protection
Southwest Region - Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

White — Landfill

Canary — Acknowledgement

Pink — Transporter

Goldenrod — Generator

Site Permit No. 100281

- GENERATOR'S SPECIAL WASTE PROFILE SHEET CODE NO.

(Name and Title)

- Signature of authorized agent and title: James M. Smith, Jr. Attorney at Law

- Signature of authorized agent and title: John J. [illegible]

Goldenrod — Generator

NO * GREENRIDGE
R R 1 BOX 712
SCOTTSDALE PA 15488

Weighmaster: MIKE

Date / Time:

000030 - 0017

22 March 2005

10:55 am

119 AMOCO

11:05 am

119 UNIVERSITY OF

119 UNIVERSITY DR

Vehicle: PTM1

Origin: FAYETTE CO.

DUMBAR, PA 15431

Contract: 01132

Reference: 62913

OS Gross Weight 55,960.00 LB
Tare Weight 23,580.00 LB
Net Weight 32,380.00 LB 16.67 TN

Rate

Total

16.67 T R+ 12680 1 Soil

1.00 LB C ENVIRONMENTAL FEE

SAFETY MEMOS:Hard hats **MUST** be worn.Passengers **MUST** remain in vehicles at all time.ANSI Class II vests **MUST** be worn.SIGNATURE: 

Greenridge Reclamation
R.D. 1, Box 716
Scottsdale, Pennsylvania 15683
724/887-9400
FAX: 724/887-6558

NON-HAZARDOUS WASTE MANIFEST

☐ Municipal ☐ Residual ☐ Special Handling

Site Permit No. 100281

1. Generator Name: (Print or Type) Ray Smith
Pick-up Address: 119 University Drive Danville Pa 15411
(No.) (Street) (City) (State) (Zip Code)
Telephone Number: 724-438-0472
Generator of Waste (must be filled in by producer) EPA I.D. No. 100281
Waste Stream Identification: This manifest represents a non-hazardous waste as per E.P.A. and P.A.D.E.P. regulations
Asbestos: Friable _____ Non-Friable _____ Contaminated Soil ✓
Volume: 60 tons Cubic Yards: _____ Other (Specify): _____
Special Handling Instructions, if any: _____

GENERATOR'S SPECIAL WASTE PROFILE SHEET CODE NO.

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I certify that the foregoing is true and correct to the best of my knowledge.

Signature: Ray Smith
Print: Ray Smith
(Name and Title)

Date: 3-23-05

2. Hauler of Waste (must be filled-in by hauler) EPA I.D. No. _____
COMPANY NAME: Proctor Tank Motors
ADDRESS: Rt 274 Monaca Pa 15663 724-446-3516
Street City State Zip Code Phone Number

Pick-up Date: 3-23-05 Truck No.: 15 Vehicle Lic. No.: AE-93658

The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify under penalty of perjury that the foregoing is true and correct.

Signature of authorized agent and title: Ray Smith Driver

3. Disposer of Waste (must be filled-in by disposer)
Company Name: (Print or Type): Greenridge Reclamation
Site Location: R.D. 1, Box 716, Landfill Road, Scottsdale, PA 15683 724-887-9400
Waste subject to this manifest was delivered by the above hauler to this disposal facility and accepted on 3-23-05 (DISPOSAL DATE)
Signature of authorized agent and title: Danise Hugg

Copies of this manifest will be furnished on request.

Manifest Discrepancies and/or Comments:

16.69 TONS

Name and Address of Responsible Agency
Commonwealth of Pennsylvania
Department of Environmental Protection
Southwest Region - Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

White — Landfill

Canary — Acknowledgement

Pink — Transporter

Goldenrod — Generator

Greenridge Reclamation
 R.D. 1, Box 716
 Scottsdale, Pennsylvania 15683
 724/887-9400
 FAX: 724/887-6558

NON-HAZARDOUS WASTE MANIFEST

☐ Municipal ☐ Residual ☐ Special Handling

Site Permit No. 100281

1. Generator Name: (Print or Type) Ray Smith
 Pick-up Address: 119 Community Drive Danville Pa 15511
 (No.) (Street) (City) (State) (Zip Code)
 Telephone Number: 724-438-5472
 Generator of Waste (must be filled in by producer) EPA I.D. No. 100281
 Waste Stream Identification: This manifest represents a non-hazardous waste as per E.P.A. and P.A.D.E.P. regulations
 Asbestos: Friable _____ Non-Friable _____ Contaminated Soil ☒
 Volume: 600 tons Cubic Yards: _____ Other (Specify): _____
 Special Handling Instructions, if any: _____

GENERATOR'S SPECIAL WASTE PROFILE SHEET CODE NO.

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I certify that the foregoing is true and correct to the best of my knowledge.

Signature: Ray Smith
 Date: 3-23-05 Print: Ray Smith
 (Name and Title)

2. Hauler of Waste (must be filled-in by hauler) EPA I.D. No. _____
 COMPANY NAME: Pressure Tank Movers
 ADDRESS: Box 274 Madison Pa 15643 724-446-3216
 Street City State Zip Code Phone Number

Pick-up Date: 3-23-05 Truck No.: 15 Vehicle Lic. No.: AL-95658

The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify under penalty of perjury that the foregoing is true and correct.

Signature of authorized agent and title: Ray Smith Driver

3. Disposer of Waste (must be filled-in by disposer)
 Company Name: (Print or Type): Greenridge Reclamation
 Site Location: R.D. 1, Box 716, Landfill Road, Scottsdale, PA 15683 724-887-9400
 Waste subject to this manifest was delivered by the above hauler to this disposal facility and accepted on 3-23-05 (DISPOSAL DATE)
 Signature of authorized agent and title: Dennis P. Hugg

Copies of this manifest will be furnished on request.

Manifest Discrepancies and/or Comments:

16.69 Tons

Name and Address of Responsible Agency
 Commonwealth of Pennsylvania
 Department of Environmental Protection
 Southwest Region - Waste Management
 400 Waterfront Drive
 Pittsburgh, PA 15222-4745

White — Landfill

Canary — Acknowledgement

Pink — Transporter

Goldenrod — Generator

Greenridge Reclamation
 R.D. 1, Box 716
 Scottsdale, Pennsylvania 15683
 724/887-9400
 FAX: 724/887-6558

NON-HAZARDOUS WASTE MANIFEST
☐ Municipal ☐ Residual ☐ Special Handling

Site Permit No. 100281

1. Generator Name: (Print or Type) K.M. Hays + Son Inc.
 Pick-up Address: 119 University Dr. Lakeland FL 33409
 (No.) (Street) (City) (State) (Zip Code)
 Telephone Number: 724 446-4772
 Generator of Waste (must be filled in by producer) EPA I.D. No. 100281
 Waste Stream Identification: This manifest represents a non-hazardous waste as per E.P.A. and P.A.D.E.P. regulations
 Asbestos: Friable _____ Non-Friable _____ Contaminated Soil ☒
 Volume: 60 TONS Cubic Yards: _____ Other (Specify): _____
 Special Handling Instructions, if any: _____

GENERATOR'S SPECIAL WASTE PROFILE SHEET CODE NO.

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I certify that the foregoing is true and correct to the best of my knowledge.

Date: 3-25-05 Signature: Mark Kite
 Print: Mark Kite
 (Name and Title)

2. Hauler of Waste (must be filled-in by hauler) EPA I.D. No. _____
 COMPANY NAME: Greenridge
 ADDRESS: Box 716 Landfill Rd PA 15683 724-446-3511
 Street City State Zip Code Phone Number
 Pick-up Date: 3-25-05 Truck No.: 15 Vehicle Lic. No.: AE-93652-PA
 The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify under penalty of perjury that the foregoing is true and correct.
 Signature of authorized agent and title: Mark Kite (Driver)

3. Disposer of Waste (must be filled-in by disposer)
 Company Name: (Print or Type) Greenridge Reclamation
 Site Location: R.D. 1, Box 716, Landfill Road, Scottsdale, PA 15683 724-887-9400
 Waste subject to this manifest was delivered by the above hauler to this disposal facility and accepted on 3-25-05 (DISPOSAL DATE)
 Signature of authorized agent and title: Mark Kite

Copies of this manifest will be furnished on request.

Manifest Discrepancies and/or Comments:

Name and Address of Responsible Agency
 Commonwealth of Pennsylvania
 Department of Environmental Protection
 Southwest Region - Waste Management
 400 Waterfront Drive
 Pittsburgh, PA 15222-4745

White — Landfill

Canary — Acknowledgement

Pink — Transporter

Goldenrod — Generator

020381

NO. 1 GREENRIDGE
P. R. 1 BOX 71c
SCOTTDALE PA 15088

Neighborhood: DENISE RUGG

Date: Time:

25 March 2005

9:23 am

000030 - 0017

119 AMOCO

119 UNIVERSITY DR

119 UNIVERSITY DR

9:45 am

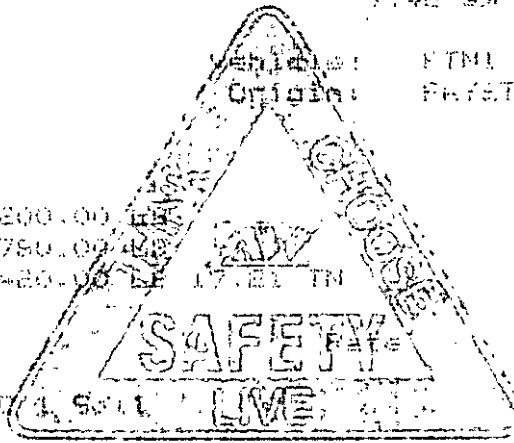
DUNBAR, PA 15401

Contract: 01188

Reference: 68915

Vehicle: FTMI
Origin: PRYETTE CO.

OE Gross Weight 38,200.00 LB
Tare Weight 38,780.00 LB
Net Weight 34,420.00 LB 17.21 TN



Total

17.21 T PA 12480 (1,500) LIVE

1.04 LD - 12 ENCL. *ANSI Class II vest thing!*

SAFETY MEMOS:

Hard hats **MUST** be worn.

Passengers **MUST** remain in vehicles at all time.

• ANSI Class II vests **MUST** be worn.

SIGNATURE: _____

[Handwritten signature]

63915

Document No.

Greenridge Reclamation
R.D. 1, Box 716
Scottsdale, Pennsylvania 15683
724/887-9400
FAX: 724/887-6558

NON-HAZARDOUS WASTE MANIFEST

☐ Municipal ☐ Residual ☐ Special Handling

Site Permit No. 100281

1. Generator Name: (Print or Type) RON HAI + Tim Shell
 Pick-up Address: 119 UNIVERSITY DR DUNKARD PA 15431
 (No.) (Street) (City) (State) (Zip Code)
 Telephone Number: 724 432 2472
 Generator of Waste (must be filled in by producer) EPA I.D. No. 100281
 Waste Stream Identification: This manifest represents a non-hazardous waste as per E.P.A. and P.A.D.E.P. regulations
 Asbestos: Friable _____ Non-Friable _____ Contaminated Soil ☒
 Volume: 60 TNS Cubic Yards: _____ Other (Specify): _____
 Special Handling Instructions, if any: _____

GENERATOR'S SPECIAL WASTE PROFILE SHEET CODE NO.

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to applicable state and federal law. The wastes were consigned to the transporter named. I certify that the foregoing is true and correct to the best of my knowledge.

Date: 3-25-05Signature: Mark Kite JRPrint: MARK KITE JR
(Name and Title)

2. Hauler of Waste (must be filled-in by hauler) EPA I.D. No. _____
 COMPANY NAME: Precise Tank MODS
 ADDRESS: Box 274 Madison PA 15663 724-446-3511
 Street City State Zip Code Phone Number
 Pick-up Date: 3-25-05 Truck No.: 15 Vehicle Lic. No.: AE-93652-PA
 The above described waste was picked up and hauled by me to the disposal facility named below and was accepted. I certify under penalty of perjury that the foregoing is true and correct.
 Signature of authorized agent and title: Mark Kite JR (Driver)

3. Disposer of Waste (must be filled-in by disposer)
 Company Name: (Print or Type): Greenridge Reclamation
 Site Location: R.D. 1, Box 716, Landfill Road, Scottsdale, PA 15683 724-887-9400
 Waste subject to this manifest was delivered by the above hauler to this disposal facility and accepted on 3-25-05 (DISPOSAL DATE)
 Signature of authorized agent and title: Debbie Kite

Copies of this manifest will be furnished on request.

Manifest Discrepancies and/or Comments:

17. Jiten

Name and Address of Responsible Agency
Commonwealth of Pennsylvania
Department of Environmental Protection
Southwest Region - Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

White — Landfill

Canary — Acknowledgement

Pink — Transporter

Goldenrod — Generator

Ticket: 101 534160

020381

NO 9 GREENRIDGE
R R 1 BOX 715
SCOTTDALE PA 15488

Weighmaster: DENISE RUGG

Date / Time:

25 March 2005

9:23 am

000080 - 0017

119 AMOCO

119 UNIVERSITY DR

119 UNIVERSITY DR

9:46 am

Vehicle: PTH

Origin: FAYETTE CO.

DUNBAR, PA 15431

Contract: 01132

Reference: 63913

OE Gross Weight 35,200.00 LB
Tare Weight 23,780.00 LB
Net Weight 34,420.00 LB 17.21 TN

Rate

Total

17.21 R4 CR6HC 1 Soil

1.00 LB 01 ENVIRONMENTAL FEE

SAFETY MEMOS:

Hard hats **MUST** be worn.

Passengers **MUST** remain in vehicles at all time.

• ANSI Class II vests **MUST** be worn.

SIGNATURE: 

WEIGHMASTER CERTIFICATE
TRUCK SCALE

TC-2046, Rev. 0

TICKET #: 0008751

**TUBE CITY, LLC**
We Create Value®Purchased From: P20000
MISCELLANEOUS TK SUPPLIER
1, PA 1TUBE CITY, LLC - MIFFLIN YARD
516 DELWAR RD
ALLEGHENY COUNTY
WEST MIFFLIN, PA 15236

Vehicle #: PRECISE

Supp Ref: Scale Payment

Rpt:

SHIPMENT#	COMMODITY	GROSS	TARE	NET	ADJ REASON	PD WT-ST
632411	HEAVY MELT.#1 551030011	38360	34600	3760		3760 U

Ticket Comments: PRECISE TANK

ALL WEIGHTS ARE REPORTED IN POUNDS UNLESS OTHERWISE INDICATED

M = MANUAL ENTRY

WEIGHMASTER SIGNATURE JOHN MACZUZAK

Gross Date: 01/26/05
Gross Time: 13:00
Tare Date: 01/26/05
Tare Time: 13:44

GROSS TONS
1.6786

CUSTOMER SIGNATURE _____

WEIGHMASTER CERTIFICATE

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy.

Tank Owner: RON HALL & TIM SHELL
 Address: 925 MORELL AVE
CONNELLSVILLE, PA 15405
 Facility I.D. Number 26-18711

Contractor Name: DON MAUGHAN
 Company Name: PRECISE TANK
 Address: PO BOX 274
MADISON, PA 15663
 Company Certification Number 1163
 Inst/Insp. Certification Number 1400

**ITEMIZED EXPENSES FOR REIMBURSEMENT
 PERFORMED UNDER ACT 13, SECTION 711
 POLLUTION PREVENTION GRANT PROGRAM**

A. Pumping Costs	Tank No.	Tank No.	Tank No.	Tank No.	Tank No.	Tank No.
Indicate Applicable Tank No.'s.	<u>004</u>					
Cost Per Gallon to Pump	<u>5.00</u>					
Total Gallons Pumped	<u>100</u>					
Equipment Rental (if applicable)						
Total Pumping Cost per Tank	<u>500.00</u>					
Total Pumping Costs				<u>\$ 500.00</u>		
B. Disposal/Recycling Costs, if Applicable	A copy of the Bill of Lading or Manifest or other official documentation proving the waste was properly disposed of must be submitted along with this application.					
Cost Per Gallon/Drum	<u>60.00</u>					
Total Gallons/Drums	<u>2</u>					
Transportation	<u>\$ 345.00</u>					
Total Disposal Costs per Tank	<u>\$ 465.00</u>					
Total Disposal Costs				<u>\$ 465.00</u>		
C. Cleaning Costs						
Total Cleaning Costs per Tank	<u>\$ 1500.00</u>					
Total Cleaning Costs				<u>\$ 1500.00</u>		
D. Fill Pipe Grouting Costs (Not Applicable if permanent closure process occurred.)						
Total Grouting Costs per Tank	<u>0</u>					
Total Grouting Costs				<u>\$</u>		
Grand Total (Totals for A, B, C and D)				<u>\$ 2465.00</u>		
Total Costs per Tank (cannot exceed \$2,500/Tank)						

Date work was completed: 1-25-2005

DONALD L. MAUGHAN
 Name of Contractor

Donald L. Maughan
 Signature of Contractor

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name TIM SHELL


Owner Signature

PTA
Title

4/25/05
Date

Information & Invoices should be sent to:

- ☒ Tank Owner Contact
☐ Site Contact
☐ Facility Operator
☐ Other Responsible Party Identified Below

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
Individual Last Name	First Name	MI	Suffix	SSN
HALL	RON			
Additional Individual Last Name	First Name	MI	Suffix	SSN
SHELL	TIM			
Mailing Address Line 1		Mailing Address Line 2		
925 MORRELL AVE				
Address Last Line - City		State	ZIP+4	Country
CONNELLSVILLE		PA	15425	US
Client to Site (Facility) Relationship				
OWNER				

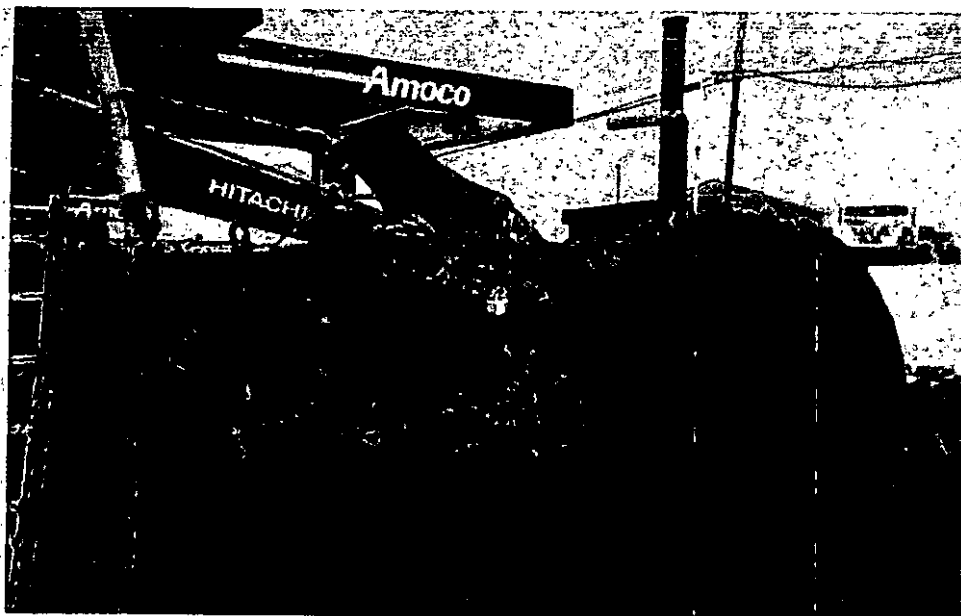
Yes N/A

☐ ☐ 20. Briefly describe the disposition of and amount 0 (tons) of uncontaminated soil (attach analyses): _____

I, Tim Shell, hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn falsification to authorities) that I am the owner of the above referenced storage tank(s) and that the information provided by me in this closure report (Section I) is true, accurate and complete to the best of my knowledge and belief.


Signature of Tank Owner

4/25/05
Date



Tank 002



Tank 001



Tank 004



Tank 003



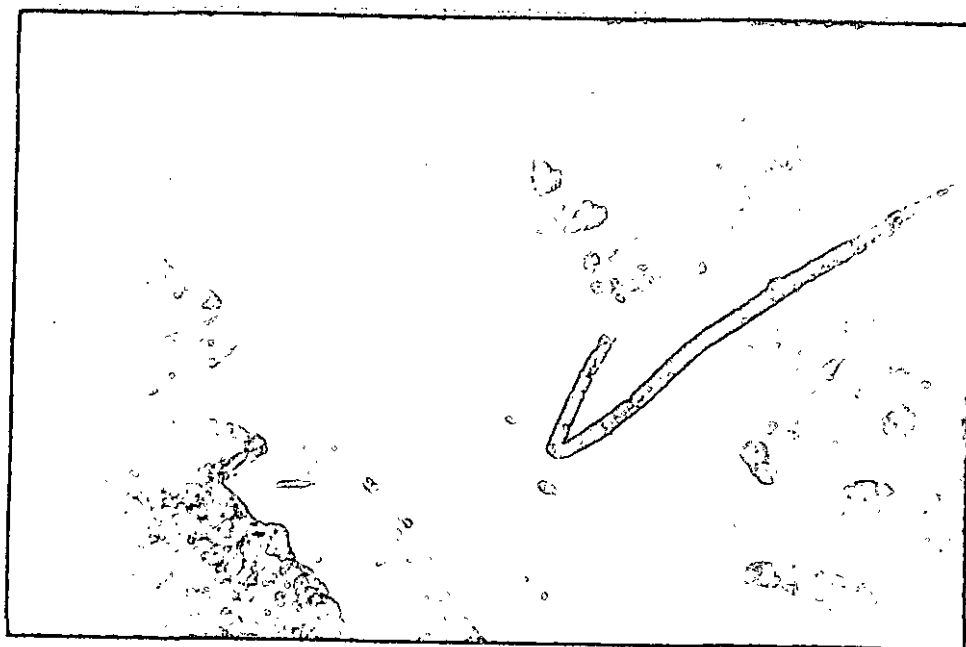
dispenser Area



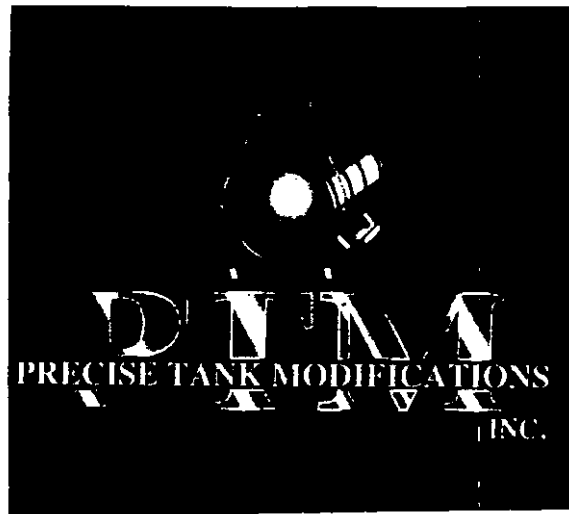
Dispenser Area



Tank Area



Piping Area



Closure Report Form

Facility I D # 26-18711
Rt. 119 Amoco
Rt. 119 & University Drive
Dunbar , Pa.

APPENDIX G

Dunbar Ordinance 8-1-1990

ORDINANCE NO. 8-1 - 1990

DUNBAR TOWNSHIP

THIS ORDINANCE (i) REQUIRING EACH PROPERTY OWNER ACCESSIBLE TO A PUBLIC WATER SUPPLY SYSTEM TO CONNECT THERETO; (ii) PROVIDING REMEDIES FOR AN OWNER'S NEGLECT OR REFUSAL TO CONNECT TO THE WATER SYSTEM; (iii) PROVIDING FOR WATER CONNECTION PERMITS AND ISSUANCE THEREOF; (iv) ESTABLISHING SPECIFIC RULES WITH RESPECT TO WATER CONNECTIONS; and (v) PROVIDING PENALTIES FOR VIOLATIONS OF THIS ORDINANCE.

BE IT ORDAINED AND ENACTED by the Board of Supervisors for Dunbar Township, Fayette County, Pennsylvania; and it is hereby ordained and enacted by the authority of the same as follows:

SECTION 1: The owner or owners of each property in Dunbar Township accessible to and whose principal building, previously erected or hereafter constructed, is within one hundred fifty (150) feet of a public water supply, shall connect with and use the public water supply, except; those owner or owners of industries and farms who have their own supply of water for uses other than human consumption, shall be an exemption.

SECTION 2: In case any owner or owners of property; except those previously excluded; have neglected or refused to connect to the public water system, for a period of ninety (90) days following notice to connect, which notice shall be served personally or by registered mail upon said owner, the Township Supervisors or their agents may enter upon said property and construct the required connection. In such case, the Township Supervisors shall, upon completion of the work, send an itemized bill of the costs and expenses of construction of said water connection to the owner or owners of the property to which connection has been made, which bill shall be payable

05. 11. 2004

2004

McCUE & HUSBAND
LAW FIRM
REGIONAL LAW BUILDING
513 BLACKSTONE ROAD
CONNELLSVILLE, PA 15425

(2) 628-5130
Facsimile
(2) 628-2011

forthwith or the Supervisors may authorize installment payments bearing interest at the legal rate.

SECTION 3: The cost and expense of construction for connections shall be payable at the Office of the Township Supervisors or a designated office, in full or in monthly installments, with interest from the date of completion of the connection.

SECTION 4: In the case of default in the payment of any installment or interest for a period of sixty (60) days after the same shall become due, the entire cost/expense of construction for connection to water line and accrued interest thereon shall become accelerated and immediately due; and, the Township Solicitor shall proceed to collect the same under the general laws relating to the collection of municipal claims.

SECTION 5: In case of neglect or refusal by the owner or owners of such property to pay bills or in case of installment payment, it shall be the duty of the Township Supervisors to file municipal liens for the cost and expense of construction within a reasonable time of the date of completion of the construction of such connections; the same to be subject in all respects to the general law providing for the filing and recovery of municipal liens.

SECTION 6: No unauthorized person or company shall uncover, make any connections, with or opening into, use, alter or disturb the public water supply system without first having obtained a written water connection permit. The owner or owners of a building or premises desiring or required to connect with the water supply system shall first make application therefore, in writing, to the Township Supervisors, or their designated agent; who upon

approval of the application shall refer to the Township Secretary or the Township Supervisors' agent.

SECTION 7: The construction, number and size of all water lines and/or connections shall be completed in accordance with the specifications, plans and procedures established by the Pennsylvania American Water Company or North Fayette County Municipal Authority Rules and Regulations, whichever may apply to the specific connection, as the same may be from time to time published and amended; copies of which, upon adoption, shall be maintained on file with the appropriate Water Authority.

SECTION 8: All costs and expenses, incident to the installation of the water connection and the connection of such building or premises with the public water supply system, not covered by a grant; shall be borne by the owner or owners of such building or premises. The owner or owners shall indemnify and save harmless the Township, and the Township's designated agents as their interest shall appear, from any loss or damage directly or indirectly caused by or arising out of such installation and connection.

SECTION 9: The owner or owners holding water connection permits, shall notify the Township Supervisors or their designated agent, when the water connection is ready for inspection and connection with the public water supply system. In no case shall backfill be placed until such inspection has been made and completed.

SECTION 10: All excavations for water connections shall be adequately guarded with barriers and lights to protect the public from hazards. All streets, sidewalks and public property, disturbed in the course of making a

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JUNESVILLE, PA 15435

73 628-4150
JCH/MLR
21 628-3013

sewer connection, shall be restored in a manner satisfactory to the Township Supervisors and their designated agents by restoring to the condition prior to installation of the connection.

SECTION 11: Any person violating any of the provisions of this Ordinance shall, upon conviction thereof before any District Justice, be sentenced to pay a fine of not more than Three Hundred (\$300.00) Dollars for each and every offence, plus all costs incurred, and/or imprisonment in the Fayette County Jail for a period not exceeding thirty (30) days. Following proper notification in writing by the Township Supervisors or their designated agents that compliance is required, any person or organization in violation of this Ordinance shall be deemed to incur continuing violation with each full week that compliance is lacking to be deemed a separate offense punishable by a fine or imprisonment upon conviction hereunder.

SECTION 12: All Ordinances or Resolutions or parts of Ordinances or Resolutions inconsistent herewith are hereby repealed to the extent of such inconsistency.

SECTION 13: The validity of any part of this Ordinance shall not affect the validity of any other part of this Ordinance.

SECTION 14: This Ordinance shall become effective five (5) days after legal enactment thereof.

ORDAINED and ENACTED as an Ordinance and passed by the Board of

McCue & Husband
Law Firm
Colonial Law Building
813 Blackstone Road
Connellsville, PA 15425

(1) 624-5150
attorneys
(2) 624-2013

Township Supervisors of Dunbar Township on the 24 day of Aug, 1990.

DUNBAR TOWNSHIP SUPERVISORS

Frank Fabian
Frank Fabian, Chairman

Eugene Frazier
Eugene Frazier, Secretary

Steve Tomachko
Steve Tomachko, Member

ATTEST:

Eugene Frazier
Eugene Frazier, Secretary

McCUE & HUSBAND
LAW FIRM
COLONIAL LAW BUILDING
813 BLACKSTONE ROAD
CONNELLSVILLE, PA 15425

TEL 628-5150
JCS:mle
JL 628-2013

Aug 7 4 05 PM '90

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APPENDIX H
Geoprobe® Soil Boring Logs

SOIL BORING COMPLETION LOG

BORING NUMBER : SB-1 (GB-1)

SHEET 1 of 1

PROJECT: Former Route 119 Amoco

PROJECT NUMBER: 031

DRILLING METHOD: Geoprobe

DRILLING CONTRACTOR: Letterle Leasing, LLC

LOGGED BY: Eric Itle

START TIME: 5/8/06

FINISH TIME: 5/8/06

DATE: 5/8/06

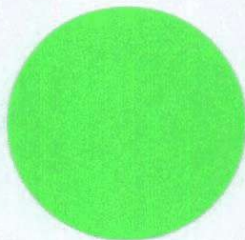
SAMPLE TYPE(S): 4' Macro-Core

TOTAL DEPTH: 7 feet

WATER LEVEL (ft bgs): not encountered

LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft m 0					Ground Surface	
					Asphalt, Concrete, and Gravel	
1	1	39	0.0		Medium Brown Silty Clay; dry, odorless, with abundant rocks	
2	2		0.0		Light Brown Shale; dry, odorless fissile, weathered.	
4	3	36	6.2			
6	4*		555			soil sample collected, SB-1/SS-4 wet with odor at 6.5 feet. refusal at 7 feet.
8					EXTENT OF BOREHOLE	



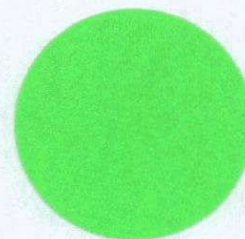
SOIL BORING COMPLETION LOG

BORING NUMBER : SB-2 (GB-2)
SHEET 1 of 1

PROJECT: Former Route 119 Amoco
PROJECT NUMBER: 031
DRILLING METHOD: Geoprobe
DRILLING CONTRACTOR: Letterle Leasing, LLC
LOGGED BY: Eric Iltle
START TIME: 5/9/06

FINISH TIME: 5/9/06
DATE: 5/9/06
SAMPLE TYPE(S): 4' Macro-Core
TOTAL DEPTH: 8 feet
WATER LEVEL (ft bgs): not encountered
LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft m 0					Ground Surface	
					Asphalt, Concrete, and Gravel	
1	1	96			Medium Brown Silty Clay; dry, odorless, with abundant rocks.	
2	2	40	473			
3	3	1271			Gray Shale; dry, weathered odor.	
4					Black Shale; moist.	soil sample collected, SB-2/SS-3
5					Gray Shale; very hard.	
6	4	48	522			
7						
8					EXTENT OF BOREHOLE	refusal at 8.0 feet



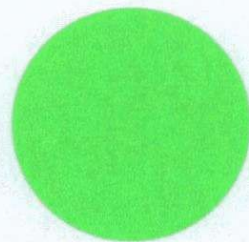
SOIL BORING COMPLETION LOG

BORING NUMBER : SB-3 (GB-3)
SHEET 1 of 1

PROJECT: Former Route 119 Amoco
PROJECT NUMBER: 031
DRILLING METHOD: Geoprobe
DRILLING CONTRACTOR: Letterle Leasing, LLC
LOGGED BY: Eric Itle
START TIME: 5/8/06

FINISH TIME: 5/8/06
DATE: 5/8/06
SAMPLE TYPE(S): 4' Macro-Core
TOTAL DEPTH: 9 feet
WATER LEVEL (ft bgs): not encountered
LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft m					Ground Surface	
					Asphalt, Concrete, and Gravel	
1	1				Gray Fill wet, coarse rock, slight odor.	
2		19.2				
	2		42.0		moderate odor.	
4						
	3		143			
6		18				
2	4		643			soil sample collected, SB-3/SS-4
8					Gray Shale; weathered.	
	5		458			
					EXTENT OF BOREHOLE	
10						



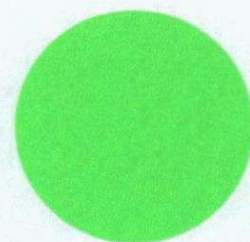
SOIL BORING COMPLETION LOG

BORING NUMBER : GB-5
SHEET 1 of 1

PROJECT: Former Route 119 Amoco
PROJECT NUMBER: 031
DRILLING METHOD: Geoprobe
DRILLING CONTRACTOR: Letterle Leasing, LLC
LOGGED BY: Eric Hle
START TIME: 5/8/06

FINISH TIME: 5/8/06
DATE: 5/8/06
SAMPLE TYPE(S): 4' Macro-Core
TOTAL DEPTH: 5.3 feet
WATER LEVEL (ft bgs): not encountered
LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft m 0					Ground Surface	
					Asphalt, Concrete, and Gravel	
1	1		0.0		Medium Brown Silty Clay; dry, shale texture, odorless.	
2		45.6				
	2		0.0			
4					Medium Brown Shale; dry, odorless, weathered.	
	3		0.0			soil sample collected, GB-5/SS-3.
						refusal at 5.3 feet.
6					EXTENT OF BOREHOLE	



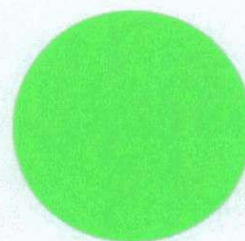
SOIL BORING COMPLETION LOG

BORING NUMBER : GB-6
SHEET 1 of 1

PROJECT: **Former Route 119 Amoco**
PROJECT NUMBER: **031**
DRILLING METHOD: **Geoprobe**
DRILLING CONTRACTOR: **Letterle Leasing, LLC**
LOGGED BY: **Eric Iltle**
START TIME: **5/8/06**

FINISH TIME: **5/8/06**
DATE: **5/8/06**
SAMPLE TYPE(S): **4" Macro-Core**
TOTAL DEPTH: **5 feet**
WATER LEVEL (ft bgs): **not encountered**
LOCATION: **Dunbar, Pa**

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft m 0					Ground Surface	
					Asphalt, Concrete, and Gravel	
1	1		0.0		Medium Brown Shale; dry, weathered, odorless.	
2		45.6				
	2		0.0			
4						
	3		0.0			soil sample collected, GB-6/SS-3/5'
						refusal at 5.0 feet.
6					EXTENT OF BOREHOLE	



SOIL BORING COMPLETION LOG

BORING NUMBER : GB-7
SHEET 1 of 1

PROJECT: Former Route 119 Amoco
PROJECT NUMBER: 031
DRILLING METHOD: Geoprobe
DRILLING CONTRACTOR: Letterle Leasing, LLC
LOGGED BY: Eric Iltle
START TIME: 5/8/06

FINISH TIME: 5/8/06
DATE: 5/8/06
SAMPLE TYPE(S): 4' Macro-Core
TOTAL DEPTH: 4 feet
WATER LEVEL (ft bgs): not encountered
LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0					Ground Surface	
0					Asphalt, Concrete, and Gravel	
1	1		0.0		Medium Brown Shale; dry, weathered, odorless.	
2		48				
2	2		0.0			
					hard at 3.5 feet dry odorless	soil sample collected, GB-7/4'.
4						refusal at 4.0 feet.
4					EXTENT OF BOREHOLE	
6						

SOIL BORING COMPLETION LOG

BORING NUMBER : GB-8

SHEET 1 of 1

PROJECT: Former Route 119 Amoco

PROJECT NUMBER: 031

DRILLING METHOD: Geoprobe

DRILLING CONTRACTOR: Letterle Leasing, LLC

LOGGED BY: Eric Itle

START TIME: 5/8/06

FINISH TIME: 5/8/06

DATE: 5/8/06

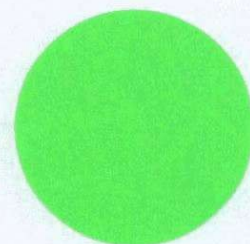
SAMPLE TYPE(S): 4" Macro-Core

TOTAL DEPTH: 6 feet

WATER LEVEL (ft bgs): not encountered

LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0					Ground Surface	
0					Asphalt, Concrete, and Gravel	
1	1		0.0		Medium Brown Shale; dry, weathered, odorless.	
2		44				
2	2		1.9		slight odor at 3 to 4 feet.	
4						
4	3	NA	1492		wet at 5 feet, moderate odor.	soil sample collected, GB-8/5'
6						refusal at 6 feet.
6					EXTENT OF BOREHOLE	
8						



SOIL BORING COMPLETION LOG

BORING NUMBER : GB-9

SHEET 1 of 1

PROJECT: Former Route 119 Amoco

PROJECT NUMBER: 031

DRILLING METHOD: Geoprobe

DRILLING CONTRACTOR: Letterle Leasing, LLC

LOGGED BY: Eric Ille

START TIME: 5/8/06

FINISH TIME: 5/8/06

DATE: 5/8/06

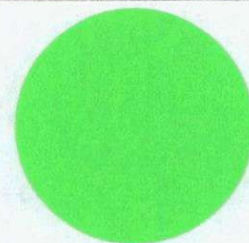
SAMPLE TYPE(S): 4" Macro-Core

TOTAL DEPTH: 6 feet

WATER LEVEL (ft bgs): not encountered

LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft m 0					Ground Surface	
					Asphalt, Concrete, and Gravel	
1	1		0.0		Medium Gray to Brown Shale; dry, weathered, odorless.	
2		48				
	2		1.9		dry odorless	
4						
	3		1492		wet at 5 feet, moderate odor.	soil sample collected, GB-9/5'
6						refusal at 6 feet
2					EXTENT OF BOREHOLE	
8						



SOIL BORING COMPLETION LOG

BORING NUMBER : GB-10

SHEET 1 of 1

PROJECT: Former Route 119 Amoco

PROJECT NUMBER: 031

DRILLING METHOD: Geoprobe

DRILLING CONTRACTOR: Letterle Leasing, LLC

LOGGED BY: Eric Hle

START TIME: 5/9/06

FINISH TIME: 5/9/06

DATE: 5/9/06

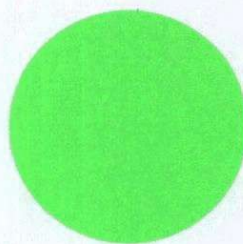
SAMPLE TYPE(S): 4" Macro-Core

TOTAL DEPTH: 7 feet

WATER LEVEL (ft bgs): not encountered

LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft m 0					Ground Surface	
					Asphalt, Concrete, and Gravel	
1	1	18.3			Light Brown Shale; dry, weathered, odorless.	
2		43			slight odor at 2 feet.	
	2	562			moist at 3 feet.	
4	3	639			dry slight odor.	
		36				
6	4	1820				
2						soil sample collected, GB-10/SS-4/6-7 refusal at 7 feet.
					EXTENT OF BOREHOLE	
8						



SOIL BORING COMPLETION LOG

BORING NUMBER : GB-11

SHEET 1 of 1

PROJECT: Former Route 119 Amoco

PROJECT NUMBER: 031

DRILLING METHOD: Geoprobe

DRILLING CONTRACTOR: Letterie Leasing, LLC

LOGGED BY: Eric Itle

START TIME: 5/9/06

FINISH TIME: 5/9/06

DATE: 5/9/06

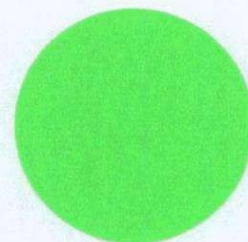
SAMPLE TYPE(S): 4" Macro-Core

TOTAL DEPTH: 6 feet

WATER LEVEL (ft bgs): not encountered

LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft m 0					Ground Surface	
					Asphalt, Concrete, and Gravel	
1	1		0.0		Light Brown Shale; dry, weathered, odorless.	
2		48				
	2		190		slight odor at 3 feet.	
					wet from 4 to 5 feet, moderate odor.	
4						
	3	24	540		hard dry .	soil sample collected, GB-11/SS-3/4-6.
6						refusal at 6 feet.
2					EXTENT OF BOREHOLE	
8						



SOIL BORING COMPLETION LOG

BORING NUMBER : GB-12

SHEET 1 of 1

PROJECT: Former Route 119 Amoco

PROJECT NUMBER: 031

DRILLING METHOD: Geoprobe

DRILLING CONTRACTOR: Letterle Leasing, LLC

LOGGED BY: Eric Itle

START TIME: 5/9/06

FINISH TIME: 5/9/06

DATE: 5/9/06

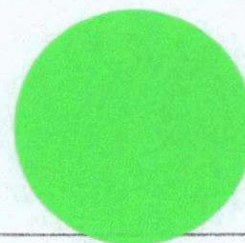
SAMPLE TYPE(S): 4" Macro-Core

TOTAL DEPTH: 6.5 feet

WATER LEVEL (ft bgs): not encountered

LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft m 0					Ground Surface	
					Asphalt, Concrete, and Gravel	
1	1		352		Light Brown Shale; dry, weathered, slight odor.	
2		48				
	2		597		very moist, moderate odor at 3.5 feet.	soil sample collected, GB-12/SS-2/2-4.
4						
	3	24	292		Dark Brown Shale; moist, weathered, odor.	
6					Gray Shale; dry, weathered.	
2						refusal at 6.5 feet.
8					EXTENT OF BOREHOLE	



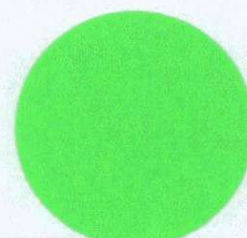
SOIL BORING COMPLETION LOG

BORING NUMBER : GB-13
SHEET 1 of 1

PROJECT: Former Route 119 Amoco
PROJECT NUMBER: 031
DRILLING METHOD: Geoprobe
DRILLING CONTRACTOR: Letterie Leasing, LLC
LOGGED BY: Eric Iltle
START TIME: 5/9/06

FINISH TIME: 5/9/06
DATE: 5/9/06
SAMPLE TYPE(S): 4" Macro-Core
TOTAL DEPTH: 4.5 feet
WATER LEVEL (ft bgs): not encountered
LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft					Ground Surface	
0					Asphalt, Concrete, and Gravel	
1	1		23.7		Light Brown Shale; dry, weathered, odorless.	
2		46				
	2		375			soil sample collected, GB-13/SS-2/2-4.
4						refusal at 4.5 feet.
					EXTENT OF BOREHOLE	
6						
8						



SOIL BORING COMPLETION LOG

BORING NUMBER : GB-14

SHEET 1 of 1

PROJECT: Former Route 119 Amoco

PROJECT NUMBER: 031

DRILLING METHOD: Geoprobe

DRILLING CONTRACTOR: Letterle Leasing, LLC

LOGGED BY: Eric Iltle

START TIME: 5/9/06

FINISH TIME: 5/9/06

DATE: 5/9/06

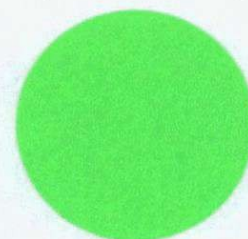
SAMPLE TYPE(S): 4' Macro-Core

TOTAL DEPTH: 8 feet

WATER LEVEL (ft bgs): not encountered

LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft m 0					Ground Surface	
					Asphalt, Concrete, and Gravel	
1	1		1901		Light Grey Shale; dry, weathered slight odor..	soil sample collected, GB-14/SS-1/0-2.
2		44				
	2		10.1			
4						
	3		400			
6		48				
2	4		783			
8					EXTENT OF BOREHOLE	refusal at 8.0 feet.



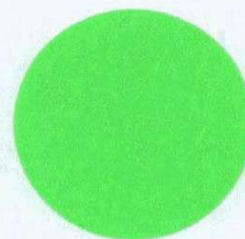
SOIL BORING COMPLETION LOG

BORING NUMBER : GB-15
SHEET 1 of 1

PROJECT: Former Route 119 Amoco
PROJECT NUMBER: 031
DRILLING METHOD: Geoprobe
DRILLING CONTRACTOR: Letterle Leasing, LLC
LOGGED BY: Eric Itle
START TIME: 5/9/06

FINISH TIME: 5/9/06
DATE: 5/9/06
SAMPLE TYPE(S): 4" Macro-Core
TOTAL DEPTH: 6.5 feet
WATER LEVEL (ft bgs): not encountered
LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft					Ground Surface	
0					Asphalt, Concrete, and Gravel	
1	1		1.4		Medium Brown Shale; dry, weathered.	
2		42				
	2		0.0			
4					very moist at 3.5 to 4.5 feet.	
	3	30	908		odor at 5 feet.	soil sample collected, GB-15/SS-3/4-6
6						
						refusal at 6.5 feet.
2					EXTENT OF BOREHOLE	
8						

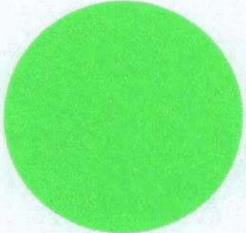


SOIL BORING COMPLETION LOG

BORING NUMBER : GB-16
SHEET 1 of 1

PROJECT: Former Route 119 Amoco
PROJECT NUMBER: 031
DRILLING METHOD: Geoprobe
DRILLING CONTRACTOR: Letterle Leasing, LLC
LOGGED BY: Eric Hle
START TIME: 5/9/06

FINISH TIME: 5/9/06
DATE: 5/9/06
SAMPLE TYPE(S): 4' Macro-Core
TOTAL DEPTH: 8 feet
WATER LEVEL (ft bgs): not encountered
LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft					Ground Surface	
0					Asphalt, Concrete, and Gravel	
1	1		42		Light Brown Shale; dry, weathered odorless.	
2		44			odor at 2 feet dry.	
2	2		964			
4					wet from 4 to 5 feet, strong odor.	
4	3		1477			soil sample collected, GB-16/SS-3/4-6.
6		48				
6	4		205			
8						refusal at 8.0 feet.
					EXTENT OF BOREHOLE	

SOIL BORING COMPLETION LOG

BORING NUMBER : GB-17
SHEET 1 of 1

PROJECT: Former Route 119 Amoco

PROJECT NUMBER: 031

DRILLING METHOD: Geoprobe

DRILLING CONTRACTOR: Letterle Leasing, LLC

LOGGED BY: Eric Ite

START TIME: 5/9/06

FINISH TIME: 5/9/06

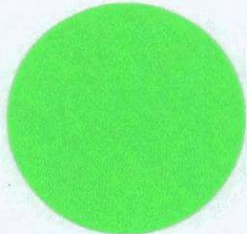
DATE: 5/9/06

SAMPLE TYPE(S): 4" Macro-Core

TOTAL DEPTH: 6 feet

WATER LEVEL (ft bgs): not encountered

LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft					Ground Surface	
0					Asphalt, Concrete, and Gravel	
1	1		59.1		Light Brown Shale; dry, weathered, odorless.	
2		48				
	2		961		odor at 3 feet.	soil sample collected, GB-17/SS-2/2-4.
4						
	3	24	180		wet at 5.5 feet, dark gray, odor.	
6						refusal at 6 feet.
					EXTENT OF BOREHOLE	
2						
8						

SOIL BORING COMPLETION LOG

BORING NUMBER : GB-18

SHEET 1 of 1

PROJECT: Former Route 119 Amoco

PROJECT NUMBER: 031

DRILLING METHOD: Geoprobe

DRILLING CONTRACTOR: Letterle Leasing, LLC

LOGGED BY: Eric Iltle

START TIME: 5/9/06

FINISH TIME: 5/9/06

DATE: 5/9/06

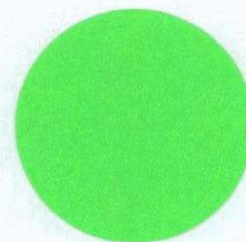
SAMPLE TYPE(S): 4' Macro-Core

TOTAL DEPTH: 5 feet

WATER LEVEL (ft bgs): not encountered

LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0 ft m 0					Ground Surface	
					Asphalt, Concrete, and Gravel	
1	1	4.2			Light Brown Shale; dry, weathered, odorless.	soil sample collected, GB-18/SS-1/0-2.
2		45.6				
	2	2.3				
4	3	0.9				
						refusal at 5.0 feet
6					EXTENT OF BOREHOLE	



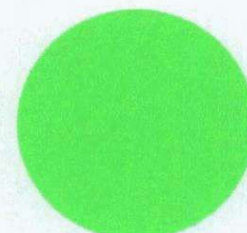
SOIL BORING COMPLETION LOG

BORING NUMBER : GB-19
SHEET 1 of 1

PROJECT: Former Route 119 Amoco
PROJECT NUMBER: 031
DRILLING METHOD: Geoprobe
DRILLING CONTRACTOR: Letterle Leasing, LLC
LOGGED BY: Eric Hle
START TIME: 5/9/06

FINISH TIME: 5/9/06
DATE: 5/9/06
SAMPLE TYPE(S): 4" Macro-Core
TOTAL DEPTH: 6.5 feet
WATER LEVEL (ft bgs): not encountered
LOCATION: Dunbar, Pa

DEPTH BELOW SURFACE (FT)	SAMPLE			LITHOLOGIC DESCRIPTION		COMMENTS
	SAMPLE ID	RECOVERY (in.)	VAPOR (ppm)	USCS SYMBOL	CLASSIFICATION OF MATERIAL	
0					Ground Surface	
0					Asphalt, Concrete, and Gravel	
1	1		0.0		Medium Brown Shale; dry, weathered.	
2		48				
2	2		0.0			
4					moist at 3.6 to 4.0 feet, odorless. wet from 4 to 4.5 feet, odorless.	
4	3	30	0.4		Light Gray Shale; dry, hard, odorless.	soil sample collected, GB-19/SS-3/4-6.
6						
6						refusal at 6.5 feet.
2					EXTENT OF BOREHOLE	
8						



APPENDIX I
Waste Disposal Results



PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Land Recycling and Waste Management
P.O. Box 8550
Harrisburg, PA 17105-8550

2500-FM-LRWM0051 REV. 7/89

OFFICIAL PENNSYLVANIA MANIFEST FORM

Form approved.
OMB No. 2050-0038

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of	Information within the bold red border is not required by Federal law but may be required by State law.
3. Generator's Name and Mailing Address Former 119 Amoco 1809 University Circle Dunbar PA 15431		1. Generator's US EPA ID No. PADEP0012041		A. State Manifest Document Number PAH 310104	
4. Generator's Phone (724) 438-8472		6. US EPA ID Number		B. State Gen. ID SAME	
5. Transporter 1 Company Name The Penn-Del Corporation		8. US EPA ID Number 04R000028837		C. State Trans. ID PA-AH 0618	
7. Transporter 2 Company Name		9. US EPA ID Number		D. Transporter's Phone (412) 942-7906	
9. Designated Facility Name and Site Address Chemtron Corporation 35850 Schneider Court Avon OH 44011		10. US EPA ID Number 04HD066060609		E. State Trans. ID PA-AH	
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) HM		12. Containers		13. Total Quantity	14. Unit Wt/Vol
a. RD, Hazardous waste solid, n.o.s., X (D018), 9, NA3077, III		No.	Type		
b.					
c.					
d.					
J. Additional Descriptions for Materials Listed Above		K. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information a. Q20060811A23 WID 41745 24 - Hour Emergency contact: 724-438-8472					
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.					
Printed/Typed Name James D. Lewis		Signature <i>[Signature]</i>		MONTH DAY YEAR 08 18 06	
17. Transporter 1 Acknowledgment of Receipt of Material Printed/Typed Name James D. Lewis		Signature <i>[Signature]</i>		MONTH DAY YEAR 08 18 06	
18. Transporter 2 Acknowledgment of Receipt of Material Printed/Typed Name		Signature		MONTH DAY YEAR	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.					
Printed/Typed Name		Signature		MONTH DAY YEAR	

APPENDIX J

Chambers, RETTEW, and Letterle Drilling Logs

WELL CONSTRUCTION LOG

Borehole: **SB-7/MW-7**

Total Depth: **50 feet**

Casing Elevation: **502.06**

Project: **Former Route 119 Amoco**

Diameter: **2-inch**

Water Level - Initial: **NA**

Client: **Mr & Mrs. Tim Shell**

Casing Length: **35 feet**

Water Level - Static: **463.31**

Location: **Dunbar, Pa**

Screen Length: **15 feet**

Gauging Date: **5/2006**

SUBSURFACE PROFILE			SAMPLE				Well Completion Details
Depth	Symbol	Description	Number	Blows	Recovery (%)	Vapor (ppm)	
0		Ground Surface					
0		Asphalt	1	2-4-4-6	60	0.0	
2		Light Brown Clayey Silt; dry, trace sand, no odor.	2	14-9-14-16	100	106	
4			3	8-12-13-15	100	63	
6			4	19-28-27-47	100	0.0	
8		Medium Gray Mudstone; dry, hard, slightly fissile, no odor.	5	16-36-50/3	60	0.0	
10		Medium Gray Shale; dry, soft, no odor.					
12							
14							
16							
18							
20							
22							
24		Medium Gray Silty Shale; dry, no odor.					
26		Black Coal					
28		Light Gray Siltstone; soft.					
30							
32							
34							
36							
38							
40							
42							
44							
46		Medium Gray Shale; Soft.					
48							
50							
52		Extent of Borehole					

Drilled By: **Terra Testing, Inc.**

Borehole Diameter: **6-inch** Log By: **Eric Itle**

Drill Method: **HSA/ Air Hammer**

Type: **PVC**

Sheet: **1 of 1**

Drill Date: **5/4/2006**

Slot Size: **0.020-inch**

* Sample submitted for laboratory analysis

WELL CONSTRUCTION LOG

Borehole: **SB-8/MW-8**

Total Depth: **51 feet**

Casing Elevation: **497.01**

Project: **Former Route 119 Amoco**

Diameter: **2-inch**

Water Level - Initial: **NA**

Client: **Mr. & Mrs. Tim Shell**

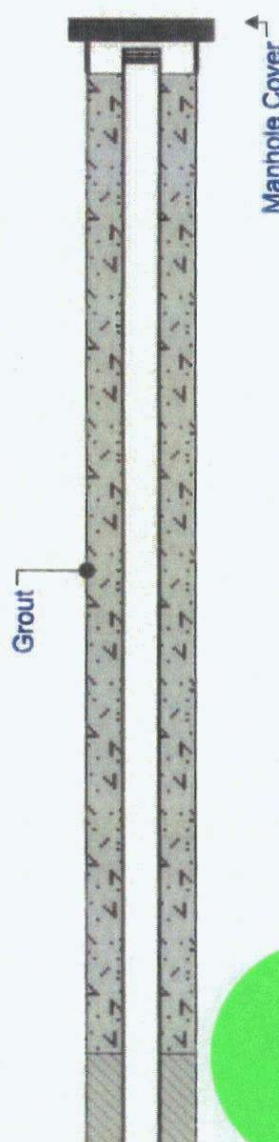
Casing Length: **36 feet**

Water Level - Static: **471.19**

Location: **Dunbar, Pa**

Screen Length: **15 feet**

Gauging Date: **May 2006**

SUBSURFACE PROFILE			SAMPLE				Well Completion Details
Depth	Symbol	Description	Number	Blows	Recovery (%)	Vapor (ppm)	
0		Ground Surface					
0		Asphalt					
2		Slag slight odor.		Hand Dig	100		
4		Brown Clay; damp, trace shale fragments.					
6		Brown Clayey Silt; dry, hard, trace weathered siltstone, wet 5.0' to 6.0'	1	13-20-29-28	91		
8		Brown and Gray Siltstone; wet, weathered.	2	20-33-50/3	58		
10		Gray-Brown Siltstone; dry, hard, moderate to highly weathered.					
12		Gray-Brown Siltstone; dry.					
14		Gray Shale; wet, soft, thin carbonaceous.					
16		Gray Shale; soft.					
18		Light Gray Shale; dry, hard.					
20		Black Shale; soft, carbonaceous.					
22		Light Gray Shale; dry, soft.					
24		Gray Shale soft.					
26		Gray Sandstone; dry, hard.					
28		Gray Silty Shale; dry, soft.					
30		Light Gray Sandstone; dry, hard, very fine.					

Drilled By: **Terra Testing, Inc.**

Borehole Diameter: **6-inch** Log By: **David Martincek**

Drill Method: **HSA/ Air Hammer**

Type: **PVC**

Sheet: **1 of 2**

Drill Date: **5/8/06**

Slot Size: **0.020-inch**

* Sample submitted for laboratory analysis

WELL CONSTRUCTION LOG

Borehole: **SB-8/MW-8**

Total Depth: **51 feet**

Casing Elevation: **497.01**

Project: **Former Route 119 Amoco**

Diameter: **2-inch**

Water Level - Initial: **NA**

Client: **Mr. & Mrs. Tim Shell**

Casing Length: **36 feet**

Water Level - Static: **471.19**

Location: **Dunbar, Pa**

Screen Length: **15 feet**

Gauging Date: **May 2006**

SUBSURFACE PROFILE			SAMPLE				Well Completion Details
Depth	Symbol	Description	Number	Blows	Recovery (%)	Vapor (ppm)	
32		Dark Gray Shale; soft.					<p>Bentonite</p> <p>#5 Best Sand</p> <p>Screen</p>
34		Gray Shale; soft.					
36	11						
38							
40							
42							
44	13	Black-Gray Shale; moist, very soft.					
46		Light Gray Shale; hard.					
48		Gray Silty Shale; hard.					
50	15						
52		EXTENT OF BOREHOLE					
54							
56	17						
58							
60							

Drilled By: **Terra Testing, Inc.**

Borehole Diameter: **6-inch** Log By: **David Martincek**

Drill Method: **HSA/ Air Hammer**

Type: **PVC**

Sheet: **2 of 2**

Drill Date: **5/8/06**

Slot Size: **0.020-inch**

* Sample submitted for laboratory analysis

WELL CONSTRUCTION LOG

Borehole: **SB-9/MW-9**

Total Depth: **55 feet**

Casing Elevation: **497.01**

Project: **Former Route 119 Amoco**

Diameter: **2-inch**

Water Level - Initial: **NA**

Client: **Mr. & Mrs. Tim Shell**

Casing Length: **40 feet**

Water Level - Static: **459.12**

Location: **Dunbar, Pa**

Screen Length: **15 feet**

Gauging Date: **May 2006**

SUBSURFACE PROFILE			SAMPLE				Well Completion Details
Depth	Symbol	Description	Number	Blows	Recovery (%)	Vapor (ppm)	
0		Ground Surface					
0		Asphalt					
2		Light Brown Silty Clay ; dry, slight odor.	1	4-4-10-9	55	1.4	
4			2	9-16-14-12	85	87.3	
6		Gray Shale; dry, weathered, moderate odor.	3*	15-50/6	50	1874	
8		Medium Gray Shale; dry, soft, slight odor.					
10		Dark Gray Shale					
12		Medium Gray Shale; dry.					
14							
16							
18							
20							
22							
24		Light Gray Siltstone; moderately hard.					
26		Light Gray Shale; soft.					
28							
30							
32							
34							
36							
38							
40							
42							
44		Black Coal; very soft.					
46		Light Gray Siltstone; hard.					
48							
50							
52							
54							
56		Extent of Borehole					

Drilled By: **Terra Testing, Inc**

Borehole Diameter: **6-inch** Log By: **Eric Ite**

Drill Method: **HSA/ Air Hammer**

Type: **PVC**

Sheet: **1 of 1**

Drill Date: **5/5/2006**

Slot Size: **0.020-inch**

* Sample submitted for laboratory analysis

ADVANCED DRILLING, INC.		PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER MW-1
MUNICIPALITY Connellsville		COUNTY	STATE Pennsylvania	COORDINATES		WELL PERMIT NO.	
START DATE 8-28-97	COMPLETION DATE 8-29-97	DRILLER Paul Keeney		DRILLER LICENSE NO. 2178		BORING DIA. 8"	TOTAL DEPTH 35.5 Ft.
LOT	BLOCK	DRILLING METHOD Air Rotary		SAMPLE TYPE From Cuttings		DEPTH OF GROUNDWATER 25 Feet	

PROTECTIVE CASING FLUSH	NOTES
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Soil Boring Cross-Reference MW-1
 Town and City Connellsville
 County and State Pennsylvania

Installation Date (s) 8-29-97

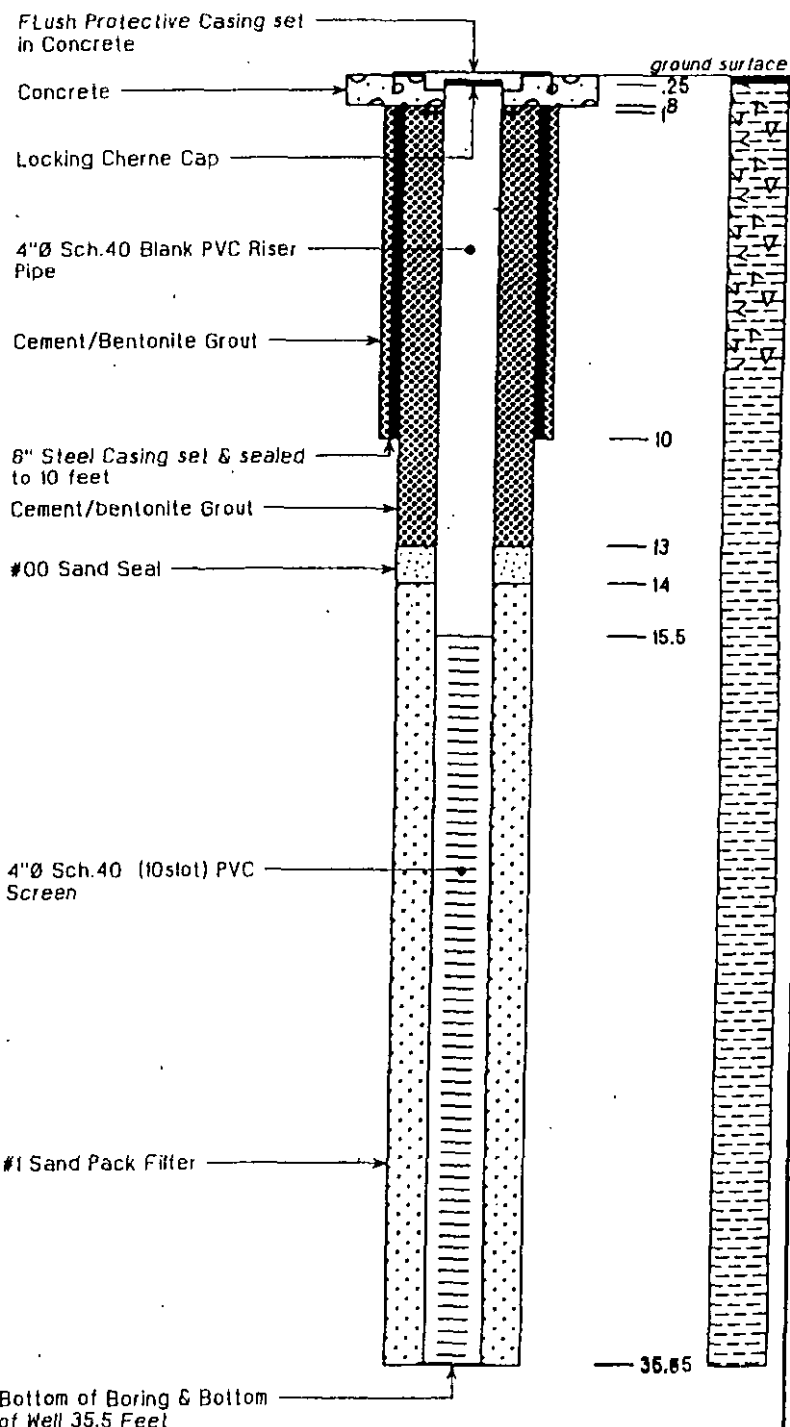
Drilling Method Air Rotary
 Driller Paul Keeney
 Drilling Fluid None

Static water level after drilling ft.
 Well developed for hours at gpm
 Method of development By Client

Well Purpose Monitoring

Remarks

Prepared By Paul
 Date Prepared 9/2/97



ADVANCED DRILLING, INC.				PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER MW-2	
MUNICIPALITY Connellsville			COUNTY		STATE Pennsylvania	COORDINATES			WELL PERMIT NO.	
START DATE 8-28-97		COMPLETION DATE 8-29-97		DRILLER Paul Keeney		DRILLER LICENSE NO. 2178		BORING DIA. 8"	TOTAL DEPTH 40.75 Ft.	
LOT		BLOCK		DRILLING METHOD Air Rotary		SAMPLE TYPE From Cuttings/split spoon		DEPTH OF GROUNDWATER 39 Feet		
PROTECTIVE CASING FLUSH			NOTES						SHEET 1 of 1	

DEPTH	SAMPLE NUMBER	BLOWS/6" ON SAMPLE SPOON	"N" VALUE	LAYER Elev. Depth	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION density, grain size/shape, color, structure composition, sorting, texture, moisture facies, odor	DRILLING NOTES water levels, water return, character of drilling, etc.
4-6	1	4/6 32/40	38		2.0			2" ASPHALT	
					5.0			Dry WEATHERED SHALE	
					8.0				
					10				
					15				
					20				
					25			Grey SHALE	
					30				
					35				
					40				
				40.7					8" air rotary to 10 feet; set and sealed 8" casing to 10 feet; 6" air rotary to 40.75'
								Bottom of Boring @ 40.75 Feet	

ADVANCED DRILLING, INC.		PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER MW-2
MUNICIPALITY Connellsville		COUNTY	STATE Pennsylvania	COORDINATES		WELL PERMIT NO.	
START DATE 8-28-97	COMPLETION DATE 8-29-97	DRILLER Paul Keeney		DRILLER LICENSE NO. 2178		BORING DIA. 8"	TOTAL DEPTH 40.75 Ft.
LOT	BLOCK	DRILLING METHOD Air Rotary		SAMPLE TYPE From Cuttings/split spoon		DEPTH OF GROUNDWATER 39 Feet	
PROTECTIVE CASING FLUSH		NOTES					

Soil Boring Cross-Reference MW-2

Town and City Connellsville

County and State Pennsylvania

Installation Date (s) 8-29-97

Drilling Method Air Rotary

Driller Paul Keeney

Drilling Fluid None

Static water level after drilling ft.

Well developed for _____ hours at _____ gpm

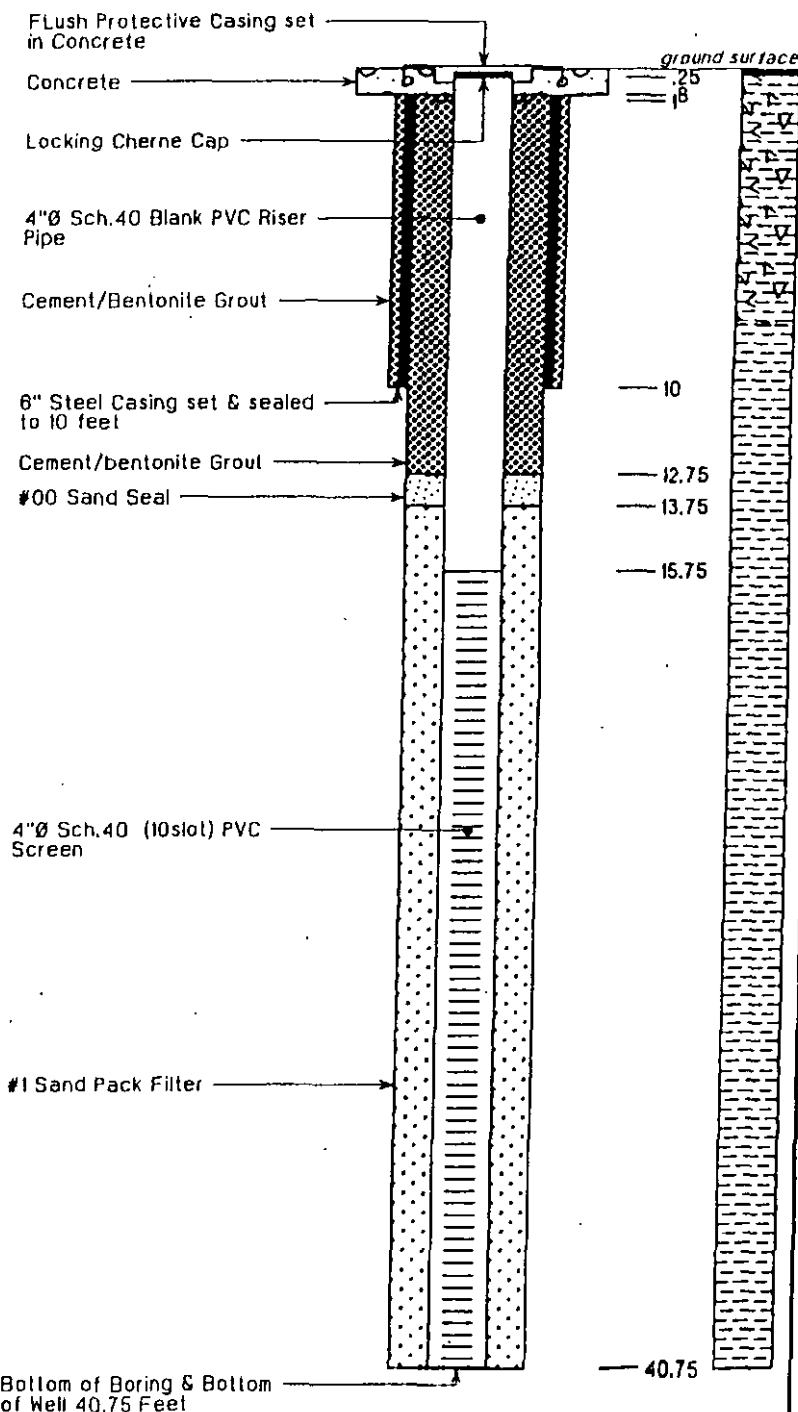
Method of development By Client

Well Purpose Monitoring

Remarks _____

Prepared By Paul

Date Prepared 9-2-97



ADVANCED DRILLING, INC.				PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER MW-3
MUNICIPALITY Connellsville			COUNTY		STATE Pennsylvania		COORDINATES		WELL PERMIT NO.
START DATE 8-28-97		COMPLETION DATE 8-28-97		DRILLER Paul Keeney		DRILLER LICENSE NO. 2178		BORING DIA. 8"	TOTAL DEPTH 36 Ft.
LOT		BLOCK		DRILLING METHOD Air Rotary		SAMPLE TYPE From Cuttings/split spoon		DEPTH OF GROUNDWATER 35 Feet	
PROTECTIVE CASING FLUSH				NOTES					SHEET 1 of 1

DEPTH	SAMPLE NUMBER	BLOWS/6" ON SAMPLE SPOON	"N" VALUE	LAYER Elev. Depth	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION density, grain size/shape, color, structure composition, sorting, texture, moisture facies, odor	DRILLING NOTES water levels, water return, character of drilling, etc.
4-6	1	8/12 16/34	28		1.0 5 8.0 10 15 20 25 30 35 36.0		<p>12" CRUSHED STONE</p> <p>Dry WEATHERED SHALE</p> <p>Grey SHALE</p> <p>Bottom of Boring @ 36 Feet</p>	<p>8" air rotary to 11 feet; set and sealed 8" casing to 11 feet; 6" air rotary to 36'</p>

ADVANCED DRILLING, INC.		PROJECT Route 118 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER MW-3
MUNICIPALITY Connellsville		COUNTY	STATE Pennsylvania	COORDINATES		WELL PERMIT NO.	
START DATE 8-28-97	COMPLETION DATE 8-29-97	DRILLER Paul Keeney		DRILLER LICENSE NO. 2178		BORING DIA. 8"	TOTAL DEPTH 36 Ft.
LOT	BLOCK	DRILLING METHOD Air Rotary		SAMPLE TYPE From Cuttings/split spoon		DEPTH OF GROUNDWATER 35 Feet	

PROTECTIVE CASING FLUSH	NOTES
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Soil Boring Cross-Reference MW-3
 Town and City Connellsville
 County and State Pennsylvania

Installation Date (s) 8-29-97

Drilling Method Air Rotary
 Driller Paul Keeney
 Drilling Fluid None

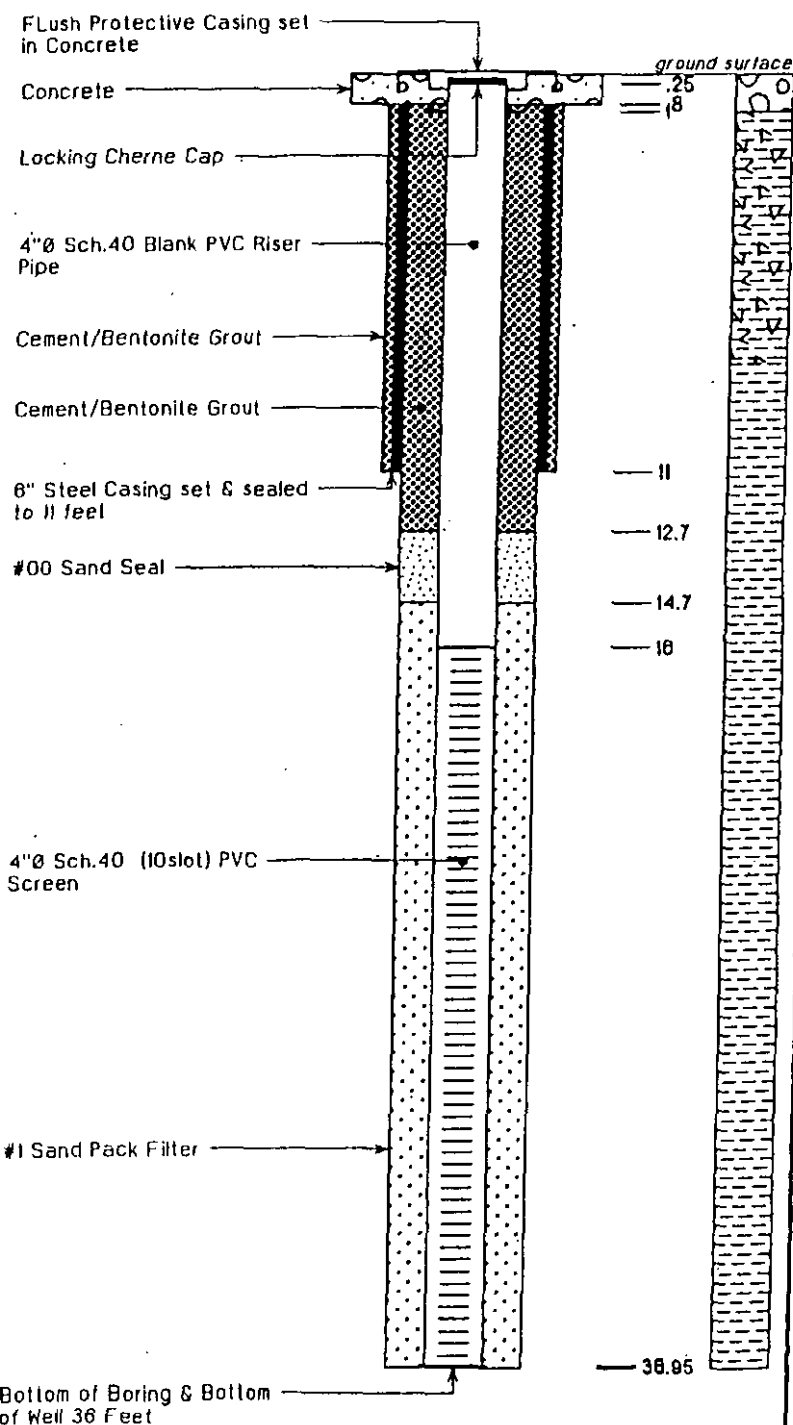
Static water level after drilling ft.
 Well developed for hours at gpm
 Method of development By Client

Well Purpose Monitoring

Remarks

Prepared By Paul

Date Prepared 9/2/97



ADVANCED DRILLING, INC.		PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513		HOLE NUMBER MW-4		
MUNICIPALITY nnellsville		COUNTY		STATE Pennsylvania		COORDINATES		WELL PERMIT NO.		
START DATE 8-28-97		COMPLETION DATE 8-29-97		DRILLER Paul Keeney		DRILLER LICENSE NO. 2178		BORING DIA. 8"		
LOT		BLOCK		DRILLING METHOD Air Rotary		SAMPLE TYPE From Cuttings/split spoon		DEPTH OF GROUNDWATER 37 Feet		
PROTECTIVE CASING FLUSH		NOTES							SHEET 1 of 1	

DEPTH	SAMPLE NUMBER	BLOWS/6" ON SAMPLE SPOON	"N" VALUE	LAYER Elev. Depth	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION density, grain size/shape, color, structure composition, sorting, texture, moisture facies, odor	DRILLING NOTES water levels, water return, character of drilling, etc.
6.5-8.5	1	8/9/16/20	25		5			6" TOPSOIL	
					5			Dry WEATHERED SHALE	
					10				
					12.0				
					15				
					20				
					25				
					30			Grey SHALE	
					35				
					40				
					45				
					50				
				50.7				Bottom of Boring @ 50.75 Feet	

8" air rotary to 16 feet; set and sealed 6" casing to 16 feet; 6" air rotary to 50.75'

ADVANCED DRILLING, INC.		PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER MW-4
MUNICIPALITY Connellsville		COUNTY	STATE Pennsylvania	COORDINATES		WELL PERMIT NO.	
START DATE 8-28-97	COMPLETION DATE 8-29-97	DRILLER Paul Keeney		DRILLER LICENSE NO. 2178		BORING DIA. 8"	TOTAL DEPTH 50.75 Ft.
LOT	BLOCK	DRILLING METHOD Air Rotary		SAMPLE TYPE From Cuttings/split spoon		DEPTH OF GROUNDWATER 37 Feet	
PROTECTIVE CASING FLUSH		NOTES					

Soil Boring Cross-Reference MW-4
 Town and City Connellsville
 County and State Pennsylvania

Installation Date (s) 8-29-97

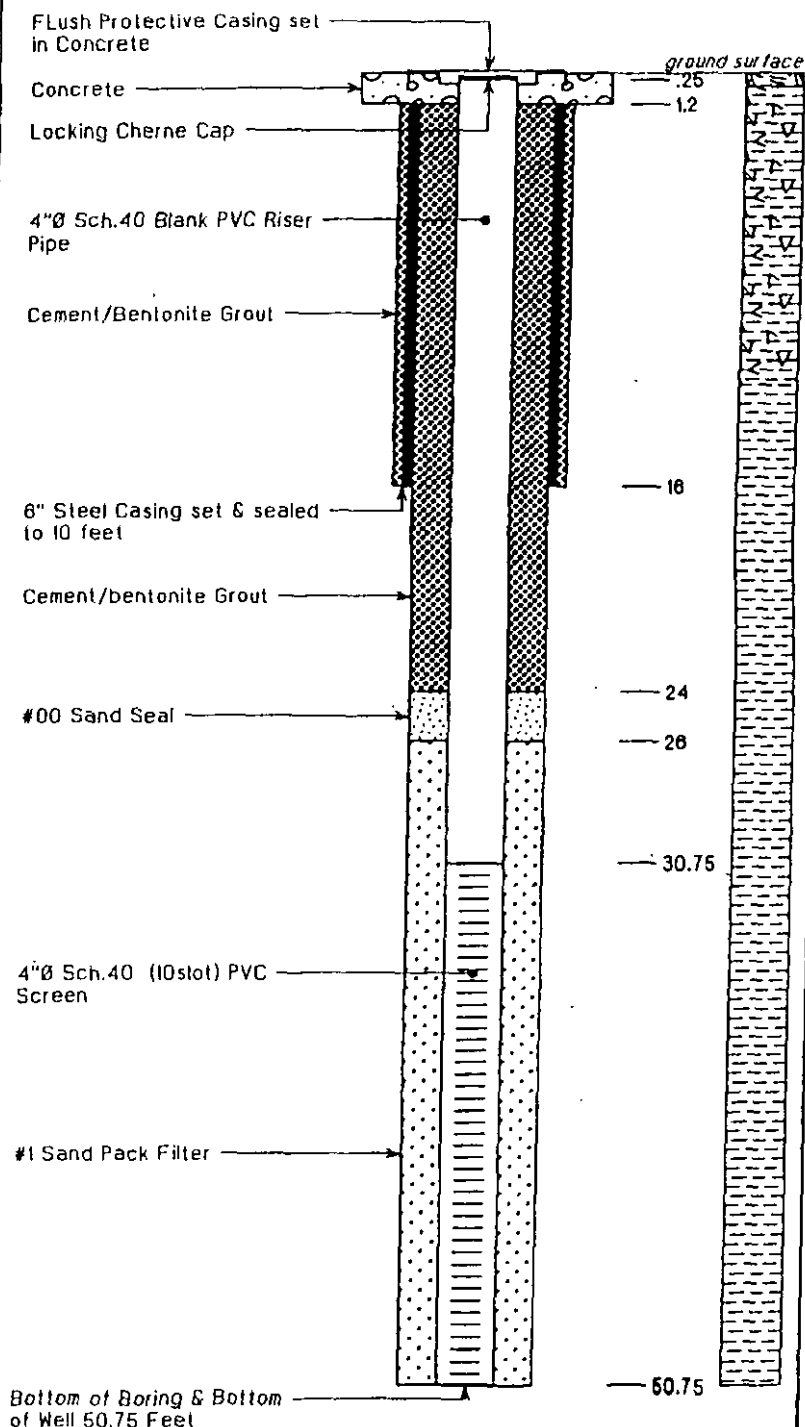
Drilling Method Air Rotary
 Driller Paul Keeney
 Drilling Fluid None

Static water level after drilling ft.
 Well developed for hours at gpm
 Method of development By Client

Well Purpose Monitoring

Remarks

Prepared By Paul
 Date Prepared 9-2-97



ADVANCED DRILLING, INC.		PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER MW-5
MUNICIPALITY Donnellsville		COUNTY	STATE Pennsylvania	COORDINATES		WELL PERMIT NO.	
START DATE 11-3-97	COMPLETION DATE 11-4-97	DRILLER Scott Alberalla		DRILLER LICENSE NO. 2178		BORING DIA. 10"/6"	TOTAL DEPTH 45.5 Ft.
LOT	BLOCK	DRILLING METHOD Air Rotary		SAMPLE TYPE From Cuttings		DEPTH OF GROUNDWATER 39 Feet	
PROTECTIVE CASING FLUSH		NOTES					SHEET 1 of 1

DEPTH	SAMPLE NUMBER	BLOWS/6" ON SAMPLE SPOON	"N" VALUE	LAYER Elev. Depth	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION density, grain size/shape, color, structure composition, sorting, texture, moisture facies, odor	DRILLING NOTES water levels, water return, character of drilling, etc.
				2.0				2" ASPHALT	10" air rotary to 12 feet; set and sealed 6" casing to 12 feet, 6" air rotary to 45.5'
					5.0			Dry tan coarse SAND & GRAVEL	
				6.0				Moist black Silty fine to medium SAND	
				9.0 10.0	10			WEATHERED SHALE	
					15				
					20				
					25			Grey SHALE ROCK	
					30				
					35				
					40				
				45.5	45			Bottom of Boring @ 45.5 Feet	

ADVANCED DRILLING, INC.		PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER MW-5
MUNICIPALITY Connellsville		COUNTY	STATE Pennsylvania	COORDINATES		WELL PERMIT NO.	
START DATE 11-3-97	COMPLETION DATE 11-4-97	DRILLER Scott Alberalla		DRILLER LICENSE NO. 2178		BORING DIA. 10"/6"	TOTAL DEPTH 45.5 ft
LOT	BLOCK	DRILLING METHOD Air Rotary		SAMPLE TYPE From Cuttings		DEPTH OF GROUNDWATER 39 Feet	

PROTECTIVE CASING
FLUSH

NOTES

Soil Boring Cross-Reference MW-5
Town and City Connellsville
County and State Pennsylvania

Installation Date (s) 11-4-97

Drilling Method Air Rotary

Driller Scott Alberalla

Drilling Fluid None

Static water level after drilling 11.

Well developed for _____ hours at _____ gpm

Method of development By Client

Well Purpose Monitoring

Remarks _____

Prepared By Scott

Date Prepared 11-15-97

Flush Protective Casing set
in Concrete

Concrete

Locking Cherne Cap

4"Ø Sch.40 Blank PVC Riser
Pipe

Cement/Bentonite Grout

6" Steel Casing set & sealed
to 12 feet

Cement/bentonite Grout

Bentonite Pellets Seal

4"Ø Sch.40 (20slot) PVC
Screen

#2 Sand Pack Filler

Bottom of Boring & Bottom
of Well 45.5 Feet

ground surface

0.25

1.2

12

18.5

20.5

25.5

45.5

ADVANCED DRILLING, INC.			PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER MW-6
MUNICIPALITY Jennellsville		COUNTY	STATE Pennsylvania	COORDINATES			WELL PERMIT NO.	
START DATE 11-3-97	COMPLETION DATE 11-4-97	DRILLER Scott Alberalla			DRILLER LICENSE NO. 2178		BORING DIA. 10"/6"	TOTAL DEPTH 46 Ft.
LOT	BLOCK	DRILLING METHOD Air Rotary			SAMPLE TYPE From Cuttings		DEPTH OF GROUNDWATER 38 Feet	
PROTECTIVE CASING FLUSH		NOTES						SHEET 1 of 1

DEPTH	SAMPLE NUMBER	BLOWS/6" ON SAMPLE SPOON	"N" VALUE	LAYER Elev. Depth	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION density, grain size/shape, color, structure composition, sorting, texture, moisture facies, odor	DRILLING NOTES water levels, water return, character of drilling, etc.
				0.5-			6" TOPSOIL	10" air rotary to 15.5 feet, set and sealed 6" casing to 15.5 feet, 6" air rotary to 46'
				3.0-			Dry Brown Silty medium to coarse SAND & GRAVEL	
				5			WEATHERED SHALE	
				8.0-				
					10			
					15			
					20			
					25			
					30		Grey SHALE ROCK	
					35			
					40			
					45			
				46.0-				
						Bottom of Boring @ 46 Feet		

ADVANCED DRILLING, INC.		PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER MW-6
MUNICIPALITY Connellsville		COUNTY	STATE Pennsylvania	COORDINATES		WELL PERMIT NO.	
START DATE 11-3-97	COMPLETION DATE 11-4-97	DRILLER Scott Alberalla		DRILLER LICENSE NO. 2178		BORING DIA. 10"/6"	TOTAL DEPTH 46 Ft.
LOT	BLOCK	DRILLING METHOD Air Rotary		SAMPLE TYPE From Cuttings		DEPTH OF GROUNDWATER 38 Feet	
PROTECTIVE CASING FLUSH		NOTES					

Soil Boring Cross-Reference MW-8
 Town and City Connellsville
 County and State Pennsylvania

Installation Date (s) 11-4-97

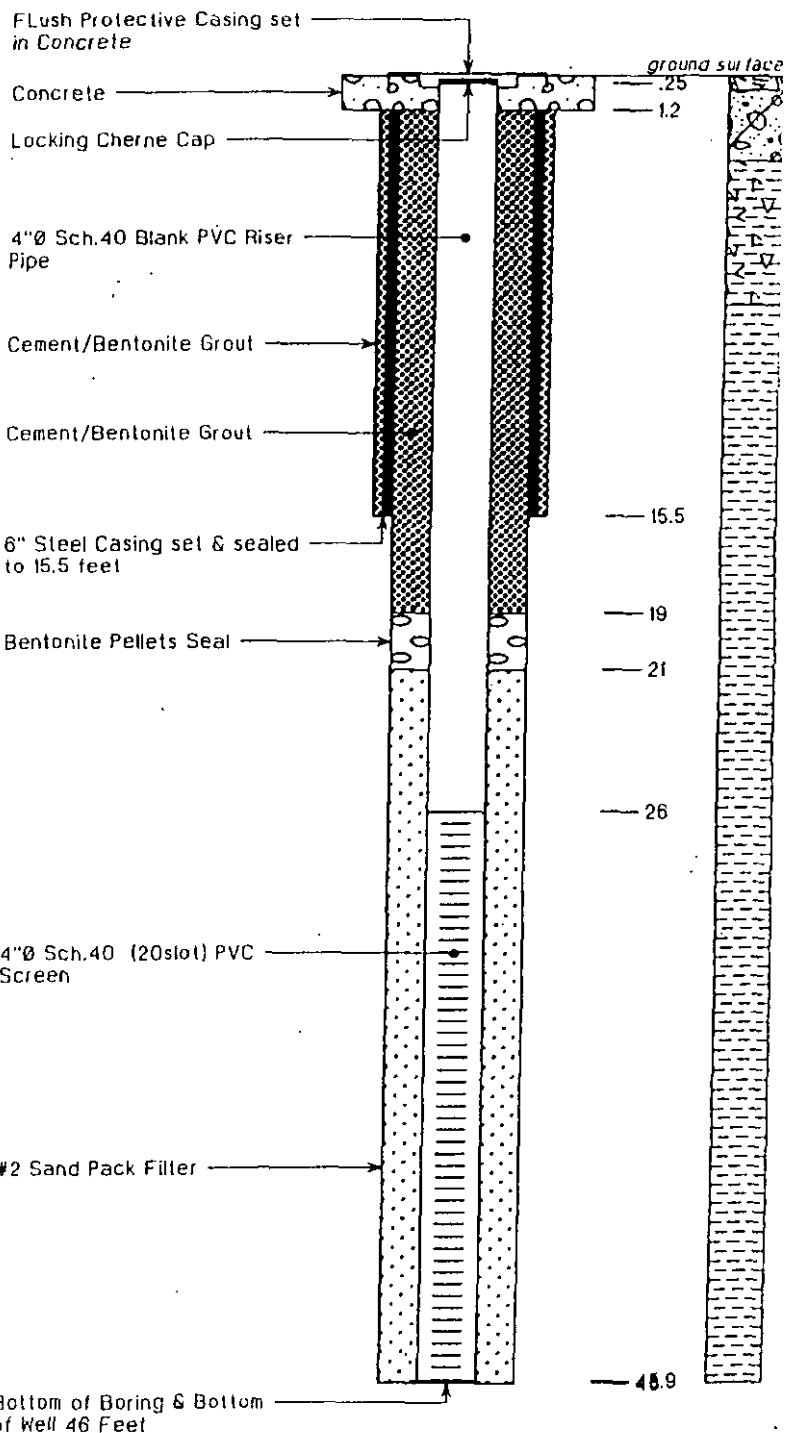
Drilling Method Air Rotary
 Driller Scott Alberalla
 Drilling Fluid None

Static water level after drilling fl.
 Well developed for _____ hours at _____ gpm
 Method of development By Client

Well Purpose Monitoring

Remarks _____



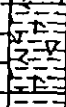
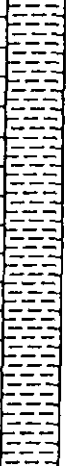
Prepared By Scott
 Date Prepared 11-15-97



ADVANCED DRILLING, INC.			PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER RW-1
MUNICIPALITY onnellsville		COUNTY		STATE Pennsylvania	COORDINATES		WELL PERMIT NO.	
START DATE 11-3-97	COMPLETION DATE 11-4-97	DRILLER Scott Alberalla			DRILLER LICENSE NO. 2178		BORING DIA. 10"/8"	TOTAL DEPTH 45 Ft.
LOT	BLOCK	DRILLING METHOD Air Rotary			SAMPLE TYPE From Cuttings		DEPTH OF GROUNDWATER 40 Feet	
PROTECTIVE CASING FLUSH		NOTES						SHEET 1 of 1

DEPTH	SAMPLE NUMBER	BLOWS/6" ON SAMPLE SPOON	"N" VALUE	LAYER Elev. Depth	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION density, grain size/shape, color, structure composition, sorting, texture, moisture facies, odor	DRILLING NOTES water levels, water return, character of drilling, etc.
					0.5		2" ASPHALT + SUBBASE	10" air rotary to 11 feet; set and sealed 8" casing to 11 feet; 8" air rotary to 45'
					3.0		Dry tan/black Silty SAND & GRAVEL	
					5		Grey dry SAND & WEATHERED SHALE	
					8.0			
					10			
					15			
					20			
					25			
					30		Grey SHALE ROCK	
					35			
					40			
					45.0	45	Bottom of Boring @ 45 Feet	

ADVANCED DRILLING, INC.			PROJECT Route 119 Amoco		CLIENT Chambers Environmental Group		PROJECT NO. ADV-513	HOLE NUMBER RW-2
MUNICIPALITY Pennellsville		COUNTY	STATE Pennsylvania	COORDINATES			WELL PERMIT NO.	
START DATE 11-3-97	COMPLETION DATE 11-4-97	DRILLER Scott Alberalla			DRILLER LICENSE NO. 2178		BORING DIA. 10"/8"	TOTAL DEPTH 43 Ft.
LOT	BLOCK	DRILLING METHOD Air Rotary			SAMPLE TYPE From Cuttings		DEPTH OF GROUNDWATER 39 Feet	
PROTECTIVE CASING FLUSH		NOTES						SHEET 1 of 1

DEPTH	SAMPLE NUMBER	BLOWS/6" ON SAMPLE SPOON	"N" VALUE	LAYER Elev. Depth	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION density, grain size/shape, color, structure composition, sorting, texture, moisture facies, odor	DRILLING NOTES water levels, water return, character of drilling, etc.
				7.5			3" ASPHALT + SUBBASE	10" air rotary to 11 feet, set and sealed 8" casing to 13 feet, 8" air rotary to 43'.
				6.0	5		Dry tan/yellow Silty coarse SAND & GRAVEL	
				9.0	10		Grey dry SAND & WEATHERED SHALE	
				25	25		Grey SHALE ROCK	
				43.0			Bottom of Boring @ 43 Feet	

ADVANCED DRILLING, INC.

PROJECT
Route 119 Amoco

CLIENT
Chambers Environmental
Group

PROJECT NO.
ADV-513

HOLE NUMBER
RW-2

MUNICIPALITY
Connellsville

COUNTY

STATE
Pennsylvania

COORDINATES

WELL PERMIT NO.

START DATE
11-3-97

COMPLETION DATE
11-4-97

DRILLER
Scott Alberalla

DRILLER LICENSE NO.
2178

BORING DIA.
10"/8"

TOTAL DEPTH
43 Ft.

LOT

BLOCK

DRILLING METHOD
Air Rotary

SAMPLE TYPE
From Cuttings

DEPTH OF GROUNDWATER
39 Feet

PROTECTIVE CASING
FLUSH

NOTES

Soil Boring Cross-Reference RW-2

Town and City Connellsville

County and State Pennsylvania

Installation Date (s) 11-4-97

Drilling Method Air Rotary

Driller Scott Alberalla

Drilling Fluid None

Static water level after drilling ft.

Well developed for hours at gpm

Method of development By Client

Well Purpose Recovery

Remarks

Prepared By Scott

Date Prepared 11-15-97

Flush Protective Casing set
in Concrete

Concrete

Locking Cherne Cap

6"Ø Sch.40 Blank PVC Riser
Pipe

Cement/Bentonite Grout

Cement/Bentonite Grout

8" Steel Casing set & sealed
to 13 feet

Bentonite Pellets Seal

6"Ø Sch.40 (20slot) PVC
Screen

#2 Sand Pack Filter

Bottom of Boring & Bottom
of Well 43 Feet

ground surface

.25

1.2

13

14

15.5

23

42.9

WELL LOG

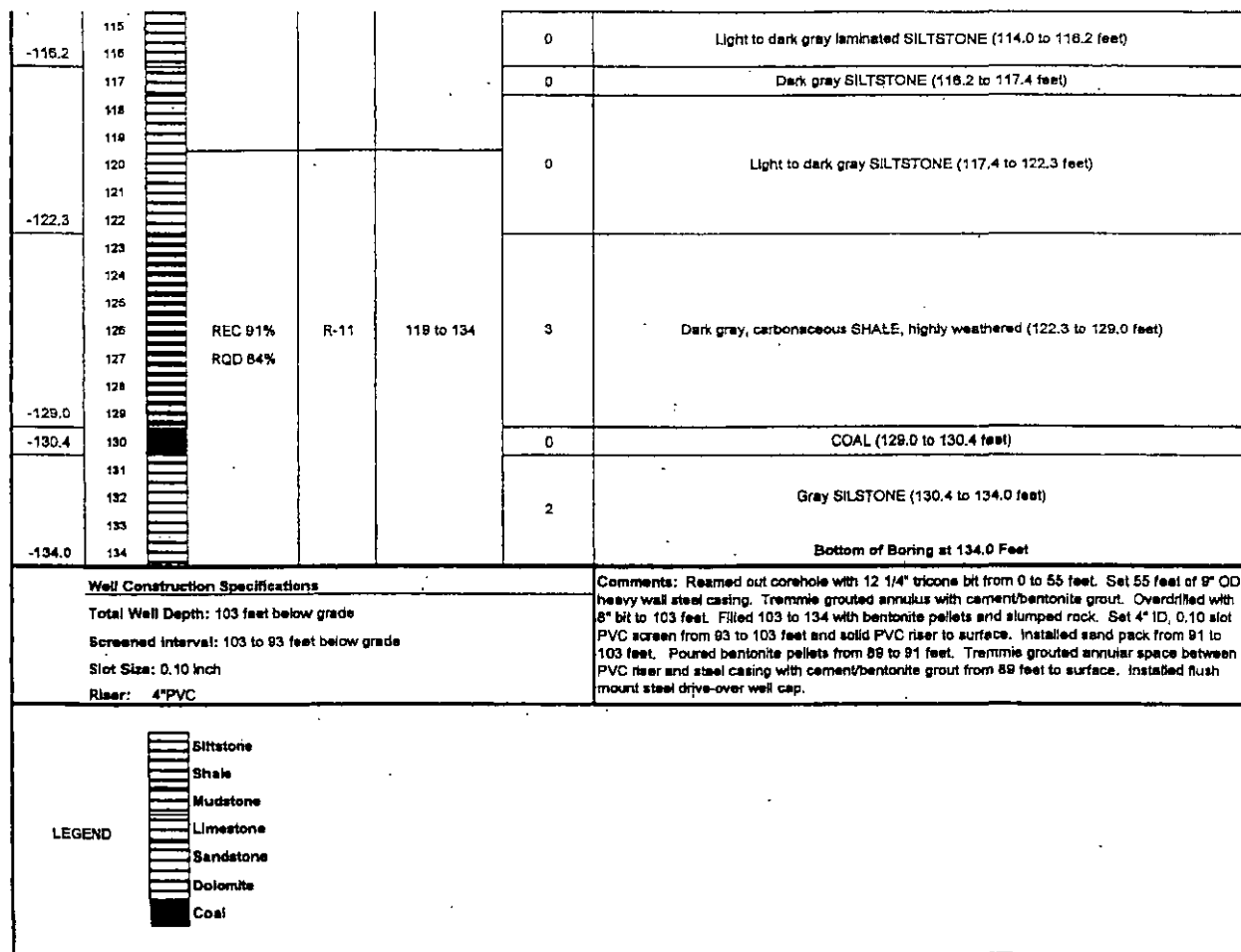
Project: Route 119 Amoco
 Proj. No.: 01-3954-01
 Location: Dunbar Twp., Fayette Co., Pa
 Client: Route 119 Amoco

Drilling Methods: NX Wireline/Air Rotary
 Well Depth: 103 feet
 Casing Size and Type: 4" diameter PVC Pipe
 Screen Size: Number 1
 Static Water Level After Completion: 76 feet below grade

Boring: DW-1
 Contractor/Foreman: L.G. Helager Drilling/L. Hopkins
 Geologist: G. Stan
 Started: 7/23/01
 Completed: 7/27/01

Elevation (ft)	Depth Scale (ft)	Rock coring	Core Run	Core Interval (ft)	Fractures per lithologic unit	LITHOLOGY
0.0	1					
	2					Macadam; overburden (0.0 to 3.0 feet)
3.0	3					
	4					Began NX Coring at 0 Feet
	5					
	6					
	7				0	Very thin, highly weathered, fissile SHALE or CLAYSTONE with some ferrous oxide staining and some very thin brown Clay interbeds. Some beds are calcareous. (3.0 to 10.5 feet)
	8					
	9	REC 47%	R-01	3 to 14		
-10.5	10	RQD 4%				
	11				5	Gray MUDSTONE, slightly calcareous (10.5 to 12.5 feet) with brown calcareous Clay (11.0 to 11.5 feet)
-12.5	12					
-13.5	13				2	Gray LIMESTONE (12.5 to 13.5 feet)
-14.0	14					Gray calcareous SHALE (13.5 to 14.0 feet)
	15					
	16				5	Very dark gray, carbonaceous SILTSTONE with thin gray Limestone interbeds; highly fractured (14.0 to 17.75 feet)
-17.8	17					
-19.0	18				5	LIMESTONE; highly fractured (17.75 to 19.0 feet)
	19					
	20					
	21	REC 100%	R-02	14 to 29		
	22	RQD 22%			4	Gray, laminated, calcareous SILTSTONE with some fine-grained Sandstone lenses (19.0 to 23.75 feet) and Coal seam from 21.4 to 22.0 feet)
-23.8	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					
	32					
	33					
	34				10	Gray SILTSTONE with abundant light gray, fine-grained Sandstone interbeds, highly fractured; Non-calcareous (23.75 to 43.5 feet)
	35					
	36	REC 100%	R-03	29 to 44		
	37	RQD 61%				
	38					
	39					
	40					
	41					
	42					
	43					
-43.5	44					
-45.3	45				3	Dark gray, carbonaceous, SHALE; Non-calcareous (43.5 to 44.5 feet) and highly fractured COAL (44.5 to 45.3 feet)
-48.3	46				2	Light to medium gray MUDSTONE (45.3 to 46.0 feet); COAL and dark gray carbonaceous SHALE (46.0 to 46.25 feet)
-47.0	47	REC 95%	R-04	44 to 50	3	Light gray LIMESTONE (46.25 to 46.5 feet) and highly fractured COAL and dark gray carbonaceous SHALE (46.5 to 47.0 feet)
-48.0	48	RQD 45%			1	Light to dark gray laminated MUDSTONE (47.0 to 48.0 feet)
	49					
	50					
	51					
	52	REC 100%	R-05	50 to 55	9	Light gray LIMESTONE (48.0 to 54.0 feet) with light gray, non-calcareous Shale interbed (52.0 to 52.25 feet)

-54.0	53	RQD 78%				
	54					
	55					
	56					
-56.0	57	REC 100%	R-06	55 to 59.5	1	Gray, sandy DOLOMITE (54.0 to 58.0 feet)
-59.0	58	RQD 80%			3	Calcareous MUDSTONE (58.0 to 58.5 feet) and dark gray, non-calcareous SHALE (58.5 to 59.0 feet)
	59					
	60					
	61					
	62				3	Gray, sandy DOLOMITE (59.0 to 64 feet)
-64.0	63					
-65.2	64				2	Gray to dark gray, calcareous MUDSTONE (64.0 to 65.2 feet)
-65.6	65				0	Gray LIMESTONE (65.2 to 65.6 feet)
	66	REC 100%	R-07	59.5 to 74		
	67	RQD 80%				
	68					
	69					
	70				10	Dark to medium gray MUDSTONE; with some calcareous laminae and clasts; highly fractured (65.6 to 73.5 feet). Fractures are weathered
	71					
	72					
	73					
-73.5	74					
	75					
	76					
	77					
	78				2	Gray, fine-grained SANDSTONE, non-calcareous, abundant fine laminae (73.5 to 81.0 feet)
	79					
	80					
-81.0	81					
	82	REC 100%	R-08	74 to 89		
	83	RQD 74%			4	Dark gray SILTSTONE with very thin, fine-grained Sandstone interbeds, non-calcareous (81.0 to 87.1 feet); Vertical fracture from 84.2 to 87.1 feet; Iron oxide staining from 86.3 to 87.1 feet.
-87.1	84					
	85					
	86					
	87					
	88				1	Gray, fine-grained SANDSTONE with thin Siltstone interbeds (87.1 to 90.4 feet). Vertical, iron oxide stained fracture continuous from 87.1 to 89.7 feet)
-90.4	89					
	90					
	91					
	92					
	93					
	94					
	95					
	96	REC 100%	R-09	89 to 104		
	97	RQD 85%				
	98					
	99					
	100					
	101				12	Gray, medium- to fine-grained, micaceous SANDSTONE (90.4 to 111.2 feet); highly fractured. Vertical, iron oxide stained fractures from 90.6 to 91.5 feet and 99.6 to 101.2 feet
	102					
	103					
	104					
	105					
	106					
	107					
	108					
	109					
	110					
-111.2	111	REC 100%	R-10	104 to 119		
-112.0	112	RQD 78%			0	COAL (111.2 to 112.0 feet)
	113					
-114.0	114				0	Dark gray SILTSTONE (112.0 to 113.5) and COAL (113.5 to 114)



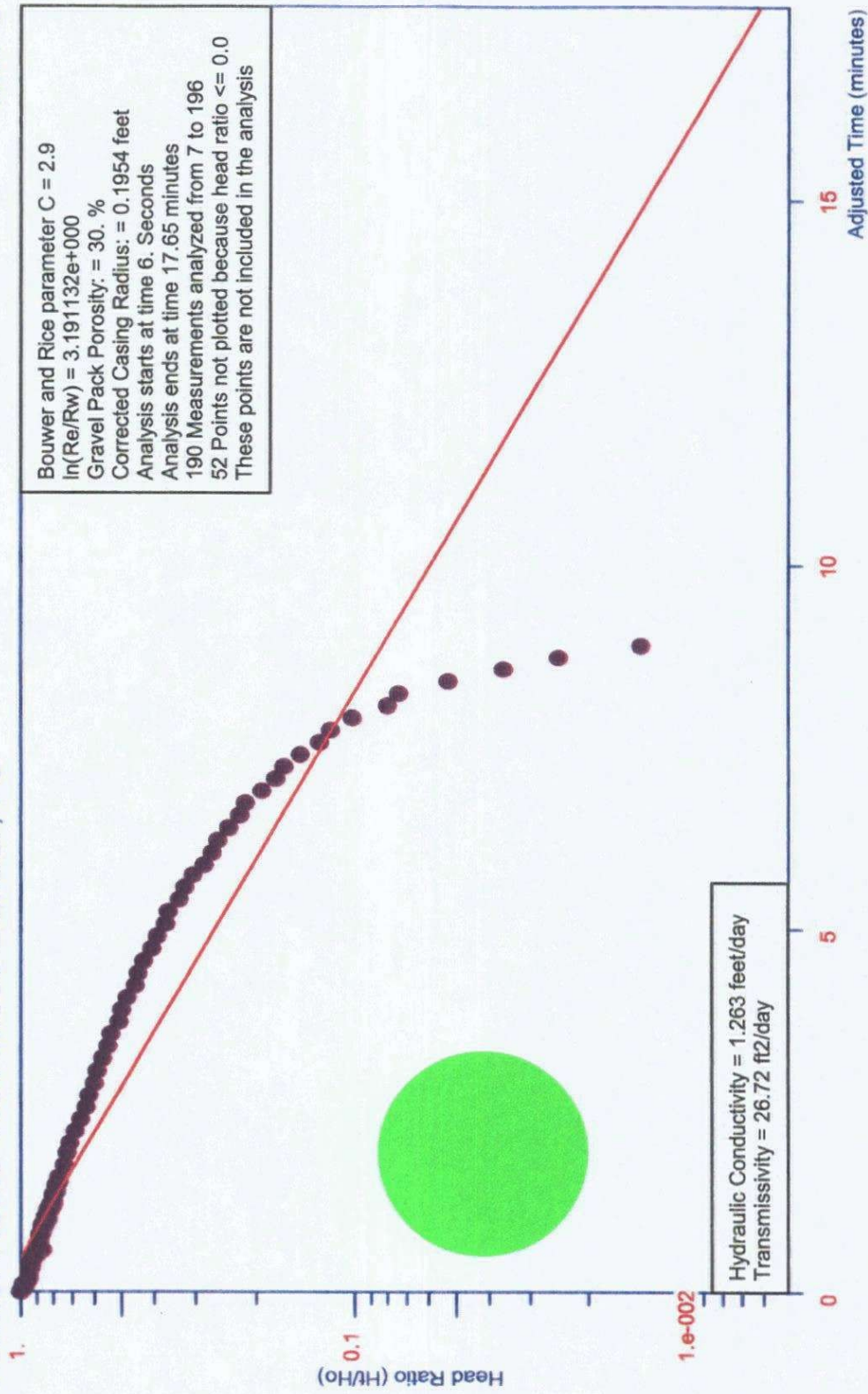
APPENDIX K
Slug Test Curves

Slug Test 7-31-06

Former Route 119 Amoco Dunbar, Pa

Bouwer and Rice Graph

MW-3



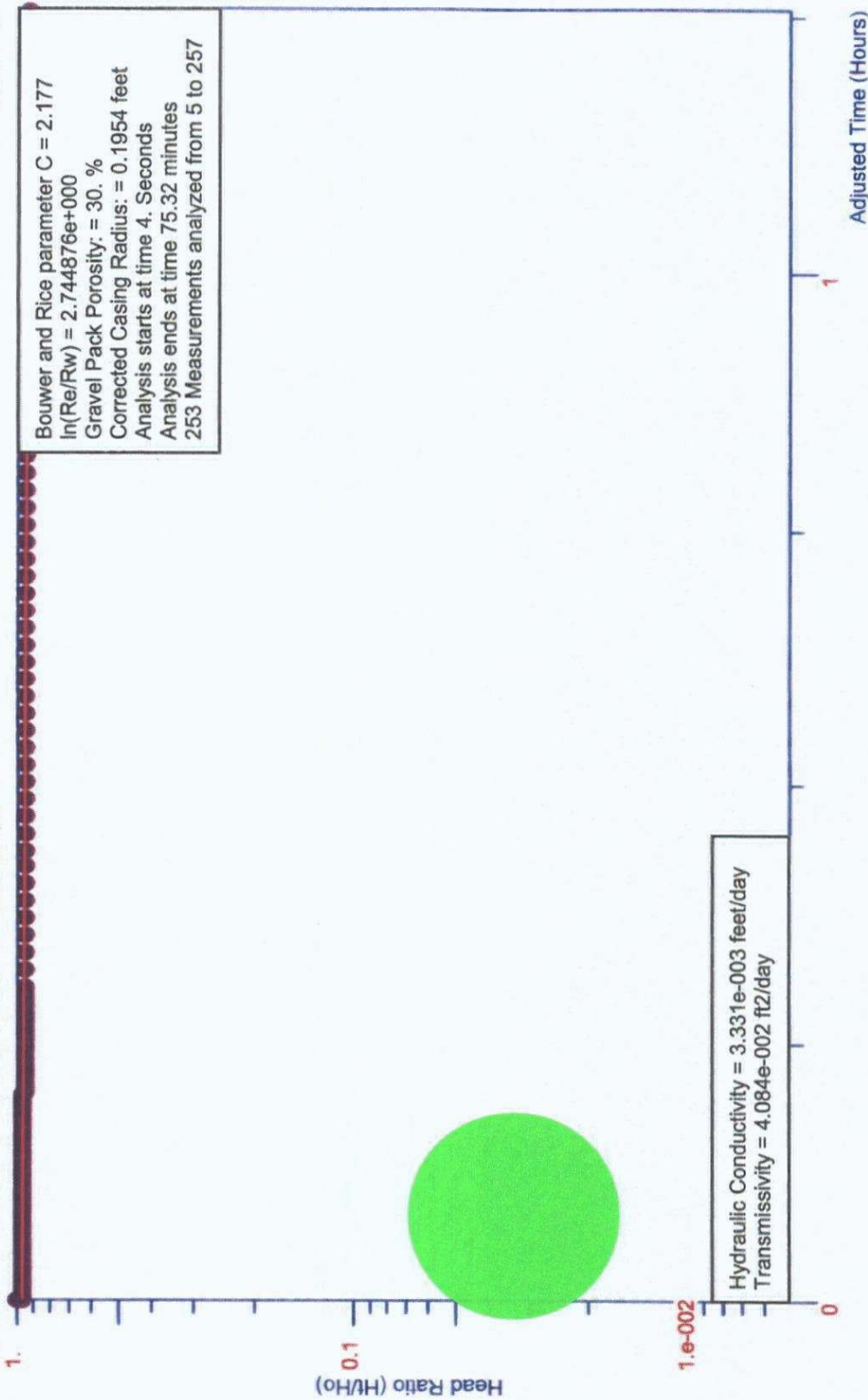
Project Number: 031 for Mr. & Mrs. Tim Shell
Analysis by Starpoint Software

Slug Test 7-31-06

Former Route 119 Amoco Dunbar, Pa

Bouwer and Rice Graph

MW-8



Project Number: 031 for Mr. & Mrs. Tim Shell
Analysis by Starpoint Software

Slug Test 7-31-06

Former Route 119 Amoco Dunbar, Pa

Bouwer and Rice Graph

MW-9



APPENDIX L

**Laboratory Reports
Soil, Groundwater, and Soil Vapor**



Analytical Laboratory & Geoprobe Sampling

9/6/06

Mr. Dave Martincek
Letterle and Associates, LLC
2859 Oxford Blvd, Suite 110
Allison Park, PA 15101

Dear Dave:

Enclosed are the sample data report, chain of custody record and quality control data for the samples received on September 5, 2006 for your project; 31 - Route 119 Amoco.

Please give me a call if you have questions or I can be of further assistance. Thank you for using Vaportech Services.

Sincerely,

A handwritten signature in dark ink, appearing to read 'David J. Masdea', with a stylized flourish at the end.

David J. Masdea

Enclosure:

1158 Pittsburgh Road • Suite 201 • Valencia, PA 16059
Tel.: 724-898-2622 • Fax: 724-898-2633

Vaportech Services, Inc.

LET335-60768

Letterle and Associates, LLC
Project : 031 - RT.119

CONCENTRATIONS IN PPMV

COMPOUND	VP-2	PQL
MTBE	ND	0.07
BENZENE	8.82	0.07
TOLUENE	*ND	*3.00
ETHYL BENZENE	ND	0.07
M&P XYLENE	0.07	0.07
O-XYLENE	ND	0.07
CUMENE	ND	0.07
NAPHTHALENE	ND	0.07

FILE NAME	V48A4.72A
DATE SAMPLED	08/31/06
DATE RECEIVED	09/05/06
DATE ANALYZED	09/06/06

PQL - 'Practical Quantitation Limit'

ND - 'Not Detected' at or above the lower practical quantitation limit

PQL raised due to interfering unidentified compound.

07-Sep-06

Reviewed by: 

Apotech Services, Inc.

Letterle and Associates, LLC
Quality Control
Laboratory Projects: 60768

CONTINUING CALIBRATION CHECK

STANDARDS: V21-R4 MTBE CUMENE NAP
FILE NAME: V48A4.57A V48A4.60A V48A4.61A V48A4.62A
DATE ANALYZED: 09/05/06 09/05/06 09/05/06 09/05/06

COMPOUND	KNOWN (PPMV)	RESULT (PPMV)	PERCENT DIFFERENCE
MTBE	25.17	22.82	9.34
BENZENE	1.25	1.22	2.08
TOLUENE	1.06	1.05	0.66
ETHYL BENZENE	0.92	0.93	0.87
M&P XYLENE	1.84	1.84	0.05
O-XYLENE	0.92	0.93	0.87
CUMENE	18.46	19.59	6.13
NAPHTHALENE	17.30	17.46	0.92

LABORATORY BLANK RESULTS

BLANK: N2 IN VIAL
FILE NAME: V48A4.56A
DATE ANALYZED: 09/05/06

COMPOUND	BLANK (PPMV)	PRACTICAL QUANTITATION LIMIT (PPMV)
MTBE	ND	0.07
BENZENE	ND	0.07
TOLUENE	ND	0.07
ETHYL BENZENE	ND	0.07
M&P XYLENE	ND	0.07
O-XYLENE	ND	0.07
CUMENE	ND	0.07
NAPHTHALENE	ND	0.07

- 'Not Detected' at or above the lower practical quantitation limit

06-Sep-06

Reviewed by: 

CHAIN-OF-CUSTODY RECORD



1158 Pittsburgh Road • Suite 201 • Valencia, PA 16059
Tel: 724-898-2622 • Fax: 724-898-2633

Company Name: Cellene & Associates
Address: 2859 Oxford Blvd. Suite 110
City: Allison Park State: PA Zip: 15101
Proj. Manager: Dave Marticek
Proj. Location: Route 119 Amoco Dunbar PA
Proj. Number: 031
Phone #: 412-486-0600 Fax #:

Pete Weir

Sampler's signature:

Light Hydrocarbons: Methane, Ethane, Ethylene, Propane, Propylene, iso-Butane, n-Butane
Permanent Gases: Carbon Dioxide, Oxygen, Nitrogen, Methane, Carbon Monoxide
BTEX: Benzene, Toluene, Ethyl Benzene, m & p-Xylene, o-Xylene
C5-C10: Pentane, Hexane, Heptane, Octane, Nonane, Decane
Chlorinated HC: 1,1-DCE, 1,1-DCA, Methylene Chloride, trans-1,2-DCE, cis-1,2-DCE, 1,1,1-TCA, Carbon Tetrachloride, Trichloroethylene (TCE), Tetrachloroethylene

Analysis Options:

A	Light Hydrocarbons	F	BTEX
B	Permanent Gases	G	BTEX & C5 - C10
C	Methane	H	TPH (C4 - C12 range)
D	Methane, Ethane, Ethylene	I	Chlorinated Hydrocarbons
E	Hydrogen	J	624 Compound List

[illegible]

Results 10 :

Invoice to: SAME

Invoice to :

Requisitioned by:

Company: _____

Date: 1/1/2000 Time: 1:00

Received by: LS

Company: 7

Time:

Relinquished by :

Company:

Date:

Received by :

Company :

Time:

Relinquished by :

Company :

Date : _____

Received by :

Company :

Time:

WHITE COPY : Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

Vaportech Services, Inc.

LET298-60448

Letterle and Associates, LLC
Project : 031 - RT. 119 Amoco

CONCENTRATIONS IN PPMV

COMPOUND	VP-1	VP-2	VP-3	PQL
MTBE	ND	ND	ND	0.07
BENZENE	ND	12.45	ND	0.07
TOLUENE	ND	2.37	0.07	0.07
ETHYL BENZENE	ND	ND	ND	0.07
M&P XYLENE	ND	ND	0.10	0.07
O-XYLENE	ND	ND	ND	0.07
CUMENE	ND	ND	ND	0.07
NAPHTHALENE	ND	ND	ND	0.07

FILE NAME	V47A.96A	V47A.97A	V47A.98A
DATE SAMPLED	05/08/06	05/08/06	05/09/06
DATE RECEIVED	05/16/06	05/16/06	05/16/06
DATE ANALYZED	05/17/06	05/17/06	05/17/06

PQL - 'Practical Quantitation Limit'

ND - 'Not Detected' at or above the lower practical quantitation limit

May-06

12/30/2008

Reviewed by: 

Vaportech Services, Inc.

LET298-60448

Letterle and Associates, LLC
Project : 031 - RT. 119 Amoco

QUALITY CONTROL

CONTINUING CALIBRATION CHECK

STANDARDS: V21-R4 MTBE CUMENE NAP
FILE NAME: V47A.88A V47A.89A V47A.90A V47A.91A

LABORATORY BLANK RESULTS

BLANK: N2 IN VIAL
FILE NAME: V47A.87A

COMPOUND	KNOWN (PPMV)	RESULT (PPMV)	PERCENT DIFFERENCE
MTBE	25.17	24.71	1.83
BENZENE	1.25	1.21	2.96
TOLUENE	1.06	1.06	0.19
ETHYL BENZENE	0.92	0.93	1.20
M&P XYLENE	1.84	1.86	1.25
O-XYLENE	0.92	0.91	1.20
CUMENE	18.46	20.06	8.68
NAPHTHALENE	17.30	19.87	14.85

COMPOUND	BLANK (PPMV)	PRACTICAL QUANTITATION LIMIT (PPMV)
MTBE	ND	0.07
BENZENE	ND	0.07
TOLUENE	ND	0.07
ETHYL BENZENE	ND	0.07
M&P XYLENE	ND	0.07
O-XYLENE	ND	0.07
CUMENE	ND	0.07
NAPHTHALENE	ND	0.07

D - 'Not Detected' at or above the lower practical quantitation limit

Reviewed by: 

LEI 298-60498



1158 Pittsburgh Road • Suite 201 • Valencia, PA 16059
Tel: 724-898-2622 • Fax: 724-898-2633

CHAIN-OF-CUSTODY RECORD

Company Name: Letterle & Associates, LLC
Address: 2859 Oxford Blvd, Suite 110
City: Allison Park State: PA Zip: 15101
Proj. Manager: Dave Martincek
Proj. Location: RT-119 Amoco
Proj. Number: # 031
Phone #: 412-496-0600 Fax #: _____

Sampler's signature:

Levi cells

Light Hydrocarbons: Methane, Ethane, Ethylene, Propane, Propylene, iso-Butane, n-Butane
Permanent Gases: Carbon Dioxide, Oxygen, Nitrogen, Methane, Carbon Monoxide
BTEX: Benzene, Toluene, Ethyl Benzene, m & p -Xylene, o-Xylene
C5-C10: Pentane, Hexane, Heptane, Octane, Nonane, Decane
Chlorinated HC: 1,1-d-CE, 1,1-DCA, Methylene Chloride, trans-1,2-DCE, cis-1,2-DCE, Chloroform
 1,1,1-TCA, Carbon Tetrachloride, Trichloroethylene (TCE), Tetrachloroethylene (PCE)

Analysis Options:

A	Light Hydrocarbons	F	BTEX
B	Permanent Gases	G	BTEX & C5 - C10
C	Methane	H	TPH (C4 - C12 range)
D	Methane, Ethane, Ethylene	I	Chlorinated Hydrocarbons
E	Hydrogen	J	624 Compound List

Collection Date	Time	Number of Containers	Sample Type	Sample Identification	Requested Analysis (Other)	Remarks
5/8/06	1410	1	air	VP-1 VP-1		labeled VB-1 on vial xx
5/8/06	1450	1	air	VP-2	comment	
5/9/06	1436	1	air	VP-3 VP-3	BTX MTH MTH	Labeled VP-3 VB-3 on vial 5/16/06 xx
					Nephthylene	xx use
						VP-1 & VP-3
						Per Dave Martin
						5/22/06

Results to :

Letterle & Associates, LLC

Invoice to :

LeFleur & Associates, LLC

Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
				<i>Monter</i>	<i>VA Tech</i>	<i>5/16/06</i>	<i>1520</i>
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY : Submitter

May 25, 2006

Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Dear Mr. Letterle:

Enclosed are analytical results for samples submitted to Pace Analytical by Letterle & Associates. The samples were received on May 15, 2006. The results reported in this project meet the requirements as specified in Chapter 5 of the NELAC Standards. Any deviations or discrepancies from the NELAC standards are documented in the case narrative(s) of this report. Parameters printed in italics represent Non-NELAC accredited parameters. Please reference Pace project number 06-2883 when inquiring about this report.

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Pace Sample Identification	Client Sample Identification
0605-2147	MW-2
0605-2148	MW-3
0605-2149	MW-4
0605-2150	MW-6

Pace Sample Identification	Client Sample Identification
0605-2151	MW-7
0605-2152	MW-8
0605-2153	MW-9

General Comments: Cooler temperature 3 ° C upon receipt. Ice was present.

Please call me if you have any questions regarding the information contained within this report.

Sincerely,



Rachel D. Christner
Project Manager

RDC: jld

Enclosures

Page 1 of 9

REPORT OF LABORATORY ANALYSIS

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2883
Lab Sample ID: 0605-2147
Client Sample ID: MW-2
Sample Matrix: Aqueous

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/12/2006
Date Received: 05/15/2006

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Cumene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Ethylbenzene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Naphthalene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Toluene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Xylenes (Total)	8260B ⁽¹⁾	<3.0	3.0	ug/l	MAK	05/23/2006	0049684-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

REPORT OF LABORATORY ANALYSIS

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Pace Analytical Services, Inc.
5203 Triangle Lane
Export, PA 15632
Phone: 724.733.1161
Fax: 724.327.7793

Lab Project ID: 06-2883
Lab Sample ID: 0605-2148
Client Sample ID: MW-3
Sample Matrix: Aqueous

Date Sampled: 05/12/2006
Date Received: 05/15/2006

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	38	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Cumene	8260B ⁽¹⁾	1.9	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Ethylbenzene	8260B ⁽¹⁾	7.5	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Methyl tert-butyl ether	8260B ⁽¹⁾	17	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Naphthalene	8260B ⁽¹⁾	3.2	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Toluene	8260B ⁽¹⁾	1.3	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Xylenes (Total)	8260B ⁽¹⁾	6.5	3.0	ug/l	MAK	05/23/2006	0049684-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

REPORT OF LABORATORY ANALYSIS

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2883
Lab Sample ID: 0605-2149
Client Sample ID: MW-4
Sample Matrix: Aqueous

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/12/2006
Date Received: 05/15/2006

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Cumene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Ethylbenzene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Methyl tert-butyl ether	8260B ⁽¹⁾	4.7	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Naphthalene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Toluene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Xylenes (Total)	8260B ⁽¹⁾	<3.0	3.0	ug/l	MAK	05/23/2006	0049684-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Client Site: Pennsylvania
Client Ref.: RL 119 Amoco

Pace Analytical Services, Inc.
5203 Triangle Lane
Export, PA 15632
Phone: 724.733.1161
Fax: 724.327.7793

Lab Project ID: 06-2883
Lab Sample ID: 0605-2150
Client Sample ID: MW-6
Sample Matrix: Aqueous

Date Sampled: 05/12/2006
Date Received: 05/15/2006

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Cumene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Ethylbenzene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Naphthalene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Toluene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/23/2006	0049684-1	<1.0
Xylenes (Total)	8260B ⁽¹⁾	<3.0	3.0	ug/l	MAK	05/23/2006	0049684-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Pace Analytical Services, Inc.
5203 Triangle Lane
Export, PA 15632
Phone: 724.733.1161
Fax: 724.327.7793

Lab Project ID: 06-2883
Lab Sample ID: 0605-2151
Client Sample ID: MW-7
Sample Matrix: Aqueous

Date Sampled: 05/12/2006
Date Received: 05/15/2006

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	2.4	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Cumene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Ethylbenzene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Methyl tert-butyl ether	8260B ⁽¹⁾	18	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Naphthalene	8260B ⁽¹⁾	<1.0	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Toluene	8260B ⁽¹⁾	2.2	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Xylenes (Total)	8260B ⁽¹⁾	17	3.0	ug/l	MAK	05/18/2006	0049567-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

REPORT OF LABORATORY ANALYSIS

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2883
Lab Sample ID: 0605-2152
Client Sample ID: MW-8
Sample Matrix: Aqueous

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/12/2006
Date Received: 05/15/2006

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	120	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Cumene	8260B ⁽¹⁾	8.4	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Ethylbenzene	8260B ⁽¹⁾	66	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Methyl tert-butyl ether	8260B ⁽¹⁾	29	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Naphthalene	8260B ⁽¹⁾	15	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Toluene	8260B ⁽¹⁾	93	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Xylenes (Total)	8260B ⁽¹⁾	250	3.0	ug/l	MAK	05/18/2006	0049567-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

REPORT OF LABORATORY ANALYSIS

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2883
Lab Sample ID: 0605-2153
Client Sample ID: MW-9
Sample Matrix: Aqueous

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/12/2006
Date Received: 05/15/2006

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	44	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Cumene	8260B ⁽¹⁾	36	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Ethylbenzene	8260B ⁽¹⁾	150	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Methyl tert-butyl ether	8260B ⁽¹⁾	20	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Naphthalene	8260B ⁽¹⁾	80	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Toluene	8260B ⁽¹⁾	10	1.0	ug/l	MAK	05/18/2006	0049567-1	<1.0
Xylenes (Total)	8260B ⁽¹⁾	520	3.0	ug/l	MAK	05/18/2006	0049567-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

REPORT OF LABORATORY ANALYSIS

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8888

Section A: Client Information
Company: Letterle & Associates, LLC
Address: 2859 Oxford Blvd, Suite 110
City: Allison Park, PA 15101
Phone: Fax:
Report To: Same
Copy To: Same
Purchase Order No.:
Project Name: RT-119 Annex
Project Number: 28591
Requested Due Date/TAT: Standard

Section B: Required Project Information
Matrix Code: WT
Sample ID: 2
One Character per box (A-Z, 0-9 / -)
Samples IDs MUST BE UNIQUE

Section C: Invoice Information
Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #: 4031

Section D: Required Client Information
Matrix Code: WT
Sample ID: 2
One Character per box (A-Z, 0-9 / -)
Samples IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	Matrix Code	Collected Date/Time	Composite Start Date/Time	Composite End/Grab Date/Time	Sample Temp at Collection	# of Containers	Preservatives	Filtered (Y/N)	Requested Analysis	Pace Project Number	Lab ID
1	MW	WT	5/12/06 0940	5/12/06 0940	5/12/06 0940	10	3	3	X	X	06-2883	05-2147
2	MW	WT	5/12/06 0955	5/12/06 0955	5/12/06 0955	10	3	3	X	X		48
3	MW	WT	10/21	10/21	10/21	10	3	3	X	X		49
4	MW	WT	11/38	11/38	11/38	10	3	3	X	X		50
5	MW	WT	0851	0851	0851	10	3	3	X	X		51
6	MW	WT	0908	0908	0908	10	3	3	X	X		52
7	MW	WT	0900	0900	0900	10	3	3	X	X		53
8												
9												
10												
11												
12												

Additional Comments: CA

Relinquished By / Affiliation: Eric JHC **Date:** 5/15/06 **Time:** 1000

Accepted By / Affiliation: Eric JHC **Date:** 5/15/06 **Time:** 1000

Temp in °C: 15.0

Received on Ice: Y/N

Quarantined: Y/N

Sealed Cooler: Y/N

Sample Intact: Y/N

SAMPLER NAME AND SIGNATURE: Eric JHC

PRINT Name of SAMPLER: Eric JHC

SIGNATURE of SAMPLER: Eric JHC

DATE Signed (MM/DD/YY): 5/15/06

May 23, 2006

Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Dear Mr. Letterle:

Enclosed are analytical results for samples submitted to Pace Analytical by Letterle & Associates. The samples were received on May 9, 2006. The results reported in this project meet the requirements as specified in Chapter 5 of the NELAC Standards. Any deviations or discrepancies from the NELAC standards are documented in the case narrative(s) of this report. Parameters printed in italics represent Non-NELAC accredited parameters. Please reference Pace project number 06-2752 when inquiring about this report.

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Pace Sample Identification	Client Sample Identification
0605-1539	GB-9/5ft
0605-1540	GB-7/4ft
0605-1541	GB-6/5ft
0605-1542	GB-5/SS-3

Pace Sample Identification	Client Sample Identification
0605-1543	GB-8/5ft
0605-1544	SB-3/SS-4
0605-1545	SB-2/SS-3
0605-1546	SB-1/SS-4

General Comments: Cooler temperature 3 ° C upon receipt. Ice was present.

Please call me if you have any questions regarding the information contained within this report.

Sincerely,



Rachel D. Christner
Project Manager

RDC: jld

Enclosures

Page 1 of 10

REPORT OF LABORATORY ANALYSIS

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Mr. Louis J. Letterie (President)
Letterie & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2752
Lab Sample ID: 0605-1539
Client Sample ID: GB-9/5ft
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/08/2006
Date Received: 05/09/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	77	N/A	%	JPZ	05/09/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	120	6.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Cumene	8260B ⁽¹⁾	56	6.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	79	6.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	14	6.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Naphthalene	8260B ⁽¹⁾	74	6.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Toluene	8260B ⁽¹⁾	90	6.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	180	6.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

REPORT OF LABORATORY ANALYSIS

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Pace Analytical Services, Inc.
5203 Triangle Lane
Export, PA 15632
Phone: 724.733.1161
Fax: 724.327.7793

Lab Project ID: 06-2752
Lab Sample ID: 0605-1540
Client Sample ID: GB-7/4ft
Sample Matrix: Solid

Date Sampled: 05/08/2006
Date Received: 05/09/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	87	N/A	%	JPZ	05/09/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	22	5.8	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Cumene	8260B ⁽¹⁾	<5.8	5.8	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	<5.8	5.8	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<5.8	5.8	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Naphthalene	8260B ⁽¹⁾	<5.8	5.8	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Toluene	8260B ⁽¹⁾	14	5.8	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	<5.8	5.8	ug/kg	EAC	05/18/2006	0049552-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2752
Lab Sample ID: 0605-1541
Client Sample ID: GB-6/5ft
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/08/2006
Date Received: 05/09/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	90	N/A	%	JPZ	05/09/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B(1)	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Cumene	8260B(1)	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Ethylbenzene	8260B(1)	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Methyl tert-butyl ether	8260B(1)	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Naphthalene	8260B(1)	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Toluene	8260B(1)	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Xylenes (Total)	8260B(1)	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0

(1) U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2752
Lab Sample ID: 0605-1542
Client Sample ID: GB-5/SS-3
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/08/2006
Date Received: 05/09/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	91	N/A	%	JPZ	05/09/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Cumene	8260B ⁽¹⁾	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Naphthalene	8260B ⁽¹⁾	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Toluene	8260B ⁽¹⁾	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	<5.5	5.5	ug/kg	EAC	05/18/2006	0049552-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

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Mr. Louis J. Letterie (President)
Letterie & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2752
Lab Sample ID: 0605-1543
Client Sample ID: GB-8/5ft
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/08/2006
Date Received: 05/09/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	88	N/A	%	JPZ	05/09/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	170	5.7	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Cumene	8260B ⁽¹⁾	75	5.7	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	3900	240	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	8.1	5.7	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Naphthalene	8260B ⁽¹⁾	280	5.7	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Toluene	8260B ⁽¹⁾	87	5.7	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	17000	240	ug/kg	JEC	05/22/2006	0049657-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

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Mr. Louis J. Letterie (President)
Letterie & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2752
Lab Sample ID: 0605-1544
Client Sample ID: SB-3/SS-4
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/08/2006
Date Received: 05/09/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	85	N/A	%	JPZ	05/09/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	94	5.9	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Cumene	8260B ⁽¹⁾	180	5.9	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	2400	260	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<5.9	5.9	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Naphthalene	8260B ⁽¹⁾	950	260	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Toluene	8260B ⁽¹⁾	280	5.9	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	5900	260	ug/kg	JEC	05/22/2006	0049657-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence. Surrogate recoveries were outside QC limits(high) due to matrix interferences.

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Pace Analytical Services, Inc.
5203 Triangle Lane
Export, PA 15632
Phone: 724.733.1161
Fax: 724.327.7793

Lab Project ID: 08-2752
Lab Sample ID: 0605-1545
Client Sample ID: SB-2/SS-3
Sample Matrix: Solid

Date Sampled: 05/08/2006
Date Received: 05/09/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	86	N/A	%	JPZ	05/09/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	49	7.6	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Cumene	8260B ⁽¹⁾	340	7.6	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	15000	350	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<7.8	7.6	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Naphthalene	8260B ⁽¹⁾	13000	350	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Toluene	8260B ⁽¹⁾	100	7.6	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	570	7.6	ug/kg	EAC	05/18/2006	0049552-1	<5.0

(1) U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence. Surrogate recoveries were outside QC limits(high) due to matrix interferences.

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2752
Lab Sample ID: 0605-1546
Client Sample ID: SB-1/SS-4
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/08/2006
Date Received: 05/09/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	75	N/A	%	JPZ	05/09/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	160	6.7	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Cumene	8260B ⁽¹⁾	280	6.7	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	8800	290	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<6.7	6.7	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Naphthalene	8260B ⁽¹⁾	6800	290	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Toluene	8260B ⁽¹⁾	170	6.7	ug/kg	EAC	05/18/2006	0049552-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	780	6.7	ug/kg	EAC	05/18/2006	0049552-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence. Surrogate recoveries were outside QC limits(high) due to matrix interferences.

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The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A: Client Information
Company: Lipfelle & Associates
Address: 2859 Oxford Blvd, Suite 110
Allison Park, PA 15101
Email To: _____
Phone: _____
Fax: _____
Purchase Order No.: _____
Project Name: Pt. 119 Arma
Project Number: 031
Requested Due Date/TAT: Standard

Section B: Report Information
Report To: Same
Copy To: same
Valid Matrix Codes: DRINKING WATER DW
WASTE WATER WW
PRODUCT P
SOILS SOL
WPE WP
AIR AR
OTHER OT
TISSUE T

Section C: Invoice Information
Invoice Number: 0984445
Attention: _____
Company Name: _____
Address: _____
Pace Quote Reference: _____
Pace Project Manager: _____
Pace Profile #: _____

Section D: Regulatory Agency
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ Other: _____
SITE LOCATION
☐ GAY/WHITE ☐ IN ☐ MI ☐ MN ☐ NC
☐ OH ☐ SC ☐ WI ☐ OTHER: _____

Requested Due Date/TAT:		Project Number:		Page Profile #:		Fitted (Y/N)		Analytical		Requested Chemical (Y/N)		Pace Project Number		Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
Section D Required Client Information		Valid Matrix Codes		Matrix Code		Drinking Water		Waste Water		Product		Soil/Solid		Oil		Wipe		Air		Other		Tissue		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS		TS			

May 25, 2006

Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Dear Mr. Letterle:

Enclosed are analytical results for samples submitted to Pace Analytical by Letterle & Associates. The samples were received on May 10, 2006. The results reported in this project meet the requirements as specified in Chapter 5 of the NELAC Standards. Any deviations or discrepancies from the NELAC standards are documented in the case narrative(s) of this report. Parameters printed in italics represent Non-NELAC accredited parameters. Please reference Pace project number 06-2770 when inquiring about this report.

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Pace Sample Identification	Client Sample Identification
0605-1607	GB-11/SS-3/4-6 Ft
0605-1608	GB-14/SS-1/0-2 Ft
0605-1609	GB-15/SS-3/4-6 Ft
0605-1610	GB-13/SS-2/2-4 Ft
0605-1611	GB-10/SS-4/8-8 Ft

Pace Sample Identification	Client Sample Identification
0605-1612	GB-12/SS-2/2-4 Ft
0605-1613	GB-16/SS-3/4-6 Ft
0605-1614	GB-17/SS-2/2-4 Ft
0605-1615	GB-18/SS-1/0-2 Ft
0605-1616	GB-19/SS-3/4-6 Ft

General Comments: Cooler temperature 9 ° C upon receipt. Ice was present.

Please call me if you have any questions regarding the information contained within this report.

Sincerely,


Rachel D. Christner
Project Manager

RDC: jld

Enclosures

Page 1 of 12

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2770
Lab Sample ID: 0605-1607
Client Sample ID: GB-11/SS-3/4-6 Ft
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/09/2006
Date Received: 05/10/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	90	N/A	%	JPZ	05/11/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	110	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Cumene	8260B ⁽¹⁾	81	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	290	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	16	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Naphthalene	8260B ⁽¹⁾	350	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Toluene	8260B ⁽¹⁾	95	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	510	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2770
Lab Sample ID: 0605-1608
Client Sample ID: GB-14/SS-1/0-2 Ft
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/09/2006
Date Received: 05/10/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	88	N/A	%	JPZ	05/11/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	2000	390	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Cumene	8260B ⁽¹⁾	11000	390	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	54000	20000	ug/kg	JEC	05/23/2006	0049692-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<5.6	5.6	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Naphthalene	8260B ⁽¹⁾	31000	20000	ug/kg	JEC	05/23/2006	0049692-1	<5.0
Toluene	8260B ⁽¹⁾	290000	20000	ug/kg	JEC	05/23/2006	0049692-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	390000	20000	ug/kg	JEC	05/23/2006	0049692-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence. Surrogate recoveries were outside QC limits(high) due to matrix interferences.

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, Inc.



Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Pace Analytical Services, Inc.
5203 Triangle Lane
Export, PA 15632
Phone: 724.733.1161
Fax: 724.327.7793

Lab Project ID: 06-2770
Lab Sample ID: 0805-1609
Client Sample ID: GB-15/SS-3/4-6 Ft
Sample Matrix: Solid

Date Sampled: 05/09/2006
Date Received: 05/10/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	85	N/A	%	JPZ	05/11/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	280	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Cumene	8260B ⁽¹⁾	76	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	3200	260	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<5.3	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Naphthalene	8260B ⁽¹⁾	270	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Toluene	8260B ⁽¹⁾	50	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	6200	260	ug/kg	JEC	05/22/2006	0049657-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

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Mr. Louis J. Letterle (President)
 Letterle & Associates
 2859 Oxford Boulevard, Suite 110
 Allison Park, PA 15101

Client Site: Pennsylvania
 Client Ref.: Rt. 119 Amoco

Pace Analytical Services, Inc.
 5203 Triangle Lane
 Export, PA 15632
 Phone: 724.733.1161
 Fax: 724.327.7793

Lab Project ID: 06-2770
 Lab Sample ID: 0605-1610
 Client Sample ID: GB-13/SS-2/2-4 Ft
 Sample Matrix: Solid

Date Sampled: 05/09/2006
 Date Received: 05/10/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	88	N/A	%	JPZ	05/11/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	61	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Cumene	8260B ⁽¹⁾	17	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	86	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	23	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Naphthalene	8260B ⁽¹⁾	35	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Toluene	8260B ⁽¹⁾	70	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	41	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2770
Lab Sample ID: 0805-1811
Client Sample ID: GB-10/SS-4/6-8 Ft
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/09/2006
Date Received: 05/10/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	93	N/A	%	JPZ	05/11/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	25	5.4	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Cumene	8260B ⁽¹⁾	330	5.4	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	1700	220	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<5.4	5.4	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Naphthalene	8260B ⁽¹⁾	3100	220	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Toluene	8260B ⁽¹⁾	48	5.4	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	12000	220	ug/kg	JEC	05/22/2006	0049657-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2770
Lab Sample ID: 0605-1612
Client Sample ID: GB-12/SS-2/2-4 Ft
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/09/2006
Date Received: 05/10/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	77	N/A	%	JPZ	05/11/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	130	6.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Cumene	8260B ⁽¹⁾	160	6.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	300	6.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	100	6.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Naphthalene	8260B ⁽¹⁾	390	6.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Toluene	8260B ⁽¹⁾	150	6.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	190	6.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2770
Lab Sample ID: 0605-1613
Client Sample ID: GB-16/SS-3/4-6 Ft
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/09/2006
Date Received: 05/10/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	92	N/A	%	JPZ	05/11/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	180	5.4	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Cumene	8260B ⁽¹⁾	270	5.4	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	6500	250	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<5.4	5.4	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Naphthalene	8260B ⁽¹⁾	4800	250	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Toluene	8260B ⁽¹⁾	270	5.4	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	33000	250	ug/kg	JEC	05/22/2006	0049657-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence. Surrogate recoveries were outside QC limits(high) due to matrix interferences.

REPORT OF LABORATORY ANALYSIS

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2770
Lab Sample ID: 0605-1614
Client Sample ID: GB-17/SS-2/2-4 Ft
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/09/2006
Date Received: 05/10/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	90	N/A	%	JPZ	05/11/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	<5.5	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Cumene	8260B ⁽¹⁾	26	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	29	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<5.5	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Naphthalene	8260B ⁽¹⁾	1200	210	ug/kg	JEC	05/22/2006	0049657-1	<5.0
Toluene	8260B ⁽¹⁾	<5.5	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	100	5.5	ug/kg	EAC	05/18/2006	0049555-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Lab Project ID: 06-2770
Lab Sample ID: 0605-1615
Client Sample ID: GB-18/SS-1/0-2 Ft
Sample Matrix: Solid

Date Sampled: 05/09/2006
Date Received: 05/10/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	87	N/A	%	JPZ	05/11/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B(1)	<5.7	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Cumene	8260B(1)	<5.7	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Ethylbenzene	8260B(1)	<5.7	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Methyl tert-butyl ether	8260B(1)	<5.7	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Naphthalene	8260B(1)	10	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Toluene	8260B(1)	<5.7	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Xylenes (Total)	8260B(1)	8.1	5.7	ug/kg	EAC	05/18/2006	0049555-1	<5.0

(1) U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

REPORT OF LABORATORY ANALYSIS

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Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Lab Project ID: 06-2770
Lab Sample ID: 0605-1616
Client Sample ID: GB-19/SS-3/4-6 Ft
Sample Matrix: Solid

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Date Sampled: 05/09/2006
Date Received: 05/10/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	94	N/A	%	JPZ	05/11/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	<5.3	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Cumene	8260B ⁽¹⁾	<5.3	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	<5.3	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	<5.3	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Naphthalene	8260B ⁽¹⁾	<5.3	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Toluene	8260B ⁽¹⁾	<5.3	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	<5.3	5.3	ug/kg	EAC	05/18/2006	0049555-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

REPORT OF LABORATORY ANALYSIS

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May 19, 2006

Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Dear Mr. Letterle:

Enclosed are analytical results for samples submitted to Pace Analytical by Letterle & Associates. The samples were received on May 8, 2006. The results reported in this project meet the requirements as specified in Chapter 5 of the NELAC Standards. Any deviations or discrepancies from the NELAC standards are documented in the case narrative(s) of this report. Parameters printed in *italics* represent Non-NELAC accredited parameters. Please reference Pace project number 06-2734 when inquiring about this report.

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Pace Sample Identification	Client Sample Identification
0605-1438	MW-9/SS-3

General Comments: Cooler temperature 6 ° C upon receipt. Ice was present.

Please call me if you have any questions regarding the information contained within this report.

Sincerely,



Rachel D. Christner
Project Manager

RDC: jld

Enclosures

Page 1 of 3

REPORT OF LABORATORY ANALYSIS

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5203 Triangle Lane
Export, PA 15632
724.733.1161
724.327.7793

Mr. Louis J. Letterle (President)
Letterle & Associates
2859 Oxford Boulevard, Suite 110
Allison Park, PA 15101

Client Site: Pennsylvania
Client Ref.: Rt. 119 Amoco

Pace Analytical Services, Inc.
5203 Triangle Lane
Export, PA 15632
Phone: 724.733.1161
Fax: 724.327.7793

Lab Project ID: 06-2734
Lab Sample ID: 0605-1438
Client Sample ID: MW-9/SS-3
Sample Matrix: Solid

Date Sampled: 05/05/2006
Date Received: 05/08/2006

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	92	N/A	%	JPZ	05/09/2006	N/A	N/A

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	280	5.5	ug/kg	EAC	05/17/2006	0049517-1	<5.0
Cumene	8260B ⁽¹⁾	48	5.5	ug/kg	EAC	05/17/2006	0049517-1	<5.0
Ethylbenzene	8260B ⁽¹⁾	360	5.5	ug/kg	EAC	05/17/2006	0049517-1	<5.0
Methyl tert-butyl ether	8260B ⁽¹⁾	26	5.5	ug/kg	EAC	05/17/2006	0049517-1	<5.0
Naphthalene	8260B ⁽¹⁾	82	5.5	ug/kg	EAC	05/17/2006	0049517-1	<5.0
Toluene	8260B ⁽¹⁾	210	5.5	ug/kg	EAC	05/17/2006	0049517-1	<5.0
Xylenes (Total)	8260B ⁽¹⁾	620	5.5	ug/kg	EAC	05/17/2006	0049517-1	<5.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

REPORT OF LABORATORY ANALYSIS

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Page: of

0984444

Section A: Client Information

Company: Letter & Associates Report To: same
Address: 2859 Oxford Blvd Copy To: same
Allison Dock, PA 15101
Email To:
Phone: Fax:
Purchase Order No.:
Project Name: PT 119 Amoco
Project Number: 031

Section B: Sample Information

Requested Due Date/TAT: standard
Valid Matrix Codes: DRINKING WATER DW
WASTE WATER WW
WATER PRODUCT WP
SOIL SOLID SS
OIL OI
WASTE AIR WA
OTHER OT

Section C: Sample Collection

ITEM #	SAMPLE ID	MATRIX CODE	DATE	TIME	COMPOSITE START	COMPOSITE END	GRAB SAMPLE TYPE	CONTAINERS	PRESERVATIVE	ANALYSIS	PROJECT NUMBER	LAB ID
1	MW 9/5/08	SS	5/5/06	08:10								
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

Section D: Relinquished By / Affiliation

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITION
<u>Michael...</u>	<u>5-8-06</u>	<u>9:45</u>	<u>Robert...</u>	<u>5-8-06</u>	<u>10:45</u>	
<u>Blk H...</u>	<u>5-8-06</u>	<u>2:15</u>	<u>Unbranded</u>	<u>5-8-06</u>	<u>2:15</u>	

Section E: Sampler Information

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Eric Ith
SIGNATURE of SAMPLER: [Signature]
DATE Signed: MM/DD/YY

December 5, 2005

Mr. Louis J. Letterle (President)
Letterle & Associates
Beta Building, Suite 203
Mt. Royal Boulevard
Allison Park, PA 15101

Dear Mr. Letterle:

Enclosed are analytical results for samples submitted to Pace Analytical by Letterle & Associates. The samples were received on November 16, 2005. The results reported in this project meet the requirements as specified in Chapter 5 of the NELAC Standards. Any deviations or discrepancies from the NELAC standards are documented in the case narrative(s) of this report. Please reference Pace project number 05-6626 when inquiring about this report.

Client Site: Pennsylvania
Client Ref.: Rt. 119

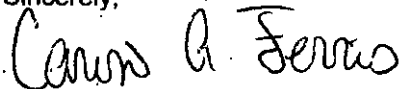
Pace Sample Identification	Client Sample Identification
0511-2464	MW-2
0511-2465	MW-3
0511-2466	MW-4
0511-2467	MW-6
0511-2468	SVE-2

Pace Sample Identification	Client Sample Identification
0511-2469	RW-1
0511-2470	RW-2
0511-2471	AS-1
0511-2472	AS-2

General Comments: Cooler temperature 4 ° C upon receipt. Ice was present.

Please call me if you have any questions regarding the information contained within this report.

Sincerely,



Carin A. Ferris
Project Manager

CAM: jld

Enclosures

Page 1 of 11

REPORT OF LABORATORY ANALYSIS

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Mr. Louis J. Letterle (President)
Letterle & Associates
Beta Building, Suite 203
Mt. Royal Boulevard
Allison Park, PA 15101

Lab Project ID: 05-6626
Lab Sample ID: 0511-2464
Client Sample ID: MW-2
Sample Matrix: Aqueous

Client Site: Pennsylvania
Client Ref.: Rt. 119

Date Sampled: 11/14/2005
Date Received: 11/16/2005

General Chemistry

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Total Dissolved Solids	160.1 ⁽¹⁾	520	10	mg/l	JMT	11/23/2005	0044927-1	980

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Cumene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Ethylbenzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Methyl tert-butyl ether	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Naphthalene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Toluene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Xylenes (Total)	8260B ⁽²⁾	<3.0	3.0	ug/l	EAC	11/18/2005	0044781-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

⁽²⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis. Due to the large amount of sediment in the VOA vial, the water portion of the sample was transferred to a new VOA vial prior to analysis. The pH of the VOA vial used for analysis was 5. The pH of the VOA sample was 5.

REPORT OF LABORATORY ANALYSIS

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Mr. Louis J. Letterle (President)

Letterle & Associates

Beta Building, Suite 203

Mt. Royal Boulevard

Allison Park, PA 15101

Client Site: Pennsylvania

Client Ref.: Rt. 119

Lab Project ID: 05-8626

Lab Sample ID: 0511-2465

Client Sample ID: MW-3

Sample Matrix: Aqueous

Date Sampled: 11/14/2005

Date Received: 11/16/2005

General Chemistry

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Total Dissolved Solids	160.1 ⁽¹⁾	300	10	mg/l	JMT	11/23/2005	0044927-1	980

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽²⁾	1.6	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Cumene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Ethylbenzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Methyl tert-butyl ether	8260B ⁽²⁾	61	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Naphthalene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Toluene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Xylenes (Total)	8260B ⁽²⁾	<3.0	3.0	ug/l	EAC	11/18/2005	0044781-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

⁽²⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

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Mr. Louis J. Letterle (President)
Letterle & Associates
Beta Building, Suite 203
Mt. Royal Boulevard
Allison Park, PA 15101

Client Site: Pennsylvania
Client Ref.: Rt. 119

Pace Analytical Services, Inc.
5203 Triangle Lane
Export, PA 15632
Phone: 724.733.1161
Fax: 724.327.7793

Lab Project ID: 05-6626
Lab Sample ID: 0511-2466
Client Sample ID: MW-4
Sample Matrix: Aqueous

Date Sampled: 11/14/2005
Date Received: 11/16/2005

General Chemistry

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Total Dissolved Solids	160.1 ⁽¹⁾	3500	10	mg/l	JMT	11/23/2005	0044927-1	980

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Cumene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Ethylbenzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Methyl tert-butyl ether	8260B ⁽²⁾	7.6	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Naphthalene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Toluene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Xylenes (Total)	8260B ⁽²⁾	<3.0	3.0	ug/l	EAC	11/18/2005	0044781-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

⁽²⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

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Letterle & Associates

Beta Building, Suite 203

Mt. Royal Boulevard

Allison Park, PA 15101

Client Site: Pennsylvania

Client Ref.: Rt. 119

Lab Project ID: 05-6626

Lab Sample ID: 0511-2467

Client Sample ID: MW-6

Sample Matrix: Aqueous

Date Sampled: 11/14/2005

Date Received: 11/16/2005

General Chemistry

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Total Dissolved Solids	160.1 ⁽¹⁾	440	10	mg/l	JMT	11/23/2005	0044927-1	980

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Cumene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Ethylbenzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Methyl tert-butyl ether	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Naphthalene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Toluene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Xylenes (Total)	8260B ⁽²⁾	<3.0	3.0	ug/l	EAC	11/18/2005	0044781-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

⁽²⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

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Mr. Louis J. Letterle (President)
Letterle & Associates
Beta Building, Suite 203
Mt. Royal Boulevard
Allison Park, PA 15101

Lab Project ID: 05-6626
Lab Sample ID: 0511-2468
Client Sample ID: SVE-2
Sample Matrix: Aqueous

Client Site: Pennsylvania
Client Ref.: Rt. 119

Date Sampled: 11/14/2005
Date Received: 11/16/2005

General Chemistry

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Total Dissolved Solids	160.1 ⁽¹⁾	470	10	mg/l	JMT	11/23/2005	0044927-1	980

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽²⁾	57	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Cumene	8260B ⁽²⁾	1.3	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Ethylbenzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Methyl tert-butyl ether	8260B ⁽²⁾	45	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Naphthalene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Toluene	8260B ⁽²⁾	1.5	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Xylenes (Total)	8260B ⁽²⁾	<3.0	3.0	ug/l	EAC	11/18/2005	0044781-1	<3.0

(1) U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

(2) U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis. Due to the large amount of sediment in the VOA vial, the water portion of the sample was transferred to a new VOA vial prior to analysis. The pH of the VOA vial used for analysis was 6.

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Mr. Louis J. Letterle (President)
Letterle & Associates
Beta Building, Suite 203
Mt. Royal Boulevard
Allison Park, PA 15101

Client Site: Pennsylvania
Client Ref.: Rt. 119

Pace Analytical Services, Inc.
5203 Triangle Lane
Export, PA 15632
Phone: 724.733.1161
Fax: 724.327.7793

Lab Project ID: 05-6626
Lab Sample ID: 0511-2469
Client Sample ID: RW-1
Sample Matrix: Aqueous

Date Sampled: 11/14/2005
Date Received: 11/16/2005

General Chemistry

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Total Dissolved Solids	160.1 ⁽¹⁾	1600	10	mg/l	JMT	11/30/2005	0045050-1	31

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Cumene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Ethylbenzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Methyl tert-butyl ether	8260B ⁽²⁾	1.2	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Naphthalene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Toluene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Xylenes (Total)	8260B ⁽²⁾	<3.0	3.0	ug/l	EAC	11/18/2005	0044781-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

⁽²⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

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Mr. Louis J. Letterle (President)
Letterle & Associates
Beta Building, Suite 203
Mt. Royal Boulevard
Allison Park, PA 15101

Lab Project ID: 05-6626
Lab Sample ID: 0511-2470
Client Sample ID: RW-2
Sample Matrix: Aqueous

Client Site: Pennsylvania
Client Ref.: Rt. 119

Date Sampled: 11/14/2005
Date Received: 11/16/2005

General Chemistry

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Total Dissolved Solids	160.1 ⁽¹⁾	710	10	mg/l	JMT	11/23/2005	0044927-1	980

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽²⁾	6.1	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Cumene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Ethylbenzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Methyl tert-butyl ether	8260B ⁽²⁾	7.9	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Naphthalene	8260B ⁽²⁾	1.1	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Toluene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Xylenes (Total)	8260B ⁽²⁾	<3.0	3.0	ug/l	EAC	11/18/2005	0044781-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

⁽²⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis. Due to the large amount of sediment in the VOA vial, the water portion of the sample was transferred to a new VOA vial prior to analysis. The pH of the VOA vial used for analysis was 6.

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Mr. Louis J. Letterle (President)
Letterle & Associates
Beta Building, Suite 203
Mt. Royal Boulevard
Allison Park, PA 15101

Lab Project ID: 05-6626
Lab Sample ID: 0511-2471
Client Sample ID: AS-1
Sample Matrix: Aqueous

Client Site: Pennsylvania
Client Ref.: Rt. 119

Date Sampled: 11/14/2005
Date Received: 11/16/2005

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽¹⁾	1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Cumene	8260B ⁽¹⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Ethylbenzene	8260B ⁽¹⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Methyl tert-butyl ether	8260B ⁽¹⁾	6.3	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Naphthalene	8260B ⁽¹⁾	2.4	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Toluene	8260B ⁽¹⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Xylenes (Total)	8260B ⁽¹⁾	<3.0	3.0	ug/l	EAC	11/18/2005	0044781-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

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Mr. Louis J. Letterle (President)

Letterle & Associates

Beta Building, Suite 203

Mt. Royal Boulevard

Allison Park, PA 15101

Client Site: Pennsylvania

Client Ref.: Rt. 119

Lab Project ID: 05-6626

Lab Sample ID: 0511-2472

Client Sample ID: AS-2

Sample Matrix: Aqueous

Date Sampled: 11/14/2005

Date Received: 11/16/2005

General Chemistry

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Total Dissolved Solids	160.1 ⁽¹⁾	1200	10	mg/l	JMT	11/23/2005	0044927-1	980

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Benzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Cumene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Ethylbenzene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Methyl tert-butyl ether	8260B ⁽²⁾	130	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Naphthalene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Toluene	8260B ⁽²⁾	<1.0	1.0	ug/l	EAC	11/18/2005	0044781-1	<1.0
Xylenes (Total)	8260B ⁽²⁾	<3.0	3.0	ug/l	EAC	11/18/2005	0044781-1	<3.0

⁽¹⁾ U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

⁽²⁾ U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis.

REPORT OF LABORATORY ANALYSIS

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Section A
Required Client Information:
Company: Letterle & Associates LLC
Address: Beta Building Suite 203
4064 RT Royal Blvd
Allison Park PA 15011
Phone: 412-486-0800 Fax: 412-486-0674
Report To: Same
Copy To: Same
Invoice To: Same
P.O.: RT 119
Project Name: RT 119
Project Number: 031

Section B
Client Information (Check quote/contract):
Requested Due Date: TAT
Project Manager: Standard 14 days
Project #: 05-6626
Profile #: 51
Requested Analysis: 3

Section D Required Client Information:

SAMPLE ID
One character per box.
(A-Z, 0-9 / -)
Sample IDs MUST BE UNIQUE

Preservatives
DATE COLLECTED: mm/dd/yy
TIME COLLECTED: hh:mm a/p
Containers: 4
Unpreserved: 1
H₂SO₄: 3
HNO₃: 3
HCl: 3
NaOH: 3
Na₂S₂O₃: 3
Methanol: 3
Other: 3

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SHIPMENT METHOD	AIRBILL NO.	SHIPMENT ADDRESS	SHIPMENT DATE		SHIPMENT TIME		SHIPMENT AFFILIATION		SHIPMENT DATE		SHIPMENT TIME	
			DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME
			11-16-05	10:15	11-16-05	10:15	BL M		11-16-05	10:15	11-16-05	10:15
			11-16-05	1:45	11-16-05	1:45	U Laboratory		11-16-05	1:45	11-16-05	1:45

SAMPLE CONDITION
Temp in °C: 4
Received on Ice: YN
Sealed Cooler: YN
Samples Intact: YN
Additional Comments: 11/14/05

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: JARED THORN
SIGNATURE of SAMPLER: Jared Thorn
DATE Signed: 11/14/05

APPENDIX M

Fate and Transport Modeling

NEW QUICK DOMENICO

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL

Project: Former RI 119 Amoco
 Date: 8/10/2006 Prepared by: LDH
 Contaminant: High Benzene: MW-1 to u.t. of Gist Run via MW-6 in 30 years

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)	24.5	2.00E+01	2.00E+00	1.00E-03	0.0009	90	10	10,950
Ax (ft)								
Ay (ft)								
Az (ft)								
LAMBDA day-1								
SOURCE WIDTH (ft)								
SOURCE THICKNESS (ft)								
Time (days)								
Hydraulic Cond (ft/day)	3.70E-03	0.182	0.1	1.85	58	5.00E-03	6.365	0.001056973
Soil Bulk Density (g/cm ³)								
Porosity (dec. frac.)								
KOC								
Frac. Org. Carb. (R)								
Retardation (=K [*] /n [*] R)								
V (ft/day)								

Point Concentration

x(ft)	y(ft)	z(ft)
750	0	0
Conc. At	750	0
at	10950 days =	0.000
		mg/l

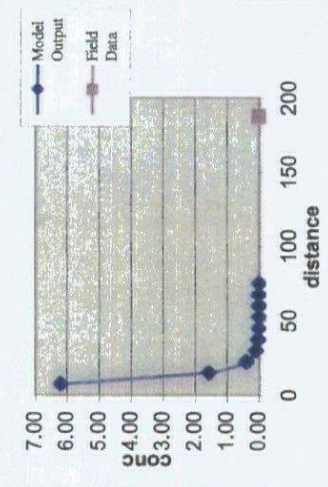
AREAL CALCULATION

MODEL	Length (ft)	Width (ft)
75	7.5	15
78	0.000	0.000
39	5.368	1.232
0	6.217	1.578
-39	5.368	1.232
-78	0.000	0.000

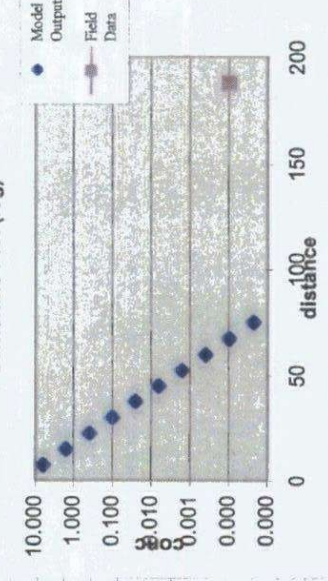
Field Data: Centerline C_i Concentration

Distance from Source
188

Centerline Plot (linear)



Centerline Plot (log)



NEW QUICK DOMENICO

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL

Project: former RL 119 Amoco
 Date: 8/10/2006 Prepared by: LDH
 Contaminant: High MTBE: MW-3 to u.t. of Gist Run via MW-6 in 30 years

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)	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)
49.9	2.00E+01	2.00E+00	>= .001	1.00E-03	0	90	10,950
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm ³)	KOC	Frac. Org. Carb. (R)	Retard- ation (R)	V (=K*/n*R) (ft/day)
3.70E-03	0.182	0.1	1.85	12	5.00E-03	2.11	0.003191469

Point Concentration

x(ft)	y(ft)	z(ft)	
750	0	0	
Conc. At	x(ft)	y(ft)	z(ft)
at	750	0	0
	10950 days =		
			0.000
			mg/l

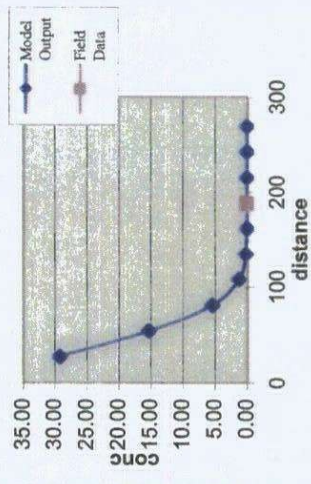
AREAL CALCULATION

MODEL	Length (ft)	Width (ft)	Area (sq ft)
34	24.983	26.9	672.8
17	29.100	53.8	1565.4
0	29.201	53.8	1565.4
-17	29.100	53.8	1565.4
-34	24.983	26.9	672.8

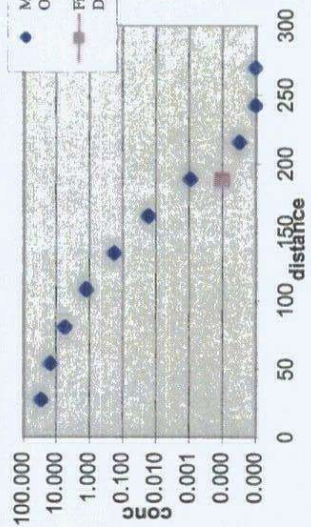
Field Data: Centerline C: Concentration

Distance from Source

Centerline Plot (linear)



Centerline Plot (log)



NEW QUICK DOMENICO

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL

Project: former Rt. 119 Amoco
Date: 8/10/2006
Prepared by: LDH
Contaminant: Post Rem. Benzene: MW-8 to u.t. of Gist Run via MW-6 in 30 years

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)	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)
0.24	2.00E+01	2.00E+00	>=.001	1.00E-03	10	5	10,950

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm ³)	KOC	Frac. Org. Carb. (R)	Retard- ation (R)	V (ft/day)
3.70E-03	0.182	0.1	1.85	58	5.00E-03	6.365	0.001057973

Point Concentration

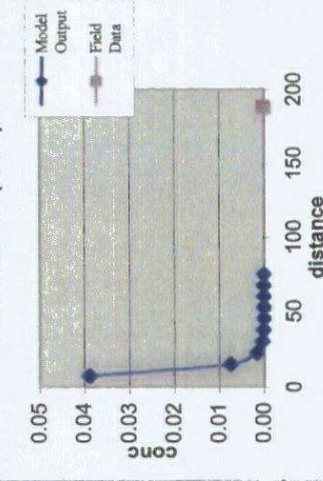
x(ft)	y(ft)	z(ft)
	750	0

AREAL CALCULATION

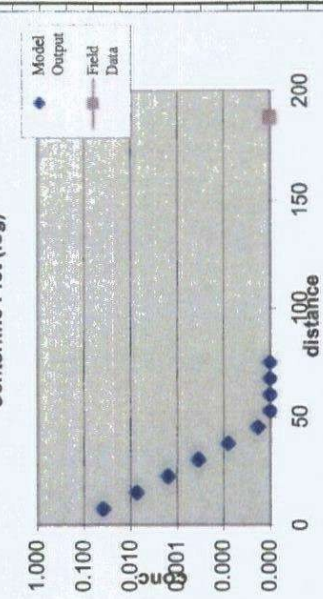
MODEL	Length (ft)	Width (ft)
50	7.5	15
25	0.000	0.000
0	0.039	0.007
-25	0.000	0.000
-50	0.000	0.000

Field Data: Centerline C: Concentration
Distance from Source

Centerline Plot (linear)



Centerline Plot (log)



distance	52.5	60	67.5	75
Model Output	0.000	0.000	0.000	0.000
Field Data	0.000	0.000	0.000	0.000

NEW QUICK DOMENICO

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project: former RL 119 Amoco

Date: 8/10/2006 Prepared by: LDH

Contaminant: Post Rem MTBE: MW-8 to u.t. of Gist Run via MW-6 in 30 years

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)	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)
0.058	2.00E+01	2.00E+00	1.00E-03	0	10	5	10,950
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm ³)	KOC	Frac. Org. Carb.	Retard- ation (R)	V (ft/day)
3.70E-03	0.182	0.1	1.85	12	5.00E-03	2.11	0.003191469

Point Concentration

x(ft)	y(ft)	z(ft)	
750	0	0	
Conc. At	x(ft)	y(ft)	z(ft)
at	750	0	0
	10950 days =		
			0.000
			mg/l

AREAL CALCULATION

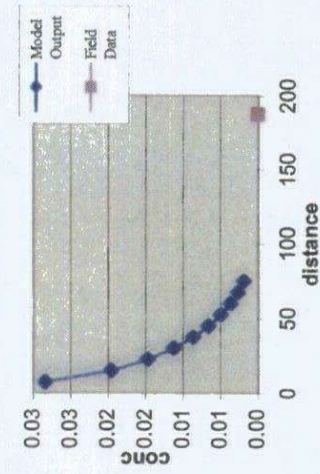
MODEL	DOMAIN
Length (ft)	75
Width (ft)	50

50	7.5	0.000	0.000	0.000	22.5	30	37.5	45	52.5	60	67.5	75
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.028	0.020	0.015	0.010	0.007	0.005	0.004	0.003	0.002	0.001	0.001	0.001
-25	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
-50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

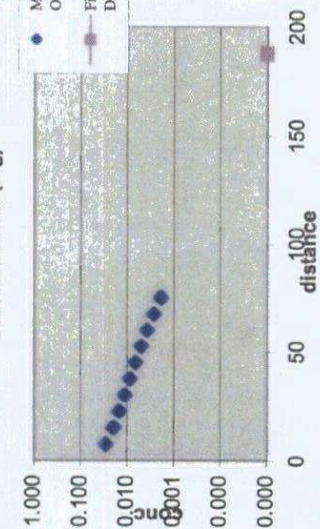
Field Data: Centerline C: Concentration

Distance from Source

Centerline Plot (linear)



Centerline Plot (log)



NEW QUICK DOMENICO

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL

Project: former Rt. 119 Amoco		LDH	
Date: 8/10/2006		Prepared by: LDH	
Contaminant: High Benzene/high cond: MW-1 to u.t. of Gist Run via MW-6 in 30 years			

SOURCE CONC (MG/L)	24.5	2.00E+01	2.00E+00	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA day ⁻¹	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)
						>=.001	1.00E-03	90	10	10,950

Hydraulic Cond (ft/day)	1.60E-01	0.182	0.1	1.85	58	5.00E-03	6.365	0.045750196
Hydraulic Gradient (ft/ft)								
Porosity (dec. frac.)								
Soil Bulk Density (g/cm ³)								
KOC								
Frac. Org. Carb. (R)								
Retardation (=K [*] i/n [*] R)								

Point Concentration			
x(ft)	y(ft)	z(ft)	
750	0	0	
Conc. At	x(ft)	y(ft)	z(ft)
at	750	0	0
	10950 days =		0.000 mg/l

AREAL CALCULATION			
MODEL	DOMAIN	Length (ft)	Width (ft)
78	150	75	78
39	75	0.224	0.226
0	75	5.014	1.516
-39	75	7.816	2.373
-78	75	5.014	1.516
	75	0.224	0.226

Field Data: Centerline C: Concentration			
Distance from Source	Concentration	Model Output	Field Data
750	0.000	0.000	0.000
675	0.000	0.000	0.000
600	0.001	0.001	0.000
525	0.002	0.002	0.000
450	0.006	0.006	0.000
375	0.017	0.017	0.000
300	0.045	0.045	0.000
225	0.111	0.111	0.000
150	0.226	0.226	0.000
75	0.472	0.472	0.000
0	0.709	0.709	0.000
-75	0.938	0.938	0.000
-150	1.167	1.167	0.000
-225	1.396	1.396	0.000
-300	1.625	1.625	0.000
-375	1.854	1.854	0.000
-450	2.083	2.083	0.000
-525	2.312	2.312	0.000
-600	2.541	2.541	0.000
-675	2.770	2.770	0.000
-750	3.000	3.000	0.000

Centerline Plot (linear)

Centerline Plot (log)

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

12/30/2008

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL

Project:
Date:

former Rt. 119 Amoco
8/10/2006

Prepared by:

LDH

Contaminant:

Post Rem. Benzene/high cond: MW-8 to u.t. of Gist Run via MW-6 in 30 years

SOURCE CONC (MG/L)

0.24

Ax (ft)

2.00E+01

Ay (ft)

2.00E+00

Az (ft)

>=.001

LAMBDA day-1

0.0009

SOURCE WIDTH (ft)

10

SOURCE THICKNESS (ft)

5

Time (days)

10,950

Hydraulic Cond (ft/day)

1.60E-01

Hydraulic Gradient (ft/ft)

0.182

Porosity (dec. frac.)

0.1

Soil Bulk Density (g/cm³)

1.85

KOC

58

Frac. Org. Carb.

5.00E-03

Retardation (R)

6.365

V (=K*/n*R) (ft/day)

0.045750196

Point Concentration

x(ft)	y(ft)	z(ft)
750	0	0
Conc. At at 10950 days =		
0.000 mg/l		

AREAL CALCULATION

MODEL Length (ft)	Width (ft)	CALCULATION DOMAIN
78	75	150
39	0.001	0.000
0	0.018	0.004
-39	0.011	0.001
-78	0.000	0.000

Field Data: Centerline C Concentration

Distance from Source	Centerline C Concentration
188	0.0009

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

Centerline Plot (linear)

Centerline Plot (log)

12/30/2008

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APPENDIX N

QD Sensitivity Analysis

Quick Domenico Model Sensitivity Analysis - Benzene

Former Rt 119 Amoco
1809 University Drive
Dunbar, Pennsylvania 15431

Input Parameter	Input Parameter Value from QD Model	Original Point Concentration (mg/l)	2 x Input Parameter Value	Point Concentration 2 x Input Parameter (mg/l)	Point Concentration Percent change	1/2 Input Parameter Value	Point Concentration 1/2 Input Parameter (mg/l)	Point Concentration Percent Change	Average Total Percent Change
Source Concentration (mg/l)	0.24	0.000	0.48	0.000	0.0%	0.12	0.000	0.0%	0.0%
Distance to Receptor (ft)	750	0.000	1500	0.000	0.0%	375	0.000	0.0%	0.0%
Longitudinal Dispersivity (ft)	20	0.000	40	0.000	0.0%	10	0.000	0.0%	0.0%
Transverse Dispersivity (ft)	2	0.000	4	0.000	0.0%	1	0.000	0.0%	0.0%
Vertical Dispersivity (ft)	0.001	0.000	0.002	0.000	0.0%	0.0005	0.000	0.0%	0.0%
Lambda	0.0009	0.000	0.0018	0.000	0.0%	0.00045	0.000	0.0%	0.0%
Source Width (ft)	10	0.000	20	0.000	0.0%	5	0.000	0.0%	0.0%
Source Thickness (ft)	5	0.000	10	0.000	0.0%	2.5	0.000	0.0%	0.0%
Time (Days)	10,950	0.000	21,900	0.000	0.0%	5,475	0.000	0.0%	0.0%
Hydraulic Conductivity (ft/day)	0.0037	0.000	0.0074	0.000	0.0%	0.00185	0.000	0.0%	0.0%
Hydraulic Gradient (ft/ft)	0.182	0.000	0.364	0.000	0.0%	0.091	0.000	0.0%	0.0%
Soil Bulk Density (g/cm ³)	1.85	0.000	3.7	0.000	0.0%	0.925	0.000	0.0%	0.0%
Fraction Organic Carbon	0.005	0.000	0.01	0.000	0.0%	0.0025	0.000	0.0%	0.0%

Quick Domenico Model Sensitivity Analysis - MTBE

Former Rt 119 Amoco
1809 University Drive
Dunbar, Pennsylvania 15431

Input Parameter	Input Parameter Value from QD Model	Original Point Concentration (mg/l)	2 x Input Parameter Value	Point Concentration 2 x Input Parameter (mg/l)	Point Concentration Percent change	1/2 Input Parameter Value	Point Concentration 1/2 Input Parameter (mg/l)	Point Concentration Percent Change	Average Total Percent Change
Source Concentration (mg/l)	0.058	0.000	0.116	0.000	0.0%	0.029	0.000	0.0%	0.0%
Distance to Receptor (ft)	750	0.000	1500	0.000	0.0%	375	0.000	0.0%	0.0%
Longitudinal Dispersivity (ft)	20	0.000	40	0.000	0.0%	10	0.000	0.0%	0.0%
Transverse Dispersivity (ft)	2	0.000	4	0.000	0.0%	1	0.000	0.0%	0.0%
Vertical Dispersivity (ft)	0.001	0.000	0.002	0.000	0.0%	0.0005	0.000	0.0%	0.0%
Lambda	0	0.000	0	0.000	0.0%	0	0.000	0.0%	0.0%
Source Width (ft)	10	0.000	20	0.000	0.0%	5	0.000	0.0%	0.0%
Source Thickness (ft)	5	0.000	10	0.000	0.0%	2.5	0.000	0.0%	0.0%
Time (Days)	10,950	0.000	21,900	0.000	0.0%	5,475	0.000	0.0%	0.0%
Hydraulic Conductivity (ft/day)	0.0037	0.000	0.0074	0.000	0.0%	0.00185	0.000	0.0%	0.0%
Hydraulic Gradient (ft/ft)	0.182	0.000	0.364	0.000	0.0%	0.091	0.000	0.0%	0.0%
Soil Bulk Density (g/cm ³)	1.85	0.000	3.7	0.000	0.0%	0.925	0.000	0.0%	0.0%
Fraction Organic Carbon	0.005	0.000	0.01	0.000	0.0%	0.0025	0.000	0.0%	0.0%