

SITE CHARACTERIZATION REPORT

Seneca Mini Mart
3390 State Route 257,
Seneca, Venango County, Pennsylvania
PADEP Facility ID # 61-18854

Prepared for:

Harper Oil Company
(Owner of the Seneca Mini Mart)

Submitted:

September 13, 2017

Prepared by:



P.O Box 44
Delmont, PA 15626
888-316-0211

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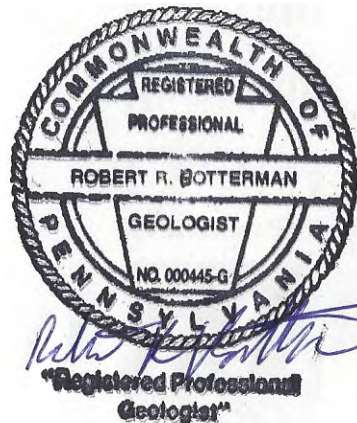
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Gary Cribbs, P.G.
Principal

Robert R. Botterman P.G.
Project Geologist

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1.0 INTRODUCTION/BACKGROUND

1.1 Introduction

This Site Characterization Report (SCR)) was prepared for Harper Oil Company, owner of the Seneca Mini Mart [Pennsylvania Department of Environmental Protection (PADEP) Facility ID # 61-18854] located at 3390 State Route 257, Seneca, Venango County, Pennsylvania. The Subject Property was formerly operated as a fuel retail and convenience store facility, recently as an automobile repair facility and is currently vacant. Harper Oil and Heath Oil Inc. (Harper Oil's parent company) also owns several of the immediately adjoining properties to the north (Hinzeman), east (Winger) and southeast (Heath) through various subsidiaries. The Subject Property is located along the east side of State Route 257 approximately 200 feet south of the Bredinsburg Road/East State Road cross street in Seneca, Pennsylvania. A Site Location Map is included as **Figure 1**.

The Seneca Mini Mart occupies the northern half of the 0.78 acre parcel (Parcel ID 08-39-13), owned by Daniel Heath. The balance of the parcel is occupied by Seneca Motors, a used car sales lot. The Seneca Mini Mart includes a single building of approximately 3,932 square feet and a single 576 square foot canopy with a single dispenser island. Two unleaded gasoline dispensers were formerly located under the canopy.

A separate dispenser for diesel fuel and kerosene was formerly located south of the Subject Property structure. The underground storage tanks (USTs) associated with the dispensers were buried to the southeast of the dispensers and included; Tank 001, a 6,000-gallon UST containing premium unleaded gasoline, Tank 003, a 10,000-gallon UST containing unleaded gasoline, Tank 004, a 2,000-gallon UST containing diesel fuel and Tank 005, a 1,000-gallon UST containing kerosene. Former Tank 002, a 4,000-gallon unleaded gasoline UST had been removed from the facility on February 11th, 1999. Also, present at the facility was a 1,000-gallon above ground storage tank containing off-road diesel fuel equipped with a single dispenser. Access to the property is gained from multiple entrances along State Route 257. **Figure 2** presents the locations of the former USTs and the AST.

These four USTs and associated dispensers were recently removed as part of the closure of the retail gasoline facility. The USTs were removed between September 14th and 17th, 2015 by John Koziara of Koziara Trucking and Excavating. It is the former UST system and associated dispensers under the canopy that were removed that are the focus of the Site Characterization.

1.2 Background

The purpose of this SCR is to provide documentation of site characterization activities undertaken in accordance with 25 Pa Code 245.309 following the confirmation of soil and groundwater impacts identified during the removal of the former underground storage tank (UST) system and associated product delivery lines in September 2015.

An aerial photograph taken July 2, 1939 shows the Subject Property as undeveloped agricultural land and that State Route 257 had not been constructed. An aerial photograph dated August 27, 1958 indicates that State Route 257 had been constructed and the main portion of the current building was present on the Subject Property. The quality and clarity of the 1958 and a later 1968 aerial photograph do not allow the identification of any dispenser islands although the 1958 photograph indicates something in the vicinity of the dispenser south of the existing Subject Property structure. The aerial photographs from 1939, 1958 and 1968 are available from pennpilot.psu.edu.

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Underground Storage Tank 001, a 6,000-gallon gasoline tank was installed on June 1, 1977. Tanks 003 through 005 were installed at the facility on April 1, 1985 and include a 10,000-gallon gasoline tank, a 2,000-gallon diesel tank and a 1,000-gallon kerosene tank, respectively. The off-road diesel fuel above ground storage tank (AST) was added on May 17, 2005. Former Tank 002, a 4,000-gallon unleaded gasoline UST (likely also installed in 1977) had been removed from the facility on February 11th, 1999. No evidence of earlier, preregistration USTs were encountered on the Subject Property during the site characterization investigation activities, however, the 1958 aerial photograph may indicate an earlier UST system and dispenser island in the same location as the recent UST system.

Google Earth images from April 1993 indicate that the current building was present and suggests that the dispenser island was present in front (west) of the building; however, the image clarity is such that it is not definitive. The canopy over the dispenser island appears to be present in the September 2005 image.

The four USTs were listed as temporally out of service when UST closure activities were initiated on September 14, 2015. John Koziara, certified tank handler (2099) of Koziara Trucking & Excavating (Koziara) (Company Certification Number 417) was conducting the UST closure activities. Discolored (stained) soil was observed near the 6,000-gallon and 10,000-gallon gasoline USTs as they were being removed. No groundwater was encountered during the removal of the four USTs. The PADEP was notified of the release on September 14, 2015 and a Notification of Reported Release form was submitted on September 16, 2015. A copy of the Notification of Reported Release form is included in **Appendix A**.

Soil confirmation samples collected from beneath the USTs did not exceed the statewide health standards (SHS) medium specific concentrations (MSCs). Obvious contamination was observed during the removal of the product piping and the dispensers. Impacted soil was only detected in the soil confirmation samples collected from under the dispensers and along the product lines leading from the dispensers back towards the USTs. Analytical data from the UST Closure Activities is included along with the UST System Closure Report Form in **Appendix A**. The locations of the former USTs and closure sample locations are also included in **Appendix A**. There are no known potential offsite sources of contamination.

It appears as if leakage from the dispensers and the product line fitting adjacent to the dispensers is the likely cause of the observed soil impacts. According to Koziara, a total of approximately 430 tons of soil was excavated from the vicinity of the dispenser islands and the four USTs during the removal activities. According to Koziara, approximately 350 tons came from the vicinity of the gasoline USTs, and gasoline associated dispenser islands and product lines had notable hydrocarbon odors. The gasoline impacted soil was stockpiled on the property encapsulated in 6 mil plastic pending disposal of the gasoline impacted soil stockpile.

Approximately 50 tons of soil were removed from the vicinity of the diesel fuel and kerosene USTs and associated dispensers and product lines. This material did not exhibit any odors and analytical results of the diesel fuel/kerosene stockpile were below laboratory detection limits for all parameters analyzed. The 50 tons of soil from the diesel fuel/kerosene stockpile were eventually used as fill and spread at the facility.

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Confirmatory soil samples collected from below the product dispensers and along the product line trenches indicated that the only parameters to exceed the residential and non-residential SHS MSCs were naphthalene, 1,2,4-trimethylbenzene (1,2,4-TMB) and 1,3,5-trimethylbenzene (1,3,5-TMB) observed in UST closure soil samples #11 through #14. (The April 19, 2016 modifications to the SHS MSCs raised the values for 1,3,5-TMB, and the 1,3,5-TMB no longer exceeds the residential SHS MSC.) The soil to groundwater, used aquifer with total dissolved solids less than 2,500 milligrams per liter SHS MSC for naphthalene is 25 milligrams per kilogram (mg/kg) for both residential and non-residential settings. Soil Sample #13 was the only sample to exhibit a naphthalene concentration exceeding the residential and non-residential SHS MSC with a concentration of 31.26 mg/kg. The soil to groundwater, used aquifer with total dissolved solids less than 2,500 milligrams per liter SHS MSC for 1,2,4-TMB is 8.4 mg/kg for residential settings and 35 mg/kg for non-residential settings. The 1,2,4-TMB values where impacts were observed exceeding the residential and non-residential SHS MSC ranged from 48.1 mg/kg (Sample # 12) to 144.55 mg/kg (Sample # 13). The soil to groundwater, used aquifer with total dissolved solids less than 2,500 milligrams per liter SHS MSC for 1,3,5-TMB is 2.3 mg/kg (revised to 74 mg/kg) for residential settings and 9.3 mg/kg (revised to 210 mg/kg) for non-residential settings. The 1,3,5-TMB values where impacts were observed exceeding the SHS MSC ranged from 8.644 mg/kg (Sample # 12) to 48.03 mg/kg (Sample #13).

Analysis of the confirmation samples collected beneath the four removed USTs indicated that none of the gasoline or diesel constituents were present at concentrations which exceed their respective Statewide Health Standards.

Obvious soil impacts were observed during the UST closure and the only impacts detected were the presence of naphthalene, and 1,2,4-TMB (and formerly 1,3,5-TMB) exceeding the residential and non-residential SHS MSCs in the confirmation soil samples collected from beneath the dispensers and along the product lines leading towards the UST cavity. No impacts were observed in the confirmation soil samples collected from beneath the removed USTs.

It appears that leakage from the dispensers and product lines adjacent to the dispensers is the likely cause of the observed soil impacts. This release was likely a chronic release in a product distribution line or at a dispenser that occurred over many years. This is also evident as the leak detection/tank gauging system never registered a significant release. The exact volume of the release is not known.

A Notification of Reportable Release (NRR) was submitted to the Pennsylvania Department of Environmental Protection (PADEP) on September 16th, 2015, following the observation of impacts beneath the dispensers and product lines.

The impacts associated with the removed UST system are being addressed under the Title 25—Environmental Protection (25 PA Code), Chapter 245 (Administration of the Storage Tank and Spill Prevention Program).

The eligibility of the funding through the UST Indemnification Fund (USTIF) for the Seneca Mini Mart facility is was approved on June 6th, 2016. The Site characterization and corrective actions at the Subject Property are 100 percent funded subject to the \$5,000.00 deductible. The USTIF utilizes ICF Consulting (ICF) as a third-party administrator. PAUSTIF Claim #2015-0120 was assigned to the cleanup of unleaded gasoline at the Seneca Mini Mart.

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2.0 SITE CHARACTERIZATION ACTIVITIES

2.1 Previous Investigations

Previous investigation activities are limited to the soil sampling conducted during the UST Closure activities in September, 2015. The September 2015 soil sampling conducted during the removal of the UST system identified naphthalene, and 1,2,4-TMB at concentrations that exceeded their Statewide Health Standard (SHS) Medium Specific Concentrations (MSCs) in UST closure soil samples #11 through #14. The soil to groundwater, used aquifer with total dissolved solids less than 2,500 milligrams per liter SHS MSC for naphthalene is 25 milligrams per kilogram (mg/kg) for both residential and non-residential settings. Soil Sample #13 was the only sample to exhibit a naphthalene concentration exceeding the residential and non-residential SHS MSC with a concentration of 31.26 mg/kg. The soil to groundwater, used aquifer with total dissolved solids less than 2,500 milligrams per liter SHS MSC for 1,2,4-TMB is 8.4 mg/kg for residential settings and 35 mg/kg for non-residential settings. The 1,2,4-TMB values where impacts were observed exceeding the residential and non-residential SHS MSC ranged from 48.1 mg/kg (Sample # 12) to 144.55 mg/kg (Sample # 13). All four of the samples that exceeded the 1,2,4-TMB SHS MSC exceeded the non-residential value.

Analysis of the confirmation samples collected beneath the four removed USTs indicated that none of the gasoline or diesel constituents were present at concentrations which exceed their respective Statewide Health Standards. The impacted soil stockpile was also observed to contain detectable concentrations of 1,2,4-TMB at concentrations that did not exceed their respective residential and non-residential SHS MSCs.

2.2 Soil Sampling and Monitoring Well Installation

2.2.1 Soil Borings and Soil Sampling - April 28th, 2016

On April 28th, 2016 Cribbs & Associates advanced six soil borings (SB-1 through SB-6) in and around the path of the former product line from the tank cavity to the dispenser islands and to the north of the dispenser island at the locations shown on **Figure 2**. Prior to drilling activities, the Pennsylvania One Call System (PA One Call) was notified of the pending site assessment activities. The soil borings were installed to delineate the horizontal and vertical extent of soil impacts in the shallow unconfined aquifer observed during the UST system removal activities. The borings were continued to depths ranging from 8.0 feet below the ground surface (bgs) (SB-3, SB-4 and SB-6) to 10.0 feet bgs (SB-1, SB-2 and SB-5).

The borings were advanced utilizing soft dig methods for utility clearance to a depth of two feet bgs then a truck mounted, air rotary drilling rig using 2¹/₄-inch internal diameter (ID) hollow stem augers were used to advance the borings to their total depths. Split spoon soil samples were collected in advance of the augers and screened using a photo-ionization detector (PID). The soil samples and cuttings were observed for color, lithologic classification, density/consistency, the presence of moisture/water, and plasticity. The materials encountered were documented on the boring logs included in **Appendix B**.

The typical soil profile encountered by soil borings SB-1 and SB-2 included several layers of fill starting with a yellowish-brown mix of clay, sand, silt and gravel ranging from 2 feet to 3 feet below ground surface (bgs). The typical soil profile for these borings included between 1.5 to 5.0 feet of brown rounded gravel with minor amounts of clay, sand and silt and wet fill over gray fine-grained sand fill material. Native soil encountered in the bottom 1.0 feet to 1.5 feet bgs included medium brown silty clay, some

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with gray mottling. These two borings (SB-1 and SB-2) were located in the former tank cavity resulting in the multiple layers of fill encountered.

The typical soil profile encountered by soil borings SB-3 through SB-6 included asphalt paving with gravel subbase extending to one to two feet bgs. Brown clay and gravel fill ranging from 1.5 to 5.5 feet thick overlaid the native soil material. The fill was typically thinner closer to the dispenser islands (SB-5 and SB-6). Native soils included brown and gray mottled silty clay with shale fragments, brown silty clay and sand and yellow brown and gray silty clay. Weathered bedrock was not encountered at the total depth of any of the borings.

Strong hydrocarbon odors and/or elevated PID readings were noted in SB-3 (2.0' to 4.0'), and SB-5 (2.0'-4.0'), and slight petroleum odors were observed in SB-4 (4.0' to 6.0'). The soil samples from SB-1, through SB-6 were collected from the horizons with the highest PID readings in each boring, ranging from 4.8 parts per million (ppm) in SB-1 to greater than 5000 ppm in SB-3. Soil borings SB-1, SB-2, and SB-6 did not have any elevated PID readings or have any observed odors.

Soil samples were selected for laboratory analysis based on field observations (odor, staining, elevated PID readings) and being above any saturated zone. At least one soil sample from each soil boring was selected for laboratory analysis, however multiple samples were collected from soil borings SB-3 and SB-4, for vertical delineation purposes. The soil samples were placed on ice and transported to Pace Analytical Laboratories in Greensburg Pennsylvania under chain of custody protocols. The soil samples were analyzed for the "new" (post March 2008) PADEP Shortlist of Petroleum Products. The soil analytical results are presented on **Table 1**.

2.2.2 Soil Borings and Soil Sampling – June 14th, 2016

On June 14th, 2016 Cribbs & Associates advanced eleven additional soil borings (SB-7 through SB-17) covering the area between the previous soil borings and State Route 257 at the locations shown on **Figure 2**. Prior to drilling activities, the Pennsylvania One Call System (PA One Call) was notified of the pending site assessment activities. The soil borings were installed to delineate the horizontal and vertical extent of soil impacts in the shallow unconfined aquifer observed during the UST system removal activities. The borings were all advanced to a depth of 8.0 feet bgs.

The borings were advanced utilizing a truck-mounted Geoprobe® direct push methods using a macro-sampling tube. A new acetate macro-sampling tube liner was used for each four-foot interval sampled. The macro tubes were opened following their recovery and the soil samples were screened using a photo-ionization detector (PID). The soil samples were observed for color, lithologic classification, density/consistency, the presence of moisture/water, and plasticity. The materials encountered were documented on the boring logs included in **Appendix B**.

The typical soil profile encountered by soil borings SB-7 through SB-17 included a layer of fill consisting of gray/brown/black silty clay with gravel and shale fragments. Some locations (SB-12, SB-13, and SB-14) also included slag and brick fragments. The fill continued to depths ranging from 2.5 feet bgs (SB-11) to 5.5 feet bgs (SB-8). Typically, gray brown silty clay with some shale fragments and occasional sand and gravel would underlie the fill material. The gray brown silty clay was frequently underlain by 0.5 feet to 1.5 feet of yellowish brown silty clay with gray mottling. In soil borings SB-9, SB-10, and SB-16, the gray brown silty clay continued to the borings total depth. Soil borings SB-7 through SB-17 typically became saturated (wet) between three feet bgs and five feet bgs. Weathered bedrock was not encountered at the total depth of any of the borings as the borings were terminated in the silty clay material which appeared to restrict the vertical migration of the contamination. PID readings and visual

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observations indicated that the soils were generally clean below a depth of 7 feet. Therefore, soil borings were not advanced through the entire thickness of this silty clay layer due to the potential of creating a pathway for the contamination from the shallow aquifer into a potential deeper aquifer.

Strong hydrocarbon odors and elevated PID readings were noted in nine of the eleven soil borings with only slight odors and moderate PID readings observed in SB-10 and SB-14. The highest PID readings in the other borings ranged as high as 3970 ppm in SB-13 (2.0'-4.0').

Soil samples were selected for laboratory analysis based on field observations (odor, staining, elevated PID readings) and being above any saturated zone. At least one soil sample from each soil boring was selected for laboratory analysis, however multiple samples were collected from soil borings SB-7, SB-11, and SB-16, for vertical delineation purposes. The soil samples were placed on ice and transported to Pace Analytical Laboratories in Greensburg Pennsylvania under chain of custody protocols. The soil samples were analyzed for the "new" (post March 2008) PADEP Shortlist of Petroleum Products for unleaded gasoline parameters. The soil analytical results are presented on **Table 1**.

2.2.3 Monitoring Well Installation – July 8th, 2016

Cribbs & Associates installed five monitoring wells, (MW-1 through MW-5) at the locations shown on **Figure 2** on July 8th, 2016. The wells were installed with MW-1 located along the former product line between the former UST basin and the dispenser island. Monitoring wells MW-2 through MW-5 were located in a line running from south to north along the western property boundary.

Prior to drilling activities, the Pennsylvania One Call System (PA One Call) was notified of the pending site assessment activities. The monitoring wells were installed to evaluate the extent of groundwater impacts in the shallow unconfined aquifer as a result of the soil impacts observed during the UST closure and soil boring activities. The borings for the monitoring wells (MW-1 through MW-5) were advanced to the total depth of 8 feet bgs.

The monitoring wells were advanced utilizing a truck mounted, hollow stem auger drilling rig using 4-1/4-inch internal diameter (ID) hollow stem augers to advance the borings to their total depths. During hollow stem auger drilling activities, no soil sampling activities were conducted and no soil samples were collected because the area had been investigated by the previous soil borings. Monitoring wells MW-3, MW-4 and MW-5 were installed at the same locations used for soil borings SB-12, SB-15 and SB-17, respectively. Nearby soil borings SB-5 and SB-11 were used as the stratigraphic description for MW-1 and MW-2 respectively. The materials encountered were documented on the boring logs included in **Appendix B**.

Following completion of the borings for the monitoring wells, Cribbs & Associates installed permanent monitoring wells (MW-1 through MW-5) at each of the monitoring well boring locations. The monitoring wells were completed as two-inch diameter polyvinyl chloride (PVC) installations with a manufactured slotted (0.010") screen. Six feet of screen were installed in each of the wells. Solid riser was used to continue each well to the ground surface. The annular space surrounding the well screen was filled with medium grained washed silica sand (free of fines) and placed to a depth of approximately one-half foot above the slotted PVC screen section. Following sand placement, bentonite pellets were placed immediately above the sand in the riser section of the well to provide an approximately one-foot thick impermeable seal directly above the screened section. The bentonite pellets were then hydrated. The well installation details are included in **Appendix B**.

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Monitoring wells MW-1 through MW-5 were completed utilizing eight-inch diameter flush mount well protectors set into approximately two feet square formed concrete pads. Each monitoring well was secured with a top mount water tight expandable locking cap assembly.

The five monitoring wells were developed on July 11th and 12th, 2016 and sampled for the first time on July 12th, 2016.

2.2.4 Additional Delineation Soil Borings and Sampling – September 2016

On September 14th, 2016 Cribbs & Associates advanced six additional soil borings (SB-18 through SB-20 and SB-22 through SB-24) stepping out towards the north and south of the previous soil borings along State Route 257 at the locations shown on **Figure 2**. Prior to drilling activities, the Pennsylvania One Call System (PA One Call) was notified of the pending site assessment activities. The soil borings were installed to delineate the horizontal and vertical extent of soil impacts in the shallow unconfined aquifer observed soil boring and monitoring well installation activities. The borings were all advanced to a depth of 8.0 feet bgs.

Three additional soil borings (SB-21, SB-25 and SB-26) were advanced immediately adjacent to previously sampled locations, SB-15, SB-3 and SB-11, respectively, to collect soil samples from areas of known impact in order to obtain disposal approval using Form FC-1 in anticipation of conducting soil excavation as a potential interim remedial activity. Access had been denied for off-site wells on the downgradient property across State Route 257 (Seneca Lawn & Landscape) and the first Quick Domenico modeling using the initial groundwater concentrations from monitoring wells MW-1 through MW-5 indicated that there was a high probability that the benzene plume could reach the unnamed tributary to Lower Twomile Run. However, the decision was made to postpone the soil excavation activities until after the SCR was submitted unless hydrocarbons were documented impacting the waterways of the Commonwealth (Lower Twomile Run). Surface water samples collected on October 4th 2016 did not indicate any impacts, therefore, the proposed soil excavation was put on hold and the disposal samples were not analyzed for all the parameters needed for FC-1 approval.

The borings were advanced utilizing a truck-mounted Geoprobe® direct push methods using a macro-sampling tube. A new acetate macro-sampling tube liner was used for each four-foot interval sampled. The macro tubes were opened following their recovery and the soil samples were screened using a photo-ionization detector (PID). The soil samples were observed for color, lithologic classification, density/consistency, the presence of moisture/water, and plasticity. The materials encountered were documented on the boring logs included in **Appendix B**.

The typical soil profile encountered by soil borings SB-18 through SB-24 included a layer of fill consisting of gray/brown silty clay or sandy silty clay with gravel, sand and shale fragments directly beneath the asphalt at the surface. One location, SB-22, also included a layer of concrete beneath the asphalt but above the fill. The fill continued to depths ranging from 2.5 feet bgs (SB-23) to 7.0 feet bgs (SB-18). Typically, gray silty clay with some shale fragments and occasional sand and gravel would underlie the fill material. The gray brown silty clay was frequently underlain by 1.0 feet to 3.0 feet of light brown silty clay or sandy silty clay often with gray mottling. Soil borings SB-19 and SB-20 typically became saturated (wet) between four feet bgs and seven feet bgs. Weathered bedrock was not encountered at the total depth of any of the borings.

Strong hydrocarbon odors and elevated PID readings were noted in soil borings SB-18, SB-22, SB-23, and SB-24 with only slight odors and moderate PID readings observed in SB-19 and SB-20. The highest PID readings in these borings ranged as high as 952 ppm in SB-18 (6.0'-8.0').

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Soil samples were selected for laboratory analysis based on field observations (odor, staining, elevated PID readings) and being above any saturated zone. One soil sample from soil borings SB-18, SB-19, SB-22 and SB-24 were selected for laboratory analysis. The soil samples were placed on ice and transported to Pace Analytical Laboratories in Greensburg Pennsylvania under chain of custody protocols. The soil samples were analyzed for the “new” (post March 2008) PADEP Shortlist of Petroleum Products for unleaded gasoline parameters. The soil analytical results are presented on **Table 1**.

2.2.5 Monitoring Well Installation – October/November 2016

Monitoring wells MW-6, MW-7 and MW-9 through MW-11 were installed on October 17th and 18th, 2016 in an attempt to delineate the northern, eastern and southern boundary of the groundwater impacts previously identified. Monitoring well MW-8 was installed on November 1, 2016. Monitoring wells MW-6 through MW-11 were advanced and installed in the same manner as the Cribbs wells installed previously. Monitoring wells MW-6, MW-10 and MW-11 were installed without collecting soil samples because they are located directly beneath the overhead powerlines, therefore, the mast used to collect split spoon samples could not be raised. A Geoprobe[®] was used to collect representative soil samples immediately adjacent to these three monitoring wells (MW-6, MW-10 and MW-11) on November 15th, 2016. Monitoring wells MW-6, MW-7, MW-10 and MW-11 were installed to depths ranging from 9.8 feet bgs, to 10.5 feet bgs. Monitoring well MW-8 was advanced to 16.0 feet bgs, while MW-9 has a total depth of 12.5 feet. Between 7.5 feet and 7.75 feet of screen was installed in monitoring wells MW-6, MW-7, MW-10 and MW-11, while 10.0 feet and 13.5 feet of screen were used in MW-9 and MW-8 respectively. Flush mount protective covers were also installed on these six monitoring wells. The boring logs and well installation details for the six wells installed in October and November 2016 are included in **Appendix B**.

The typical soil profile encountered by monitoring well borings MW-6, MW-10 and MW-11 each started with six inches to eight-inches of asphalt over gravel subbase fill material to a depth of approximately one-foot bgs. Monitoring wells MW-7 and MW-8 started in unpaved areas and MW-9 encountered 0.5 foot of gravel at the ground surface. Fill material consisting of silty clay, clay, gravel, shale fragments and slag was encountered to depths ranging from 3.0 feet bgs to 5.0 feet bgs in these wells. Brown and gray silty clay was encountered below the fill material and is native soil. Monitoring wells MW-6, MW-10 and MW-11, the westernmost of these six wells, encountered yellowish brown silty clay from 6.0 feet bgs to their total depths. Monitoring well MW-8 encountered silty sand from 6.0 feet bgs to 13.0 feet bgs before transitioning to a gray and brown silt from 13.0 feet bgs to 15.0 feet bgs. Monitoring well MW-8 as the deepest of these wells was the only boring to encounter a weathered gray shale at the bottom of the boring at 16.0 feet bgs.

A slight hydrocarbon odor and elevated PID readings were only noted in MW-10 (6.0' to 8.0') during the installation of the monitoring well. No odors or elevated PID readings were observed by the Geoprobe sampling adjacent to the monitoring well on November 15th, 2016. Two soil samples were obtained from each of the wells MW-6, MW-10 and MW-11. No odors or elevated PID readings were observed in MW-7, MW-8 or MW-9. Monitoring wells MW-6 and MW-7 were developed on October 18th, 2016 but their initial sampling event was delayed until January 17th, 2017, because the tenants had blocked access to the locations with an immobile car under repair and a pile of firewood, respectively. Monitoring wells MW-8, MW-9 and MW-10 were developed on November 30th, 2016, and the initial groundwater samples were collected on December 6th, 2016. Monitoring well MW-11 did not produce any water and remained dry through the initial sampling events of the other five wells. MW-11 contained approximately a one-foot column of groundwater and was sampled for the first time on February 22nd, 2017.

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2.2.6 Off-Site Monitoring Well Installation – January 2017

Monitoring wells MW-12 through MW-14 were installed on January 24th and 25th, 2017 to delineate the western boundary of the groundwater impacts previously identified and to evaluate if the groundwater impacts are reaching the unnamed tributary to Lower Twomile Run. Monitoring wells MW-12 through MW-14 were advanced and installed in the same manner as the Cribbs wells installed previously. Monitoring wells MW-12, MW-13, and MW-14 were each installed to a depth of 8.0 feet bgs. Six feet of screen was installed in monitoring wells MW-12 through MW-14. The sand pack extended 0.5 foot above the top of the screened interval and approximately one foot of bentonite pellets was placed above the sand pack and hydrated to create a seal to prevent the vertical migration of surface water into the monitoring wells. Flush mount protective covers were also installed on these three monitoring wells. The boring logs and well installation details for the three off-site wells installed in January 2017 are included in **Appendix B**.

The typical soil profile encountered by off-site monitoring well borings MW-12 through MW-14 was typically gray and brown silt and silty clay transitioning to gray silty clay between 5.0 feet bgs and 6.0 feet bgs. Light brown silty clay or sandy silty clay was encountered near the bottom of each boring. The silty clay in the three borings was typically damp to wet.

No hydrocarbon odors were encountered in the three off-site monitoring wells and the only elevated PID reading was observed at the surface of MW-12. One soil sample was obtained from each of the borings and submitted under chain of custody protocols to Pace Analytical Laboratories. Monitoring wells MW-12 through MW-14 were developed on January 25th, 2017 and the initial groundwater samples were collected on February 1st, 2017.

2.2.7 Monitoring Well Installation – May 2017

Monitoring well MW-15 was installed on May 24th, 2017 to delineate the eastern boundary of the groundwater impacts previously identified following the appearance of MTBE in monitoring well MW-8 in the groundwater samples collected on March 29th and April 25th, 2017. Monitoring well MW-15 was advanced and installed in the same manner as the Cribbs wells installed previously. Monitoring well MW-15 was installed to a depth of 12.5 feet bgs. Ten feet of screen was installed in monitoring well MW-15. The sand pack extended 0.5 foot above the top of the screened interval and 1.5 foot of bentonite pellets was placed above the sand pack and hydrated to create a seal to prevent the vertical migration of surface water into the monitoring well. A flush mount protective cover was installed on this monitoring well. The boring logs and well installation details for MW-15 are included in **Appendix B**.

The soil profile encountered by monitoring well boring MW-15 was a dark brown silty clay to a depth of 2.5 feet bgs. Orange brown clay with traces of silt and fine-grained sand were encountered below the silty clay to a depth of 9.5 feet bgs before transitioning to the same orange brown clay with interbedded layers of weathered sandstone to a total depth. The silty clay in the boring was moist and the clays were damp.

No hydrocarbon odors were encountered in monitoring well MW-15, therefore, no soil samples were obtained from this boring. Monitoring wells MW-15 was developed and the initial groundwater sample collected on June 12th, 2017.

2.3 Disposal of Investigation Derived Wastes

The soil cuttings generated during the soil sampling and monitoring well installation activities through July 2016 were added to the impacted soil stockpile created during the excavation of the impacted soil

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and product lines when the former UST system was removed in September 2015. The impacted soil stockpile was located on the adjoining Winger property located immediately east of the Seneca Mini Mart. Heath Oil, Inc. owns the Winger property through a subsidiary. The impacted soil stockpile was estimated to be approximately 150 cubic yards and was encased in 6-mil thick black plastic.

The impacted soil including the soil cuttings added to the soil stockpile were transported off-site for disposal. Sampling of the impacted soil stockpile was conducted on June 23rd, 2016 and a Form FC-1 for the disposal of soil impacted with unleaded gasoline was submitted to a Waste Management's Northwest Sanitary Landfill in West Sunbury, Butler County, PA for approval. On August 24th, 2016, 109.16 tons of impacted soil were transported to the Northwest Sanitary Landfill for disposal. Soil cuttings generated during the installation of monitoring wells MW-6 through MW-15 were placed in 55-gallon DOT drums and stored on the Subject Property. Following the analysis of the soil samples obtained from these wells that documented that none of the contaminants of concern exceeded their respective residential SHS MSCs the soil cuttings were spread on-site.

The decontamination water generated cleaning the drilling equipment, and the groundwater generated during the development and purging of the monitoring wells prior to sampling events and liquid phase hydrocarbons (LPH) recovery efforts was temporarily stored on-site in approved DOT 55-gallon steel drums. The water generated during the investigation was transported to the water treatment facility associated with the Heath Oil bulk storage facility in Barkeyville and subsequently treated. Copies of the disposal documents and waste manifests for the disposal of the soil stockpile and drilling wastes are provided in **Appendix C**.

2.4 Survey of Monitoring Wells and Evaluation of Groundwater Flow Direction

The elevations of the ground surface and the top of casing for each of the initial five groundwater monitoring wells was surveyed by Morris-Knowles & Associates, Inc. in late July, 2016 to determine groundwater elevations and to evaluate the groundwater flow direction. The newer on-site monitoring wells (MW-6 through MW-11) and the off-site monitoring wells (MW-12 through MW-14) were surveyed on April 11th, 2017. MW-15 was surveyed in to the network on July 31st, 2017. At the start of each groundwater sampling event the depth to groundwater was measured in each well and subtracted from the top of casing elevation for that well. The resulting groundwater elevation can be used to evaluate the groundwater flow direction at the Subject Property. **Table 2** presents the elevations for each of the groundwater sampling events conducted at the Subject Property.

Figure 3 presents a groundwater elevation contour map based on the measured groundwater elevations observed in monitoring wells MW-1 through MW-5 during the July 12th, 2016 sampling event. This map indicates that the groundwater flow pattern is generally to the west, however, monitoring well MW-4, located in the line of monitoring wells located adjacent to State Route 257 has the highest measured groundwater elevation. This creates a "bulge" in the groundwater flow map indicating that localized groundwater flow south of MW-4 is towards the southwest and that localized groundwater flow north of MW-4 is towards the northwest. This is may be the result of perched water accumulating in the vicinity of MW-4. The hydraulic gradient averages 0.181 ft./ft. between the high, upgradient, wells (MW-1 and MW-4) and the low, downgradient, wells (MW-2, MW-3 and MW-5).

Figure 4 presents a groundwater elevation contour map based on the measured groundwater elevations observed in wells MW-1 through MW-5 during the October 4th, 2016 sampling event. This map indicates that the groundwater flow pattern is generally to the west, however, monitoring well MW-4, located in the line of monitoring wells located adjacent to State Route 257 has the lowest measured groundwater

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elevation. The water table elevation rose in four of the five wells compared to the July 12th, 2016 measurement, however the water level in monitoring wells MW-2, MW-3 and MW-5 each rose almost four feet while MW-1 rose 0.06 foot and MW-4 dropped by 0.7 foot. The result of the changes in the water table likely reflect the perched conditions in the fill and results in a much shallower gradient because the difference between the high and low groundwater elevations is only 0.8 foot. The hydraulic gradient is 0.022 ft./ft. between the high, upgradient, well MW-1 and the low, downgradient well MW-2. The hydraulic gradient is 0.038 ft./ft. between the high, upgradient, well MW-5 and the low, downgradient well MW-4.

Figure 5 presents a groundwater contour map based on the measured groundwater elevations observed in monitoring wells MW-1 through MW-11 during the January 17th, 2017 sampling event and also includes the groundwater elevations obtained from MW-12, MW-13 and MW-14 from the February 1st, 2017 initial sampling event.

Figures 6 and 7 present the groundwater contour maps based on measurements obtained on March 28th-29th, 2017 and June 12, 2017 sampling events, respectively. All three figures (**Figures 5, 6 and 7**), indicate a localized high groundwater elevation in the vicinity of the former dispenser island with a radial flow towards the surrounding wells. The measured groundwater elevation for MW-11 on the three figures is very low compared the elevations measured in the other monitoring wells. MW-11 was still dry during the January and early February 2017 water level measurements and the well did contain some water during the March 29th 2017 water level measurements. Because MW-11 remained dry for so long it has likely not recovered to its static water level. Similarly, along with MW-11 the depth to water in monitoring wells MW-8 and MW-10 has been less each time since their initial sampling events through June 12, 2017, indicating that these three monitoring wells have not yet attained a true static water level. Monitoring well MW-15 installed on May 24th, 2017 and gauged for the first time on June 12th, 2017, also appears to be slow to attain a static water level.

Monitoring well MW-3 has consistently indicated the highest concentrations of the parameters detected at concentrations that exceed their respective residential and non-residential SHS MSCs. Monitoring well MW-3 is located immediately downgradient of the former dispenser islands. During the October 4th, 2016 gauging event 0.82 feet of LPH were observed in monitoring well MW-3. The product was bailed out of the well and placed into a 55-gallon DOT approved drum and stored on-site for future use. **Section 2.9** details product recovery efforts at the Subject Property following the discovery of LPH in MW-3.

2.5 Groundwater Sampling

Cribbs & Associates performed multiple groundwater sampling events at the Subject Property as part of the characterization activities. The first of these sampling events are only partial events because the initial groundwater samples were collected from wells MW-1 through MW-5 after they were installed. Monitoring wells, MW-1, through MW-5 were initially sampled on July 12th, 2016. On October 4th, 2016 monitoring wells MW-1 through MW-5 were each sampled for the second time. Monitoring wells MW-8, MW-9 and MW-10 were sampled for the first time on December 6, 2016. Monitoring wells MW-6, and MW-7 were delayed because a car under repair and a pile of firewood blocked access to these wells. MW-6 and MW-7 were sampled for the first time on January 17th, 2017. Monitoring well MW-11 was slow to make water, evidently clay material in the well became smeared across the water bearing zone during the drilling operations and MW-11 did not contain sufficient volume of water to be sampled until February 22nd, 2017. The off-site monitoring wells MW-12 through MW-14 were initially sampled on February 1st, 2017. The first sampling event to include all fourteen monitoring wells in one sampling

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event was conducted on March 28th and 29th, 2017. Monitoring well MW-15 was initially sampled on June 12th, 2017 and the follow up sampling was conducted on July 31st, 2017.

Prior to conducting each of the groundwater sampling activities, static groundwater level measurements were obtained from each monitoring well in order to calculate groundwater elevations, as discussed above. These measurements are recorded on **Table 2**. These groundwater measurements were also used to determine the volume of water in each of the wells, to evaluate the water table elevation and groundwater flow direction.

Prior to sampling, the monitoring wells were purged using low flow pumping techniques as recommended in “Standard Operating Procedure for Low-Stress (Low-Flow)/Minimal Drawdown Ground-Water Sample Collection” and referenced from the USEPA Groundwater Issue Paper “Low-Flow (Minimal Drawdown) Groundwater Sampling Procedure, by Robert W. Puls and Michael J. Barcelona”.

Each well was purged using dedicated polyethylene tubing and a dedicated micro-purge low flow stainless steel submersible air lift (bladder) pump. As the wells were purged, the discharge water was pumped through a low-flow analysis chamber with a multi-parameter water quality sensor until all parameters (temperature, specific conductance, dissolved oxygen, pH, and ORP) had stabilized. Once the parameters had stabilized, the low-flow analysis chamber was removed and samples were collected directly into laboratory supplied sample containers with the appropriate preservatives. The samples were immediately placed on ice and delivered to Pace Analytical Laboratories in Greensburg, Pennsylvania under proper chain of custody. The samples were received by Pace laboratories in acceptable condition and ice was present in the cooler at the time of delivery. The samples were subsequently analyzed for the PADEP “new” shortlist of unleaded gasoline volatile organic compounds (VOCs) parameters including benzene, toluene, ethylbenzene, total xylene, MTBE, cumene, naphthalene, 1,2,4-TMB and 1,3,5-TMB. The laboratory analytical results are presented on **Table 3** and discussed further in **Section 4.2**.

All purge water generated during sampling activities was placed in 55-gallon, DOT approved drums. Because low flow sampling techniques were used, typically less than one drum of purge water and equipment decontamination water was generated per sampling event. The water generated during the groundwater sampling events was transported to the Heath Oil bulk fuel facility located in Barkeyville and its associated water treatment facility and subsequently treated. Copies of the waste disposal documentation are provided in **Appendix C**.

2.6 Soil Vapor Monitoring Point Installation

Soil vapor intrusion was evaluated as part of the site characterization activities as residential and non-residential SHSs were exceeded in the groundwater at the Subject Property. Two soil vapor points (VP-1 and VP-2) were installed at locations identified on **Figure 2** on August 30th, 2016. VP-1 was installed through the asphalt paving immediately in front of the Subject Property building. VP-2 was installed through the concrete pad abutting the south side of the building. Because the vapor points were installed through non-permeable surfaces that extend completely to the on-site structure these vapor points can be utilized under the “new” January 2017, Act 2 Technical Guidance Manual for Vapor Intrusion into Buildings regulations as sub-slab vapor points. Exposure pathways for soil vapor intrusion of chemicals of potential indoor air concern (COPIACs) were identified and the vapor points were installed as per the requirements of the site characterization.

Each of the vapor monitoring points was installed to depths of 2 feet below grade. Each vapor point was installed with a soil gas collection point constructed of 1”-diameter by 1-foot long, slotted PVC screen.

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The vapor monitoring points were dug via soft-dig methods (hand auger) and hand digging to remove the large cobbles and/or boulders. Once the borings were extended to an approximate depth of 2.0 feet, the PVC screen was installed to the base of the excavation. The screen was attached to 3/8" Teflon tube which extended to ground surface. The tubing was fitted with a neoprene sampling valve to allow for the collection of soil vapor samples. Medium coarse silica sand was then placed in the boring to a depth of approximately 0.5 feet (0.5 feet above the top of the soil vapor screen). The surface seal consists of bentonite pellets which were hydrated providing an air-tight surface seal. Steel manhole lids were installed at each location within a concrete surface pad to secure and protect the vapor monitoring points. The vapor point installation details are included in **Appendix B**.

Vapor samples were collected from the soil vapor monitoring points on October 4th, 2016 and confirmatory samples were collected on May 3rd, 2017. Evacuated (under vacuum) stainless steel canisters were connected to the sampling valve using a minimal length of clean polyethylene tubing, and the valves were then opened and the vacuum in the canister was allowed to equilibrate, drawing vapors from the monitoring point into the canister. After nearly equilibrating, the valves were closed prior to disconnecting the tubing. The canisters were delivered to Pace in Greensburg, PA and analyzed for the "new shortlist" for unleaded gasoline parameters utilizing U.S.EPA Method TO-15 including the following parameters; benzene, toluene, ethylbenzene, total xylene, MTBE, cumene, naphthalene, 1,2,4-TMB and 1,3,5-TMB.

2.7 Aquifer Characteristic Testing

To obtain general aquifer characterization data, slug tests were performed on three of the monitoring wells. Slug tests were conducted on monitoring wells MW-1, MW-2 and MW-4 on September 1st, 2016. Because these initial slug tests were all conducted on monitoring wells located near the dispenser islands and, therefore, in predominantly fill material, additional slug tests were conducted on September 7, 2017 on monitoring wells MW-10 and MW-11 to evaluate the hydraulic conductivity of the wells installed in mostly natural unconsolidated soils. Slug testing activities were performed on the monitoring wells to provide hydro-geologic data for contaminant migration evaluation during fate and transport modeling.

Prior to starting the slug tests, static water levels were recorded in each of the monitoring wells. A down-hole data logger (Solinst Levellogger) was subsequently lowered into the well and secured approximately 1 foot from the bottom of the well. The relative height of the water column above the data logger was then measured and recorded using the accompanying Levellogger software, manufactured by Solinst, Inc. Using this data collection system, water elevations (data points) were collected at one-second intervals, with a maximum of 7,200 records (2 hour) test duration, throughout the testing procedure.

A 1.0- inch diameter test slugs were placed in the well to provide initial water displacement in the well, (water level increase). Typically, a three-foot long slug was used for the wells. The previously emplaced downhole data logger recorded the change in the height of the water column at an interval of once per second as it returned to the original static water level (SWL) in each well (falling head test). Once the height of the water column returned to near static water level, the slug was then removed, (water level decrease). The data logger collected water level data at an interval of once per second as the water level gradually recovered (rising head test) to near static water level. Falling head tests and rising head tests were performed in each of the wells tested.

2.8 Stream Sampling

Grab samples were collected from the unnamed tributary to Lower Twomile Run on October 4th, 2016. The unnamed tributary is located on the opposite side of State Route 257. The Upstream sample was

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collected from a location approximately 100 feet south of where the stream emerges from the culvert that passes beneath the intersection of State Route 257 and Bredinsburg Road/East State Road. The Downstream sample was collected from the unnamed tributary at a location roughly west-southwest of MW-14. This location is downstream of the shortest distance from the most impacted monitoring well (MW-3) to the unnamed tributary. The stream sample locations are indicated on **Figure 2**. Additional stream samples were collected on March 29th, 2017 and June 12th, 2017 as part of the quarterly sampling events along with groundwater samples from all the existing monitoring wells. The stream samples were delivered under chain of custody protocols to Pace in Greensburg, PA and analyzed for the “new shortlist” for unleaded gasoline parameters utilizing U.S.EPA Method TO-15 including the following parameters; benzene, toluene, ethylbenzene, total xylene, MTBE, cumene, naphthalene, 1,2,4-TMB and 1,3,5-TMB. The results of the stream samples are presented on **Table 3**. None of the parameters analyzed were detected at any concentration exceeding the laboratory method detection limit in either stream sample, therefore no impacts were observed.

2.9 Free Product Recovery

During the October 4th, 2016 gauging event, 0.82 feet of LPH were observed in monitoring well MW-3. Monitoring well MW-3 is located immediately downgradient of the former dispenser islands. Approximately 0.5 gallon of the product was bailed out of the well and placed into a 55-gallon DOT approved drum and stored on-site pending off-site disposal. An absorbent sock was placed into monitoring well MW-3 following the bailing of the LPH. On November 3rd, 2016, the absorbent sock was found to be saturated and replaced, no measurements were made on that date. On November 10th, 2016, the absorbent sock was saturated and removed. The LPH thickness on November 10th, 2016 was measured to be 0.3 foot. The LPH was stratified with an approximately one-inch thick dark weathered product layer over a yellowish-brown layer that was a mix of product and water. Monitoring well MW-3 was bailed again recovering approximately 0.5 gallon of LPH and a fresh absorbent sock was placed into the monitoring well. The LPH thickness in MW-3 has been reduced to less than 0.25-inch and product recovery by hand bailing and absorbent socks has been conducted weekly through mid-December 2016 and roughly every other week since then.

In early February (February 9th, 2017), a sheen of petroleum hydrocarbons was observed in monitoring wells MW-2 and MW-4 during product recovery efforts from MW-3. Although no measurable product thickness was measured an absorbent sock was inserted in each of these wells. Subsequently a sheen of petroleum hydrocarbons has been observed in MW-5 on February 22, 2017 and MW-1 on March 7th, 2017. Absorbent socks were placed in these wells following the observation of the sheens. Product recovery efforts continue in monitoring wells MW-1 through MW-5. Other than MW-3, measurable product thickness has only been observed once in MW-4 on March 7th, 2017. **Table 4** presents the results of the product recovery efforts including measured product thicknesses, product recovered by bailing and estimated product recovered by absorbent socks. The estimated volume of the LPH recovered through bailing and absorbent socks is approximately 6.4794 gallons through August 10th, 2017.

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3.0 GEOLOGIC SETTING

3.1 Topography

The project Site is located on the east side of State Route 257 approximately 200 feet south of the intersection with Bredinsburg/East State Road. In the vicinity of the Subject Property the ground surface slopes gently to the west. As indicated in **Figure 1** the ground surface at the Subject Property is approximately 1,450 feet above mean sea level (amsl). The high point on the Subject Property is approximately 1,453 feet amsl along the eastern property line behind the existing building and the low point is in the southwest corner with an approximate elevation of 1,448 feet amsl. Therefore, the Subject Property only has a total topographic relief of approximately five feet. An unnamed tributary to Lower Twomile Run is located approximately 90 feet west of the Subject Property on the opposite side of State Route 257. The unnamed tributary to Lower Twomile Run flows to the south before turning towards the southwest and joining Lower Twomile Run approximately 2 miles southwest of the Subject Property. Lower Twomile Run generally flows to the west entering the Allegheny River approximately 5.25 miles west of the Subject Property. In general, this portion of Seneca, Pennsylvania is located in an area of small, gently rolling hills on top of a plateau. The plateau is bounded with deep steeply sided valleys incised by the major rivers such as the Allegheny River and its major tributaries. The maximum relief in the area is approximately 250 feet, with a high elevation of approximately 1,540 feet amsl on nearby hills to the east of the Subject Property and the Allegheny River at approximately 1,000 feet amsl.

3.2 Regional Geology

The Subject Property is located within the Appalachian Plateaus Physiographic Province. It is located at the boundary between the Glaciated Pittsburgh Plateau Section and the Pittsburgh Low Plateau Section. The Glaciated Pittsburgh Plateau Section is characterized by smooth to irregular, undulating topography with shallow to moderate deranged wandering streams while the Pittsburgh Low Plateau Section is characterized by broad rolling plateaus separated by relatively narrow, steep walled, moderately incised valleys (The Geology of Pennsylvania, Charles H. Shultz, 1999, PA DCNR).

Stratigraphically, the bedrock underlying the Subject Property is located within the Pennsylvanian Aged rocks of the Pottsville Group (Pp). The Pottsville Group (Pp) consists of predominantly gray sandstone and conglomerate with thin beds of shale, claystone, limestone and coal. The base of the Pottsville Group is defined as the unconformity with the underlying Mississippian Age Shenango Formation (Ms). The Shenango Formation is predominantly light gray sandstone and medium gray shale with the upper third of the formation being more shaly. The boundary of the Pleistocene Age glacial till of the Mapledale Till of the Illinoian Stage as indicated on the Geologic Map of Pennsylvania intersects the Subject Property location.

The United States Department of Agriculture, Natural Resources Conservation Service, Soil Survey of Venango County identifies the soil type at the Subject Property as Brinkerton Silt Loam in the northwest corner of the parcel and Cavode Silt Loam over the majority of the Subject Property. The Brinkerton Silt Loam consists of deep, poorly drained soils that developed on uplands along narrow drainage ways in material weathered from shale and sandstones. The Cavode Silt Loam consists of deep, somewhat poorly drained soils that developed on nearly level uplands in material weathered from siltstone and shale.

The bedrock structure typically has moderate to low amplitude folds. Topographic relief is typically caused by glacial features, and fluvial erosion. Based on the elevations of the contacts between the Pennsylvania Age Pottsville Group and the underlying Mississippian Age Shenango Formation in the

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stream valleys observed on the Cranberry PA Map in the Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania, the dip of the bedrock and the primary groundwater flow component within the bedrock is assumed to be toward the northwest (approximately N64°W at 0.65°).

3.3 Site Geology

Cribbs & Associates advanced six soil borings (SB-1 through SB-6) and five borings for monitoring wells (MW-1 through MW-5) at the Subject Property utilizing hollow stem auger drilling methods. Soil borings SB-7 through SB-20 and SB-22 through SB-24 were advanced using direct push Geoprobe® methods. Split spoon samplers were driven ahead of the augers in order to obtain undisturbed samples of the materials encountered for SB-1 through SB-6 and macro cores were used to collect undisturbed soil samples during the Geoprobe® investigations. Monitoring wells MW-6, MW-7 and MW-9 through MW-11 were installed on October 17th and 18th, 2016 in an attempt to delineate the northern, eastern and southern boundary of the groundwater impacts previously identified. Monitoring well MW-8 was installed on November 1, 2016. Monitoring wells MW-6 through MW-11 were advanced and installed in the same manner as the Cribbs wells installed previously. Monitoring wells MW-6, MW-10 and MW-11 were installed without collecting soil samples because they are located directly beneath the overhead powerlines, therefore, the mast used to collect split spoon samples could not be raised. A Geoprobe® was used to collect representative soil samples immediately adjacent to these three monitoring wells (MW-6, MW-10 and MW-11) on November 14th, 2016. Monitoring wells MW-12 through MW-14 were advanced using split spoon samplers ahead of hollow stem augers and installed on January 24th and 25th, 2017. The off-site wells were installed in the same manner as the Cribbs wells installed previously.

The soil samples and cuttings were utilized to describe the unconsolidated materials encountered as well as to conduct headspace screening and soil sampling activities as described above in **Section 2.2**. The soil borings and monitoring wells were typically advanced to total depths ranging from 8 feet bgs to 10.0 feet bgs. Only the boring for monitoring well MW-8 was advanced to a depth of 16.0 feet bgs. The materials encountered by the soil borings and the monitoring wells are described on the boring logs presented in **Appendix B**.

The typical soil profile encountered by soil borings SB-1 and SB-2 included several layers of fill starting with a yellowish-brown mix of clay, sand, silt and gravel ranging from 2 feet to 3 feet below ground surface (bgs). The typical soil profile for these borings included between 1.5 to 5.0 feet of brown rounded gravel with minor amounts of clay, sand and silt and wet fill over gray fine-grained sand fill material. Native soil encountered in the bottom 1.0 feet to 1.5 feet bgs included medium brown silty clay, some with gray mottling. These two borings (SB-1 and SB-2) were located in the former tank cavity resulting in the multiple layers of fill encountered.

The typical soil profile encountered by soil borings SB-3 through SB-6 included asphalt paving with gravel subbase extending to one to two feet bgs. Brown clay and gravel fill ranging from 1.5 to 5.5 feet thick overlaid the native soil material. The fill was typically thinner closer to the dispenser islands (SB-5 and SB-6). Native soils included brown and gray mottled silty clay with shale fragments, brown silty clay and sand and yellow brown and gray silty clay. Weathered bedrock was not encountered at the total depth of any of the borings.

The typical soil profile encountered by soil borings SB-7 through SB-17 included a layer of fill consisting of gray/brown/black Silty Clay with gravel and shale fragments. Some locations (SB-12, SB-13, and SB-14) also included slag and brick fragments. The fill continued to depths ranging from 2.5 feet bgs (SB-11) to 5.5 feet bgs (SB-8). Typically, gray brown silty clay with some shale fragments and occasional

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sand and gravel would underlie the fill material. The gray brown silty clay was frequently underlain by 0.5 feet to 1.5 feet of yellowish brown silty clay with gray mottling. In soil borings SB-9, SB-10, and SB-16, the gray brown silty clay continued to the borings total depth. Soil borings SB-7 through SB-17 typically became saturated (wet) between three feet bgs and five feet bgs. Weathered bedrock was not encountered at the total depth of any of the borings.

Monitoring wells MW-3, MW-4 and MW-5 were installed at the same locations used for soil borings SB-12, SB-15 and SB-17, respectively. Nearby soil borings SB-5 and SB-11 were used as the lithologic description for MW-1 and MW-2 respectively.

The typical soil profile encountered by soil borings SB-18 through SB-24 included a layer of fill consisting of gray/brown silty clay or sandy silty clay with gravel, sand and shale fragments directly beneath the asphalt at the surface. One location, SB-22, also included a layer of concrete beneath the asphalt but above the fill. The fill continued to depths ranging from 2.5 feet bgs (SB-23) to 7.0 feet bgs (SB-18). Typically, gray silty clay with some shale fragments and occasional sand and gravel would underlie the fill material. The gray brown silty clay was frequently underlain by 1.0 feet to 3.0 feet of light brown silty clay or sandy silty clay often with gray mottling. Soil borings SB-19 and SB-20 typically became saturated (wet) between four feet bgs and seven feet bgs. Weathered bedrock was not encountered at the total depth of any of the borings.

The typical soil profile encountered by monitoring well borings MW-6, MW-10 and MW-11 each started with six inches to eight-inches of asphalt over gravel subbase fill material to a depth of approximately one-foot bgs. Monitoring wells MW-7 and MW-8 started in unpaved areas and MW-9 encountered 0.5 foot of gravel at the ground surface. Fill material consisting of silty clay, clay, gravel, shale fragments and slag was encountered to depths ranging from 3.0 feet bgs to 5.0 feet bgs in these wells. Brown and gray silty clay was encountered below the fill material and is native soil. Monitoring wells MW-6, MW-10 and MW-11, the westernmost of these six wells, encountered yellowish brown silty clay from 6.0 feet bgs to their total depths. Monitoring well MW-8 encountered silty sand from 6.0 feet bgs to 13.0 feet bgs before transitioning to a gray and brown silt from 13.0 feet bgs to 15.0 feet bgs. Monitoring well MW-8 as the deepest of these wells was the only boring to encounter a weathered gray shale at the bottom of the boring at 16.0 feet bgs.

The typical soil profile encountered by off-site monitoring well borings MW-12 through MW-14 was typically gray and brown silt and silty clay transitioning to gray silty clay between 5.0 feet bgs and 6.0 feet bgs. Light brown silty clay or sandy silty clay was encountered near the bottom of each boring. The silty clay in the three borings was typically damp to wet.

The soil profile encountered by monitoring well boring MW-15 was a dark brown silty clay to a depth of 2.5 feet bgs. Orange brown clay with traces of silt and fine-grained sand were encountered below the silty clay to a depth of 9.5 feet bgs before transitioning to the same orange brown clay with interbedded layers of weathered sandstone to a total depth. The silty clay in the boring was moist and the clays were damp.

Strong hydrocarbon odors and/or elevated PID readings were noted in SB-3 (2.0' to 4.0'), and SB-5 (2.0'-4.0'), and slight petroleum odors were observed in SB-4 (4.0' to 6.0'). The highest PID readings in borings SB-1, through SB-6, ranged from 4.8 parts per million (ppm) in SB-1, to greater than 5,000 ppm in SB-3. Soil borings SB-1, SB-2, and SB-6 did not have any elevated PID readings or hydrocarbon odors.

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Strong hydrocarbon odors and elevated PID readings were noted in nine of soil borings SB-7 through SB-17 with only slight odors and moderate PID readings observed in SB-10 and SB-14. The highest PID readings in the other borings ranged as high as 3,970 ppm in SB-13 (2.0'-4.0').

Strong hydrocarbon odors and elevated PID readings were noted in soil borings SB-18, SB-22, SB-23, and SB-24 with only slight odors and moderate PID readings observed in SB-19 and SB-20. The highest PID readings in these borings ranged as high as 952 ppm in SB-18 (6.0'-8.0').

Of the monitoring wells installed in October and November, only MW-10 (7.0' to 9.0') indicated elevated PID readings and a slight hydrocarbon odor. No hydrocarbon odors were encountered in the three off-site monitoring wells and the only elevated PID reading was observed at the surface of MW-12. These elevated PID readings in the surface soils were most likely not associated with the reported release at the Seneca Mini Mart. No hydrocarbon odors were encountered in monitoring well MW-15, therefore, no soil samples were obtained from this boring.

The subsurface conditions including the areas of petroleum hydrocarbon impacts at the Subject Property and surrounding properties area are better described by a series of cross sections presenting the subsurface geology, soil sample intervals where the analytical results exceed the residential and non-residential SHS MSCs, PID readings corresponding to the soil intervals, and the location of monitoring wells that exceed groundwater residential and non-residential SHS MSCs relative to those wells and borings exhibiting soil impacts. **Figure 8** presents the Site Plan indicating the locations of the Cross Sections A – A' through E – E'. **Figures 9** through **13** present the detailed cross sections for Cross Sections A – A' through E – E', respectively.

The cross sections indicate that the majority of the soil and groundwater impacts are most prevalent in the vicinity of the former dispenser islands, between the dispenser islands and State Route 257. The impacted area extends to just north of SB-18 and southward to SB-22. The majority of the impacts appear to be concentrated in the fill material and the brown and gray silty clay. The analytical results and PID headspace readings associated with the underlying yellowish brown silty clay are noticeably lower indicating that the change in lithology appears to coincide with a change in permeability that restricts the vertical migration of the impacts.

3.4 Site Hydrogeology

3.4.1 Surface Water

An unnamed tributary to Lower Twomile Run is located approximately 90 feet west of the Subject Property across State Route 257. The unnamed tributary flows to the south before turning towards the southwest joining Lower Twomile Run approximately 2 miles southwest of the Subject Property. Lower Twomile Run generally flows to the west entering the Allegheny River approximately 5.25 miles west of the Subject Property. The topography and the unnamed tributary to Lower Twomile Run are shown on the Site Location Map included as **Figure 1**. Because much of the Subject Property is relatively flat and covered with poorly drained soils it is not uncommon to have puddles of standing water on the non-paved area of the Subject Property following precipitation events. The nearest surface water to the Subject Property is the unnamed tributary to Lower Twomile Run, almost directly across State Route 257 from the Subject Property.

Shallow perched groundwater frequently exists in the unconsolidated soil above the soil overburden/bedrock interface. Typically, in this region, the surface of the bedrock mimics the ground surface topography. Therefore, the inferred direction of shallow groundwater flow within the

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unconsolidated soil zone across the Subject Property is expected to be toward the west or southwest, since the Site slopes gently from the east to west.

In the vicinity of the former dispenser island, particularly, monitoring wells MW-1 through MW-5 groundwater is very shallow, frequently less than 2.0 feet below the top of casing (btoc). Precipitation from the canopy is discharged to the ground surface where the former dispenser island was removed. This water infiltrates into the fill material creating a shallow bath tub. The yellowish brown silty clay observed in soil borings SB-6, SB-7, SB-8, SB-11, SB-12, SB-13, SB-14, SB-15 and SB-17 and monitoring wells MW-2 through MW-6, MW-10 and MW-11 at depths ranging from 6.0 feet bgs to 7.5 feet bgs appears to be a confining layer preventing the vertical migration of groundwater and the contaminants of concern. The depth to water of the other surrounding monitoring wells (MW-6 through MW-14) is typically 1.5 feet to 2.0 feet deeper than the water elevations observed in the bath tub area.

3.4.2 Groundwater Occurrence

The first five monitoring wells installed at the Subject Property are screened across the shallow unconfined aquifer, with total depths of 8.0 feet bgs. These wells initially had water levels that are between 1.19 feet btoc (MW-4, July 12th, 2016) and 5.72 feet btoc (MW-5, July 12th, 2016). The October 4th, 2016 measurements indicated a narrower range in the depth to groundwater readings ranging from 1.03 feet btoc (MW-5) to 1.89 feet btoc (MW-4). The January 17th, 2017 measurements indicated that the depth to the groundwater surface ranged from 0.89 feet btoc (MW-2) to 1.16 feet btoc (MW-1). The March 29th, 2017 measurements indicated that the depth to the groundwater surface ranged from 0.95 feet btoc (MW-3) to 1.53 feet btoc (MW-1). Monitoring wells MW-1 through MW-5 are used to monitor the perched shallow unconfined aquifer in the unconsolidated material. All the monitoring wells were kept shallow to avoid penetrating a layer of cleaner yellow brown silty clay identified below the most impacted horizons.

The initial depth to groundwater measurements in monitoring wells MW-8 (11.60 feet btoc), MW-9 (10.18 feet btoc), and MW-10 (8.5 feet btoc) indicated that these wells had not yet fully recharged following their installations. Measurements at later dates (January 17th, 2017 and March 29th, 2017 indicated much higher groundwater table elevations in these wells. Monitoring well MW-11 remained dry until February 22nd, 2017 and may still not have reached its true water table elevation as of the March 19th, 2017 reading. The delays in these wells recharge was likely due to the clay materials in the native soils. From their initial measurement through June 13th, 2017 the depth to water observed in monitoring wells MW-8, MW-10 and MW-11 has progressively decreased, indicating that the measured water level has continued to rise. Therefore, it appears that the true static water level in these wells has not been attained. Since monitoring well MW-11 was initially dry for several months it appears that clays in these wells continues to retard groundwater inflow.

The depth to groundwater in the off-site monitoring wells (MW-12, MW-13 and MW-14), located near the unnamed tributary to Lower Twomile Run, ranged from 3.16 feet below top of casing (btoc) to 5.61 feet btoc.

3.4.3 Groundwater Flow

Groundwater elevations have been obtained from the monitoring wells typically during their initial sampling event. Monitoring wells MW-1 through MW-5 were gauged for the first time on July 12th, 2016.

Figure 3 presents a groundwater elevation contour map based on the measured groundwater elevations observed in monitoring wells MW-1 through MW-5 during the July 12th, 2016 sampling event. This map

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indicates that the groundwater flow pattern is generally to the west, however, monitoring well MW-4, located in the line of monitoring wells located adjacent to State Route 257 has the highest measured groundwater elevation. This creates a “bulge” in the groundwater flow map indicating that localized groundwater flow south of MW-4 is towards the southwest and that localized groundwater flow north of MW-4 is towards the northwest. This may be the result of perched water accumulating in the vicinity of MW-4.

Figure 4 presents a groundwater elevation contour map based on the measured groundwater elevations observed in wells MW-1 through MW-5 during the October 4th, 2016 sampling event. This map indicates that the groundwater flow pattern is generally to the west, however, monitoring well MW-4, located in the line of monitoring wells located adjacent to State Route 257 has the lowest measured groundwater elevation. The water table elevation rose in four of the five wells compared to the July 12th, 2016 measurement, however the water level in monitoring wells MW-2, MW-3 and MW-5 each rose almost four feet while MW-1 rose 0.06 foot and MW-4 dropped by 0.7 foot. The result of the changes in the water table likely reflect the perched conditions in the fill and results in a much shallower gradient because the difference between the high and low groundwater elevations is only 0.8 foot. The hydraulic gradient is 0.022 ft./ft. between the high, upgradient, well MW-1 and the low, downgradient well MW-2. The hydraulic gradient is 0.038 ft./ft. between the high, upgradient, well MW-5 and the low, downgradient well MW-4.

Following the installation of monitoring wells MW-6 through MW-11 it appears the MW-6 and MW-7 also are screened in the shallow perched unconsolidated aquifer, but that monitoring wells MW-8 through MW-11 made very little water, initially. This could be the result of significant amount of clay in the native soils. Additionally, these four wells do not appear to show connection to the saturated sand and gravel material in the vicinity of the former dispenser islands in front of the Seneca Mini Mart building.

Figure 5 presents a groundwater contour map based on the measured groundwater elevations observed in monitoring wells MW-1 through MW-11 during the January 17th, 2017 sampling event and also includes the groundwater elevations obtained from MW-12, MW-13 and MW-14 from the February 1st, 2017 initial sampling event. **Figures 6 and 7** present the groundwater contour maps based on measurements obtained on March 28th-29th, 2017 and June 12, 2017, sampling events, respectively. All three figures (**Figures 5, 6 and 7**), indicate a localized high groundwater elevation in the vicinity of the former dispenser island with a radial flow towards the surrounding wells. The measured groundwater elevation for MW-11 on the three figures is very low compared the elevations measured in the other monitoring wells. MW-11 was still dry during the January and early February 2017 water level measurements and the well did contain some water during the March 29th, 2017 water level measurements. Because MW-11 remained dry for so long it has likely not recovered to its static water level. Similarly, along with MW-11 the depth to water in monitoring wells MW-8 and MW-10 has been less each time since their initial sampling events through June 12, 2017, indicating that these three monitoring wells have not yet attained a true static water level. Monitoring well MW-15 installed on May 24th, 2017 and gauged for the first time on June 12th, 2017, also appears to be slow to attain a static water level.

Groundwater impacts, which will be discussed in greater detail in **Section 4.2**, indicate that the groundwater flow direction in the shallow unconfined aquifer must predominantly be to the west as evidenced by impacts observed in MW-3 (highest initial concentrations for most parameters), MW-1, MW-2, MW-4, MW-5, and to a much lesser degree MW-10 with impacts spread across wells from the north to the south of MW-3. High concentrations of benzene, ethylbenzene, toluene, total xylenes, MTBE, 1,2,4-TMB and 1,3,5-TMB exceeding the residential and non-residential SHS MSCs were

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observed in MW-3. Lower concentrations were observed in MW-5 (six exceedances), MW-2 (five exceedances), MW-4 (four exceedances), MW-1 (four exceedances) and MW-10 (two exceedances). The initial sampling event for MW-8, on December 6th, 2016, indicated no exceedances, however, the second-round groundwater sample obtained from MW-8 on March 28th, 2017 indicated an exceedance for MTBE with the highest concentration of MTBE (422 µg/l) observed on-site to that date. A single sample was collected from Monitoring well MW-8 on April 25th, 2017 to confirm the March 28th result. The analysis of the sample indicated an increase in the MTBE concentration to 520 µg/l. MW-8 was sampled for the fourth time on June 12th, 2017. Monitoring well MW-15 was installed to delineate the eastern edge of the plume beyond MW-8. The lack of impacts in monitoring wells MW-6, MW-7, MW-9, MW-11 and MW-15 indicates the limits of the plume in those directions and that impacted groundwater is not traveling to the north, east or south. The lack of impacts in off-site and downgradient monitoring wells MW-12, MW-13 and MW-14 to the west indicated that the leading edge of the plume is under State Route 257 and that the impacts have not made it to the unnamed tributary to Lower Twomile Run yet.

3.4.4 Aquifer Characterization

Slug tests were conducted on monitoring wells MW-1, MW-2, and MW-4 on September 1st, 2016. Because the initial slug tests were all conducted on monitoring wells located near the dispenser islands and, therefore, in predominantly fill material, additional slug tests were conducted on September 7, 2017 on monitoring wells MW-10 and MW-11 to evaluate the hydraulic conductivity of the monitoring wells installed primarily in native soil material. Slug testing activities were performed on the monitoring wells to provide hydro-geologic data for contaminant migration evaluation during fate and transport modeling as described above in **Section 2.4**. Both falling head and rising head tests were conducted in each of the monitoring wells.

The data collected using the Solinst Levellogger was plotted in the field to examine the raw data and corresponding curve for valid test confirmation. The data file was subsequently extracted into a spreadsheet where the data could then be filtered and interpreted using an excel spreadsheet based Hvorslev Method for determination of hydraulic conductivity. **Table 5** presents the Aquifer Characteristics.

Appendix D presents the individual hydraulic conductivity excel worksheet (Hvorslev) for each of the slug testes performed. The geometric mean of the hydraulic conductivities for the three initial monitoring wells slug tested, including both the falling head and rising head results, at the Subject Property is 1.104 ft./day or 5.716E⁻⁴ cm/sec. The geometric mean of the hydraulic conductivities for the September 7th, 2017 tests on MW-10 and MW-11, including both the falling head and rising head results, at the Subject Property is 0.1279 ft./day or 4.510E⁻⁵ cm/sec. The native soils are apparently almost one order of magnitude less conductive than the wells in the fill material.

The groundwater seepage velocity (average linear velocity) for the shallow unconfined aquifer has been calculated using the equation below:

$$V = \frac{-K}{n} \frac{\delta h}{\delta l}$$

Where: V = Average Velocity
 $-K$ = Hydraulic Conductivity
 n = Porosity

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$$\frac{\delta h}{\delta l} = \text{Hydraulic Gradient}$$

Using the measured hydraulic gradient from monitoring wells MW-3 to MW-13, measured on June 12, 2017 is 0.079 ft./ft., the calculated hydraulic conductivity geometric mean value of 1.104 ft./day (or 5.716E^{-4} cm/sec.), and an estimated effective porosity of 35 percent for unconsolidated soil and fill, a groundwater seepage velocity (average linear velocity) of 0.2492 ft./day has been calculated for the shallow unconsolidated aquifer installed in the fill material surrounding the dispenser island. A groundwater seepage velocity of 0.02886 ft./day was calculated for unconsolidated aquifer installed in the native soil.

3.5 Subsurface Utilities

Subsurface utilities in the vicinity of the impacted soil and groundwater at the Subject Property could act as preferential migration pathways for impacted groundwater and or vapors. The structure on the Subject Property is serviced by municipal water, sanitary sewer, and natural gas. **Figure 2** presents the locations of the subsurface utilities in the vicinity of the Subject Property.

The municipal water line enters the Subject Property and the on-site structure from the north side of the building and continues on to the south to service the building on the adjoining Seneca Motors used car lot. The municipal water line is approximately two to four feet below the ground surface and the majority of the line is not located within the area of soil or groundwater impacts. The exception to this is the section of water line located just west of monitoring well MW-8 where the water line could intersect the water table.

Sanitary sewer lines are located along both sides of State Route 257, with the eastern line under the curb line and the western line under the traffic lanes. According to Mr. Mike Erwin of the Cranberry Township Utility Department the sanitary sewer lines are 8-inch diameter terra cotta pipes buried at a depth of eight feet bgs. The service line to the Subject Property building runs from the manhole north of MW-5 to the northeast corner of the Subject Property structure. The sanitary sewer line on the east side of State Route 257 is located in the area with the most heavily impacted soil and groundwater, however, its depth of eight feet bgs puts it below the bulk of the impacts.

Storm sewer lines are present along State Route 257 at locations north and south of the Subject Property. These storm sewer lines run perpendicular to the highway, discharging into the unnamed tributary to Lower Twomile Run. The storm sewers are also located outside the area of known soil and groundwater impacts. The base of the storm drain lines are approximately five feet bgs based on measurements taken at the inlet grates north of MW-6.

A natural gas service line enters the Subject Property between monitoring wells MW-5 and MW-6 and crosses to the gas meter located on the north side of the Subject Property structure near the northwest corner of the building. According to Mike Young of National Fuel, the main National Fuel gas trunk line is located on the opposite side of State Route 257 at a depth of 3 to 4 feet below grade, depending on the amount of post-installation fill material was subsequently placed above the line. Due to the shallow groundwater levels on the subject property, the natural gas service line in the vicinity of MW-5 is likely at a depth that could intersect the water table. However, the main trunk line on the west side of State Route 257 is above the water table, based on water level measurements in the off-site wells.

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4.0 SITE CHARACTERIZATION ANALYTICAL RESULTS

4.1 Soil Analytical Results

The analytical results of the soil samples collected during the soil boring programs on April 27th and 29th, 2016 (SB-1 through SB-6), June 14th, 2016, (SB-7 through SB-17), September 14th, 2016 (SB-18 through SB-20 and SB-22 through SB-24), October and November 2016 (MW-6 through MW-11), and January 24th and 25th, 2017 (MW-12, MW-13 and MW-14) are included on **Table 1**. The locations of these soil samples are shown on **Figure 2**. The soils were screened in the field using a PID to select the samples to be submitted for laboratory analysis. The soil samples were delivered under appropriate chain of custody documentation to Pace Analytical Services, in Greensburg, Pennsylvania and analyzed for the PADEP ‘new’ Shortlist for unleaded gasoline parameters including benzene, toluene, ethylbenzene, total xylenes, cumene, naphthalene, MTBE, 1,2,4-TMB and 1,3,5-TMB.

Multiple parameters were detected at concentrations that exceeded their respective residential soil to groundwater SHS MSCs, or the applicable non-residential soil to groundwater SHS MSCs. Soil samples SB-3 (2.0’-4.0’), SB-5 (2.0’-4.0’), SB-8 (4.0’-5.0’), SB-9 (3.0’-4.0’), SB-10 (4.0’-5.0’), SB-11 (3.0’-4.0’), SB-12 (3.0’-4.0’), SB-13 (3.0’-4.0’), SB-14 (3.0’-4.0’), SB-15 (3.0’-4.0’), SB-16 (3.0’-4.0’), SB-17 (3.0’-4.0’), SB-18 (6.0’-8.0’), and SB-22 (6.0’-8.0’) had concentrations of benzene that exceeded the non-residential soil to groundwater SHS MSC of 500 micrograms per kilogram (µg/kg), ranging from 553 µg/kg to 101,000 µg/kg. Two of the soil samples [SB-12 (3.0’-4.0’) and SB-15 (3.0’-4.0’)] had benzene concentrations that also exceeded the residential direct contact SHS MSCs of 57,000 µg/kg.

Soil samples SB-3 (2.0’-4.0’), SB-5 (2.0’-4.0’), SB-8 (4.0’-5.0’), SB-11 (3.0’-4.0’), SB-13 (3.0’-4.0’), SB-15 (3.0’-4.0’), SB-16 (3.0’-4.0’), and SB-17 (3.0’-4.0’) had concentrations of ethylbenzene that exceeded the non-residential soil to groundwater SHS MSC of 70,000 µg/kg, ranging from 87,100 µg/kg to 397,000 µg/kg. Two of the soil samples [SB-3 (2.0’-4.0’) and SB-15 (3.0’-4.0’)] had ethylbenzene concentrations that also exceeded the residential direct contact SHS MSCs of 180,000 µg/kg.

Soil samples SB-3 (2.0’-4.0’), SB-11 (3.0’-4.0’), SB-13 (3.0’-4.0’), and SB-15 (3.0’-4.0’), 4.0’) had elevated laboratory detection limits for MTBE that exceeded the non-residential soil to groundwater SHS MSC of 2,000 µg/kg, ranging from <2,070 µg/kg to <25,100 µg/kg. While MTBE was not directly identified, due to the elevated laboratory method detection limits, required due to dilutions needed for other parameters, the gap between the elevated laboratory detection limits and the SHS MSC indicates that MTBE could be present at concentrations that exceed the SHS MSC.

Soil samples SB-3 (2.0’-4.0’), SB-5 (2.0’-4.0’), SB-13 (3.0’-4.0’), SB-15 (3.0’-4.0’), and SB-17 (3.0’-4.0’) had concentrations of naphthalene that exceeded the non-residential soil to groundwater SHS MSC of 25,000 µg/kg, ranging from 30,200 µg/kg to 119,000 µg/kg.

Toluene was detected at concentrations exceeding its non-residential soil to groundwater SHS MSC of 100,000 µg/kg in soil samples SB-11 (3.0’-4.0’) (115,000 µg/kg) and SB-15 (3.0’-4.0’) (327,000 µg/kg). Toluene was detected in several other samples but at concentrations that did not exceed the SHS MSC.

Soil samples SB-3 (2.0’-4.0’), SB-8 (4.0’-5.0’), SB-9 (3.0’-4.0’), SB-11 (3.0’-4.0’), SB-13 (3.0’-4.0’), SB-14 (3.0’-4.0’), SB-15 (3.0’-4.0’), SB-16 (3.0’-4.0’), SB-17 (3.0’-4.0’), SB-18 (6.0’-8.0’), and SB-22 (6.0’-8.0’) had concentrations of 1,2,4-TMB that exceeded the non-residential soil to groundwater SHS MSC of 35,000 µg/kg, ranging from 40,000 µg/kg to 895,000 µg/kg. Seven of the above soil samples had 1,2,4-TMB concentrations that also exceeded the residential direct contact SHS MSCs of 130,000 µg/kg.

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SB-3 (3.0'-4.0') also exceeded the non-residential surface soil (0'-2') SHS MSC for 1,2,4-TMB of 560,000 µg/kg and SB-15 (3.0'-4.0') exceeded the non-residential surface soil (2'-15') SHS MSC for 1,2,4-TMB of 640,000 µg/kg. The soil samples obtained from SB-10 (4.0'-5.0'), SB-12 (3.0'-4.0'), and SB-24 (6.0'-8.0') each exceeded the residential soil to groundwater SHS MSC of 8,400 µg/kg.

1,3,5-TMB was detected at concentrations exceeding its non-residential soil to groundwater SHS MSC of 210,000 µg/kg in soil sample SB-15 (3.0'-4.0') (291,000 µg/kg). 1,3,5-TMB was detected in SB-3 (2.0'-4.0'), SB-11 (3.0'-4.0'), SB-13 (3.0'-4.0'), and SB-17 (3.0'-4.0') at concentrations that did exceed the residential soil to groundwater SHS MSC of 74,000 µg/kg.

Total xylenes were detected at concentrations exceeding its non-residential soil to groundwater SHS MSC of 1,000,000 µg/kg in soil samples SB-3 (2.0'-4.0') (1,110,000 µg/kg), and SB-15 (3.0'-4.0') (2,030,000 µg/kg). Only the sample from SB-15 (3.0'-4.0') also exceeds the residential direct contact (0'-2') SHS MSC of 1,900,000 mg/kg.

Many of the soil samples in the vicinity of the dispenser islands and canopy were collected from saturated soils because of the perched water in the vicinity. The non-residential saturated soil standards for naphthalene, 1,2,4-TMB and 1,3,5-TMB are typically lower than the non-residential soil to groundwater SHS MSCs, however, in this area these samples typically also exceed the higher values and other parameters in the sample also exceed their SHS MSCs. Potential remedial activities discussed below in **Chapter 8.0** favor the excavation of these impacted soils eliminating the conditions causing the perched water table in the vicinity and removing those samples that exceed their respective residential and non-residential SHS MSCs.

Of the other soil sample parameters that indicated detectable concentrations of the parameter analyzed, none had any parameters that exceeded their respective residential SHS MSCs.

Soil sampling analytical results obtained during the installation of monitoring wells MW-6 through MW-14 had only a few parameters detected and none that exceeded the more stringent residential SHS MSCs, respectively. Only one sample, MW-10 (8.0'-10.0') resulted in a slightly elevated laboratory method detection limits, none of which exceeded their respective residential SHS MSCs. The cross sections (**Figures 9** through **13**) also indicate the horizons where one or more soil parameters exceeded their respective residential and non-residential SHS MSCs.

The soil analytical results presented on **Table 1** were also compared to the non-residential vapor intrusion screening values. Detected concentrations or elevated laboratory method detection limits exceeded the non-residential vapor intrusion screening values for benzene (nineteen samples), ethylbenzene (ten samples), toluene (two samples), total xylenes (two samples), MTBE (five samples), naphthalene (six samples), 1,2,4-TMB (eleven samples), and 1,3,5-TMB (one sample). The exceedance of the non-residential vapor intrusion screening values indicates that the potential for vapor intrusion exists and that vapor sampling is required. The laboratory reports from the analysis of the soil samples are attached in **Appendix E**.

4.2 Groundwater Analytical Results

As mentioned above Cribbs & Associates performed an initial round of groundwater sampling of monitoring wells MW-1 through MW-5 on July 12th, 2016, as part of the characterization activities. Monitoring wells MW-1 through MW-5 were sampled for the second time on October 4th, 2016. The groundwater samples were placed on ice as they were collected and delivered under appropriate chain of custody documentation to Pace Analytical Services, in Greensburg, Pennsylvania and analyzed for the

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PADEP" new" Shortlist for unleaded gasoline parameters including benzene, toluene, ethylbenzene, total xylenes, cumene, naphthalene, MTBE, 1,2,4-TMB and 1,3,5-TMB.

During the initial July 12th, 2016 sampling event, benzene was detected in monitoring wells MW-1 through MW-5 at concentrations exceeding the residential and non-residential SHS MSC of 5 µg/l, ranging from 63.2 µg/l in MW-1 to 15,000 µg/l in MW-3. Ethylbenzene was detected in three monitoring wells, MW-3, MW-4 and MW-5, at concentrations exceeding the residential and non-residential SHS MSC of 700 µg/l, ranging from 1,240 µg/l in MW-4 to 3,070 µg/l in MW-3. MTBE was detected at concentrations exceeding the residential and non-residential SHS MSC of 20 µg/l, in two monitoring wells, MW-3 at 41.7 µg/l, and MW-5 at 51.7 µg/l. Naphthalene was detected at concentrations exceeding the residential and non-residential SHS MSC of 100 µg/l, in four out of five monitoring wells ranging from 150 µg/l in MW-5 to 291 µg/l in MW-4. One of those four wells that exceeded the residential and non-residential SHS MSC was MW-3, where the reported laboratory detection limit for naphthalene was <500 µg/l. Toluene was detected at a concentration exceeding the residential and non-residential SHS MSC of 1,000 µg/l, in MW-3 with a concentration of 10,500 µg/l. 1,2,4-TMB was detected in all five monitoring wells at concentrations exceeding the non-residential SHS MSC of 62 µg/l, ranging from 301 µg/l in MW-1 to 2,300 µg/l in MW-3. 1,3,5-TMB was detected in all five monitoring wells, however, only the samples from MW-3 (595 µg/l) and MW-5 (485 µg/l) exceeded the residential SHS MSC of 420 µg/l. None of the 1,3,5-TMB concentrations exceeded the non-residential SHS MSC of 1,200 µg/l. Total xylenes were detected at a concentration of 15,600 µg/l in MW-3, exceeding the residential and non-residential SHS MSC of 10,000 µg/l.

During the second sampling event, October 4th, 2016, monitoring wells MW-1 through MW-5 were sampled and upstream and downstream samples were collected from the unnamed tributary to Lower Twomile Run. Benzene was detected in monitoring wells MW-1 through MW-5 at concentrations exceeding the residential and non-residential SHS MSC of 5 µg/l, ranging from 92.1 µg/l in MW-1 to 17,800 µg/l in MW-3. Ethylbenzene was detected in four monitoring wells, MW-1, MW-2, MW-3, and MW-5, at concentrations exceeding the residential and non-residential SHS MSC of 700 µg/l, ranging from 752 µg/l in MW-2 to 3,000 µg/l in MW-3. MTBE was detected at concentrations exceeding the residential and non-residential SHS MSC of 20 µg/l, in three monitoring wells, MW-2 at 21.3 µg/l, MW-3 at 39.7 µg/l, and MW-5 at 75.5 µg/l. Naphthalene was detected at concentrations exceeding the residential and non-residential SHS MSC of 100 µg/l in all five monitoring wells sampled, ranging from 133 µg/l in MW-4 to 411 µg/l in MW-3. Toluene was detected at a concentration exceeding the residential and non-residential SHS MSC of 1,000 µg/l, in MW-3 with a concentration of 10,200 µg/l. 1,2,4-TMB was detected in all five monitoring wells at concentrations exceeding the non-residential SHS MSC of 62 µg/l, ranging from 313 µg/l in MW-4 to 2,020 µg/l in MW-3. 1,3,5-TMB was detected in all five monitoring wells, however, only the samples from MW-3 (557 µg/l) and MW-5 (554 µg/l) exceeded the residential SHS MSC of 420 µg/l. None of the 1,3,5-TMB concentrations exceeded the non-residential SHS MSC of 1,200 µg/l. Total xylenes were detected at a concentration of 15,600 µg/l in MW-3, exceeding the residential and non-residential SHS MSC of 10,000 µg/l.

The initial groundwater sampling results for monitoring wells MW-6 through MW-10, collected between December 6th, 2016 and January 17th, 2017, only indicated the presence of benzene (16.3 µg/l) and 1,2,4-TMB (260 µg/l) in the groundwater collected from MW-10 at concentrations that exceeded their respective non-residential SHS MSCs of 5 µg/l and 62 µg/l. The groundwater samples collected from the

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three off-site monitoring wells; MW-12, MW-13 and MW-14 on February 1st, 2017 were below the laboratory method detection limits and residential SHS MSCs for all parameters. Monitoring well MW-11 could not be sampled until February 22nd, 2017 due to insufficient water in the well. This sample was also non-detect for all parameters except MTBE, which was detected at a concentration of 11.6 µg/l, below the residential and non-residential SHS MSC of 20 µg/l.

Samples were collected from all fourteen monitoring wells and both stream sample locations on March 28th and 29th, 2017. This was the first event where all fourteen monitoring wells were sampled simultaneously.

Benzene was detected in monitoring wells MW-1 through MW-5 and MW-10 at concentrations exceeding the residential and non-residential SHS MSC of 5 µg/l, ranging from 8.9 µg/l in MW-10 to 13,400 µg/l in MW-3. Ethylbenzene was detected in three monitoring wells, MW-3, MW-4 and MW-5, at concentrations exceeding the residential and non-residential SHS MSC of 700 µg/l, ranging from 764 µg/l in MW-4 to 4,410 µg/l in MW-3. MTBE was detected at concentrations exceeding the residential and non-residential SHS MSC of 20 µg/l, in three monitoring wells, MW-3 at <25.0 µg/l (elevated laboratory method detection limit), MW-5 at 40.6 µg/l and for the first time in MW-8 at 422 µg/l. Monitoring well MW-8 was resampled on April 25th, 2017, to confirm the recent indication of MTBE and resulted in an MTBE concentration of 520 µg/l. The sudden appearance of MTBE at such a high concentration in MW-8 appears anomalous compared to the concentrations observed in the more heavily contaminated wells closer to the dispenser island, but could be the result of the more mobile MTBE flushing away from the source location.

Naphthalene was detected at concentrations exceeding the residential and non-residential SHS MSC of 100 µg/l, in four monitoring wells ranging from 145 µg/l in MW-4 to 880 µg/l in MW-3. Toluene was detected at a concentration exceeding the residential and non-residential SHS MSC of 1,000 µg/l, in MW-3 with a concentration of 8,810 µg/l. 1,2,4-TMB was detected in monitoring wells MW-1 through MW-5 and MW-10 at concentrations exceeding the non-residential SHS MSC of 62 µg/l, in monitoring wells MW-1 through MW-5, ranging from 118 µg/l in MW-2 to 4,920 µg/l in MW-3. The 1,2,4-TMB concentration observed in MW-10, (22.3 µg/l) exceeded the residential SHS MSC of 15 µg/l but not the non-residential SHS MSC on 62 µg/l. 1,3,5-TMB was detected in monitoring wells MW-1 through MW-5, however, the sample from MW-3 (1,590 µg/l) exceeded the non-residential SHS MSC of 1,200 µg/l and MW-5 (585 µg/l) exceeded the residential SHS MSC of 420 µg/l. Total xylenes were detected in monitoring wells MW-1 through MW-5 but only MW-3 (23,900 µg/l) indicated a concentration that exceeded the residential and non-residential SHS MSC of 10,000 µg/l.

Samples were collected from all fifteen monitoring wells (MW-15 installed on May 24th, 2017) and both stream sample locations on June 12th and 13th, 2017. Benzene was detected in monitoring wells MW-1 through MW-5 and MW-10 at concentrations exceeding the residential and non-residential SHS MSC of 5 µg/l, ranging from 5.3 µg/l in MW-10 to 17,000 µg/l in MW-3. Ethylbenzene was detected in two monitoring wells, MW-3, and MW-5, at concentrations exceeding the residential and non-residential SHS MSC of 700 µg/l, ranging from 2,980 µg/l in MW-3 to 3,020 µg/l in MW-5. MTBE was detected at concentrations exceeding the residential and non-residential SHS MSC of 20 µg/l, in three monitoring wells, MW-3 at <25.0 µg/l, MW-5 at 61.3 µg/l and at 421 µg/l in MW-8. Naphthalene was detected at concentrations exceeding the residential and non-residential SHS MSC of 100 µg/l, in three monitoring wells ranging from 153 µg/l in MW-4 to 4,470 µg/l in MW-5. Toluene was detected at a concentration

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exceeding the residential and non-residential SHS MSC of 1,000 µg/l, in MW-3 with a concentration of 7,270 µg/l. 1,2,4-TMB was detected in monitoring wells MW-1 through MW-5 at concentrations exceeding the non-residential SHS MSC of 62 µg/l, in monitoring wells MW-1 through MW-5, ranging from 179 µg/l in MW-2 to 3,510 µg/l in MW-5. The 1,2,4-TMB concentration observed in MW-10, previously recorded as (22.3 µg/l) exceeding the residential SHS MSC of 15 µg/l but not the non-residential SHS MSC on 62 µg/l had decreased to 6.4 µg/l, below the most stringent SHS MSC. 1,3,5-TMB was detected in monitoring wells MW-1 through MW-5, however, none of the detected concentrations exceeded the non-residential SHS MSC of 1,200 µg/l although MW-3 (595 µg/l) and MW-5 (1,040 µg/l) exceeded the residential SHS MSC of 420 µg/l. Total xylenes were detected in monitoring wells MW-1 through MW-5 but only MW-3 (16,800 µg/l) indicated a concentration that exceeded the residential and non-residential SHS MSC of 10,000 µg/l.

Other than the benzene and 1,2,4-TMB in MW-10 and MTBE in MW-8 all the parameters were below their respective residential and non-residential SHS MSCs in monitoring wells MW-6 through MW-14. The laboratory analytical results for the groundwater are presented on **Table 3**. **Figure 14** presents selected groundwater analytical results for the monitoring wells. Only the monitoring wells that had an exceedance of the residential and non-residential SHS MSCs are included on **Figure 14**, those wells that had detectable quantities of the contaminants of concern that were below the residential and non-residential SHS MSCs are not included on this figure. The cross sections (**Figures 9 through 13**) also indicate the monitoring wells where one or more groundwater parameters exceeded their respective residential and non-residential SHS MSCs.

The groundwater analytical results presented on **Table 3** were also compared to the non-residential vapor intrusion screening values. Detected concentrations exceeded the non-residential vapor intrusion screening values for benzene (sixteen samples, MW-2 through MW-5), ethylbenzene (ten samples, MW-1, MW-3, MW-4 and MW-5), total xylenes (four samples, MW-3), naphthalene (one sample, MW-5), 1,2,4-TMB (eleven samples, MW-2 through MW-5 and MW-10), and 1,3,5-TMB (one sample, MW-3). The exceedance of the non-residential vapor intrusion screening values indicates that the potential for vapor intrusion exists and that vapor sampling is required. The laboratory reports for the site characterization groundwater samples are attached in **Appendix F**.

4.3 Stream Sampling Analytical Results

Grab samples were collected from the unnamed tributary to Lower Twomile Run on located on the opposite side of State Route 257 on October 4th, 2016, March 29th, 2017 and June 12th, 2017. The stream samples were delivered under chain of custody protocols to Pace in Greensburg, PA and analyzed for the “new shortlist” for unleaded gasoline parameters utilizing U.S.EPA Method 8260. This shortlist includes; benzene, toluene, ethylbenzene, total xylene, MTBE, cumene, naphthalene, 1,2,4-TMB and 1,3,5-TMB. The results of the stream samples are presented on **Table 3**. None of the parameters analyzed were detected at any concentration exceeding the laboratory method detection limit in either stream sample, therefore, no impacts were observed. The laboratory reports for the site characterization stream samples are reported with the groundwater samples collected during the same sampling events and are included in **Appendix F**.

4.4 Soil Vapor Analytical Results

The non-residential vapor intrusion screening values were exceeded in both the soil (**Table 1**) and groundwater (**Table 3**) samples analyzed as part of this SCR. The exceedance of the non-residential vapor intrusion screening values indicates that the potential for vapor intrusion exists and that vapor

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sampling is required. **Table 6** presents the analytical results of the soil vapor analysis. Vapor points VP-1 and VP-2 were sampled on October 4th, 2016 and resampled on May 3rd, 2017. The soil vapor results from the initial vapor sampling event are compared to the Pennsylvania Act 2 Residential Indoor Air Quality Criteria (MSC_{IAQ}). Because the vapor samples are not collected indoors the MSC_{IAQ} s are corrected to MSC_{SG} using the following equation:

$$MSC_{SG} = \frac{MSC_{IAQ}}{TF}$$

Where: MSC_{SG} = medium specific concentration soil gas

MSC_{IAQ} = Medium specific concentration indoor air quality

TF = Transfer factor = 0.01 (as recommended in the Land Recycling Program Technical Guidance Manual Section IV.A4.

Although minor concentrations of benzene, toluene, total xylenes, naphthalene, 1,2,4-TMB and 1,3,5-TMB were detected, none of the soil vapor samples exhibited concentrations in excess of their respective MSC_{SG} . The Act 2 vapor regulations were modified in January 2017. Because the vapor points were installed immediately adjacent to the on-site structure through non-permeable surfaces (asphalt and concrete) that extend completely to the on-site structure, the existing vapor points could still be utilized under the “new” January 2017, Act 2 Technical Guidance Manual for Vapor Intrusion into Buildings regulations as sub-slab vapor points. The Non-Residential Sub-Slab vapor screening values have been added to **Table 6**. The site-specific standards for Non-Residential Sub-Slab vapor screening values are 1/10 of the sub slab screening values and have also been added to **Table 6** to compare the soil vapor results. None of the soil vapor results exceeded the most stringent of the screening values (SSS non-residential sub-slab). Copies of the soil vapor laboratory analytical results are included in **Appendix G**.

4.5 Analytical Results Summary

Based on the analytical results soil impacts include benzene, ethylbenzene, toluene, total xylene, naphthalene, MTBE, 1,2,4-TMB and 1,3,5-TMB. Benzene is the most common parameter that exceeds its non-residential soil to groundwater SHS MSC of 500 $\mu\text{g}/\text{kg}$ in fourteen soil boring samples [SB-3 (2.0'-4.0'), SB-5 (2.0'-4.0'), SB-8 (4.0'-5.0'), SB-9 (3.0'-4.0') SB-10 (4.0'-5.0'), SB-11 (3.0'-4.0'), SB-12 (3.0'-4.0'), SB-13 (3.0'-4.0'), SB-14 (3.0'-4.0'), SB-15 (3.0'-4.0'), SB-16 (3.0'-4.0'), SB-17 (3.0'-4.0'), SB-18 (6.0'-8.0'), and SB-22 (6.0'-8.0')]. One or more of the other contaminants of concern were also detected at concentrations exceeding its respective non-residential SHS MSCs in the same soil samples already listed above. Ethylbenzene exceeded its residential and non-residential SHS MSC in eight samples. Naphthalene exceeded its residential and non-residential SHS MSC in five samples. Toluene exceeded its residential and non-residential SHS MSC in two samples. 1,2,4-TMB exceeded its residential and non-residential SHS MSC in eleven samples. 1,3,5-TMB exceeded its non-residential SHS MSC in one sample. MTBE was not detected at concentrations exceeding its residential and non-residential SHS MSC of 2,000 $\mu\text{g}/\text{km}$, however elevated detection limits were reported in four soil samples. Several concentrations were high enough to exceed the direct contact SHS MSCs for residential and non-residential scenarios; including two each for benzene and ethylbenzene, seven for 1,2,4-TMB, and one for total xylene. The impacted soil is predominantly located along the west side of the Subject Property extending from SB-18 on the north to SB-22 in the south (**Figure 2**) between the former dispenser island and the edge of State Route 257. To the south of the dispenser island the impacted soil extends farther to the east including SB-3.

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The soil samples collected from soil borings SB-1, SB-2, SB-6, and SB-19 and monitoring wells MW-6 through MW-14 indicated no exceedances of any of the residential and non-residential SHS MSCs for the parameters analyzed delineating the lateral extent of the soil impacts. The deeper samples obtained from SB-3 (6.0'-8.0'), SB-4 (6.0'-8.0'), SB-7 (7.0'-8.0'), SB-11 (7.0'-8.0'), and SB-16 (7.0'-8.0') also indicated no exceedances of the residential and non-residential SHS MSCs, while the shallower samples obtained from these same borings had indicated exceedances of the residential and non-residential SHS MSCs, or in the case of SB-4 and SB-7, higher observed concentrations, delineating the vertical limits of the soil impacts. Therefore, the delineation of soil impacts has been determined.

Groundwater impacts that exceed the non-residential SHS MSCs were identified at the Subject Property including; benzene, ethylbenzene, MTBE, naphthalene, toluene, 1,2,4-TMB, 1,3,5-TMB, and total xylenes. The groundwater impacts were observed in samples collected from MW-1, MW-2, MW-3, MW-4, MW-5, and MW-10, during the groundwater sampling events. The highest concentrations observed for each of the parameters exceeding the residential and non-residential SHS MSCs, except MTBE, were detected in the groundwater samples collected from MW-3. The highest MTBE concentrations were observed in MW-8. Monitoring wells situated surrounding the perimeter of the Subject Property, MW-6, MW-7, MW-9, MW-11 and MW-15 and the off-site monitoring wells, MW-12, MW-13 and MW-15 have no observed exceedances of the residential SHS MSCs and therefore have delineated the lateral extent of the groundwater impacts.

9.84 inches of LPH was measured in monitoring well MW-3 on October 4, 2016 and product recovery efforts including bailing and absorbent socks have been conducted on a weekly or bi-monthly basis since that time. The product thickness in MW-3 has been reduced to between 3/16-of an inch to a sheen by these efforts. A sheen of petroleum product has also been observed in monitoring wells MW-2 and MW-4 on February 9th, 2017, MW-5 on February 22, 2017 and MW-1 on March 7th, 2017. Monitoring well MW-4 is the only other well observed with a measurable thickness of LPH with 3/16-of an inch measured on March 7th, 2017. Absorbent socks and occasional bailing has been conducted on these wells following the discovery of the sheen reducing the LPH thickness to a heavy sheen in MW-3.

The non-residential vapor intrusion screening values were exceeded in both the soil (**Table 1**) and groundwater (**Table 3**) samples analyzed as part of this SCR. The exceedance of the non-residential vapor intrusion screening values indicates that the potential for vapor intrusion exists and that vapor sampling is required. Analytical results on the soil vapor samples has not indicated the exceedance of even the most stringent of the applicable screening values (SSS non-residential sub-slab).

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5.0 SENSITIVE RECEPTORS

5.1 Well Search

A one-mile radius search was conducted on the Pennsylvania Groundwater Information System (PAGWIS) and eMapPA database and website for community water supplies utilizing the following parameters: surface water withdrawal, surface water intakes, groundwater wells, water supply wells, and groundwater withdrawal.

According to the PAGWIS database, eleven on-site monitoring wells are listed at the Subject Property and eight (8) groundwater wells are listed as located within approximately one-mile radius of the Subject Property. Of the eight off-site wells; one is listed as an industrial well, two are listed as public water supply wells and five are listed as domestic water supply wells.

The nearest PAGWIS identified well is the 30-foot deep industrial well at the Township building listed as being located approximately 200 feet northwest of the Subject Property based on the latitude and longitude, however, the township building address places this well approximately 4,165 feet north of the Subject Property. A public supply well 357 feet deep is reportedly located approximately 700 feet south of the Subject Property and listed as Cranberry Township. A second public water supply well listed as Cranberry Venango Co. Genl Auth is also 357 feet deep but is listed as being located 2,300 feet southwest of the Subject Property. Given the similarity in ownership and the exact same reported depth this may be the same well. The second more distant location makes more sense because it would be located in a wooded area immediately adjacent to the unnamed tributary to Lower Twomile Run. Of the five domestic water supply wells, four are located greater than 3,400 feet from the Subject Property and are located in different watersheds. Only the Graham well is located approximately 1,400 feet west of the Subject Property, however, it is located on the opposite side of the unnamed tributary to Lower Twomile Run.

Copies of the details from these searches are provided in **Appendix H**. There are no known water supplies of concern as the nearest water supply withdrawal well is located approximately 2,300 feet to the southwest. The Subject Property and the surrounding properties are currently supplied by municipal water supply by the Cranberry Twp. Authority, Seneca System. Public water is available at this location; however, Seneca has no ordinance to prohibit private or public supply wells.

Given the groundwater concentrations observed for the contaminants of concern, the hydraulic conductivity and the hydraulic gradient at the Subject Property, the contamination could potentially migrate beyond the property boundaries. Although, no data currently exists that would indicate off-site migration of contaminants have impacted any supply wells. The off-site monitoring wells (MW-12, MW-13, and MW-14) located across State Route 257 to the west and downgradient of the Subject Property and the stream samples collected from the unnamed tributary to Lower Twomile Run have not indicated the presence of any of the contaminants of concern.

According to eMapPA, the Subject Property, Harper Oil - Seneca Mini Mart (61-18854) is listed as an envirofacts facility because of the registered tanks and use as a petroleum distribution facility. Other envirofacts UST facilities include; Frampton Oil – Seneca Pennzoil (61-13470) indicated on the property immediately to the north, Kwik Fill (61-14854) and Red Express (61-37529), both located approximately 3,300 feet to the north, and Advantage Tank Lines (61-38016) located approximately 3,900 feet to the

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south-southwest of the Subject Property. E-Map indicates that numerous conventional oil and gas wells are located primarily to the north and west of the Subject Property. There were no groundwater withdrawal locations identified within a one-mile radius of the subject property and the entire area is provided public water by the Seneca Municipal Authority. The only sensitive receptor near the Subject Property is the unnamed tributary to Twomile Run, located on the west side of State Route 257. A copy of the eMapPA image is included in **Appendix H**.

The U.S. Fish and Wildlife Service National Wetlands Inventory data was accessed through Google Earth. No wetlands were identified on the Subject Property. The nearest wetland is the riverine wetland associated with the unnamed tributary to Twomile Run located on the west side of State Route 257. This wetland area is only located 107 feet from the Subject Property at its nearest point. Several small freshwater ponds are located to the east and southeast of the Subject Property as are other unnamed tributaries. An image of the Google Earth wetland locations is included in **Appendix H**.

The Subject Property and the surrounding community are supplied with public water through the Cranberry Two Authority, Seneca System, however, no ordinance exists that prohibits private or public water supply wells in the service area. The Borough of Seneca provides sewer service to the community.

5.2 Sensitive Receptor Survey

The following sensitive receptors were identified within 2,500 feet of the facility:

- The on-site building is a slab-on-grade retail facility and automotive service garage located immediately adjacent to the former UST cavity and dispenser inlands, however the Subject Property building is located upgradient of the former dispenser islands.
- The unnamed tributary to Twomile Run is located immediately downgradient of the Subject Property.
- Several hundred residential structures and numerous commercial properties are located within a 2,500-foot radius of the Subject Property. The majority of the residential facilities are located to the east and south of the Subject Property are upgradient or crossgradient to the Subject Property. The residential properties located to the west are on the opposite side of the unnamed tributary to Twomile Run, therefore, the Subject Property is not considered to be a threat. The commercial properties are located to the north and south of the Subject Property along State Route 257, also placing them in crossgradient or upgradient locations. The only facility located to the southwest or downgradient of the Subject Property is the Seneca Lawn and Landscape facility.
- Several underground utilities including a natural gas line, a storm drain, a sanitary sewer line, storm sewer line and a municipal water line run parallel to the surrounding roads within the road right-of-way.
- Numerous site utilities are located on the Subject Property.

The potential for impact to each of these sensitive receptors was evaluated as part of this investigation. The results of these evaluations are described in **Section 6.0**.

5.3 Ecological Receptor Evaluation

A Pennsylvania Natural Diversity Inventory (PNDI) online search was conducted to evaluate if the Subject Property posed any potential impacts to threatened, endangered, special concern species and

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special concern resources in the vicinity. Four government agencies have jurisdiction over the protection of these resources:

- U.S. Fish and Wildlife Service
Federally listed, proposed & candidate species
Statute: Endangered Species Act of 1973 16 U.S.C. §§ 1531 et seq.
- Pennsylvania Game Commission
PA state-listed birds and mammals
Statute: Game and Wildlife Code 34 Pa. C.S.A. §§ 101 et seq.
- Pennsylvania Fish and Boat Commission
PA state-listed fish, reptiles, amphibians, and aquatic organisms
Statute: Fish and Boat Code 30 Pa. C.S.A. §§ 101 et seq.
- Pennsylvania Department of Conservation and Natural Resources
PA state-listed plants, natural communities, terrestrial invertebrates and geological features
Statute: Wild Resources Conservation Act 32 P.S. §§ 5301 et seq.

The PNDI search did not identify any known impacts to threatened, endangered, special concern species and special concern resources in the vicinity, therefore, there are no potential conflicts or impacts. A copy of the PNDI Environmental Project Review receipt is included in **Appendix I**.

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6.0 FATE AND TRANSPORT ANALYSIS

As discussed in **Section 4.4**, the contaminant plume exists primarily in the immediate vicinity of the former dispenser island and extends to the west, north and south. The groundwater plume involves the shallow unconfined aquifer. Benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB, and 1,3,5-TMB are the contaminants of concern that have been identified at concentrations that have exceed their residential and non-residential SHS MSCs at the Subject Property and were observed in one or more of the groundwater samples collected during the site characterization activities. The initial groundwater sampling event (July 12th, 2016) identified benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, and 1,2,4-TMB at concentrations exceeding the applicable non-residential SHS MSCs in the sample collected from monitoring well MW-3. Subsequent sampling events have exhibited the highest concentrations for most of these parameters at the Subject Property in MW-3 with the exception of naphthalene in MW-5 and MTBE. The highest concentration of MTBE was observed in MW-8 on April 25th, 2017. Monitoring wells MW-2 through MW-5 are located along the western property boundary. Therefore, it appears that the contaminants of concern have migrated beyond the point of compliance (the property border). In order to determine whether these contaminants have migrated beyond the property boundary and will reach a sensitive receptor, the unnamed tributary to Twomile Run, each of the parameters of concern have been modeled using the Quick Domenico Model.

To date the groundwater samples collected from the monitoring wells located on the western side of State Route 257 (MW-12, MW-13 and MW-14) have not detected any of the contaminants of concern. Because no impacts have been observed in these downgradient monitoring wells. Additional modeling including SWLOAD and PENTOX to evaluate the volume and toxicity of contaminants of concern discharging to the unnamed tributary to Lower Twomile Run is not required.

6.1 Quick Domenico Modeling

Benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB are the contaminants of concern that currently exceed their residential and non-residential SHS MSCs at the Subject Property. Therefore, in order to determine whether these contaminants will migrate beyond the property border (point of compliance) to a sensitive receptor, each of the parameters was modeled using the Quick Domenico Model. Quick Domenico is typically a conservative model and the parameters used for each model are defined for each well. Each model also looks at the plume migration over different time windows (5-years, 10-years, 15-years, 20-years, 25-years and 30-years) to ensure that the plume indicates its maximum extent and where it demonstrates stability.

The highest concentrations observed during the site characterization groundwater sampling events were used at the initial concentration used for the modeling for the contaminants of concern. The distance from the monitoring well with the highest concentrations (MW-3) to the nearest downgradient property boundary (point of compliance) is 0 feet, (MW-2 through MW-5 are located in the right of way for State Route 257), however, the unnamed tributary to Lower Twomile Run and its associated riverine wetland is located approximately 107 feet downgradient on MW-3 in the direction of groundwater flow. Off-site monitoring well MW-12 is located approximately 85 feet downgradient of MW-3 and all of the parameter analyzed have been below the laboratory method detection limits. While the distances from MW-2, MW-4 and MW-5 are similar because they all line up in the right of way for State Route 257, MW-3 and MW-5 are used for the modeling because of the highest concentrations of the various parameters observed during the site characterization groundwater sampling events.

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The groundwater elevations observed in monitoring wells MW-1 through MW-5 in the vicinity of the dispenser islands indicate that the fill material beneath the dispenser islands is likely acting as a “bathtub” holding perched groundwater in the fill material with the less conductive native materials keeping the perched groundwater in place. The perched groundwater conditions were likely enhanced by the removal of the former UST system and associated dispensers. The removal of the dispensers allowed the precipitation draining from the canopy to infiltrate the “bathtub” creating significant mounding in the area containing fill material. Impacted groundwater formerly retained in the “bathtub” may now be forced out by the elevated and mounded groundwater conditions.

Due to the mounding of groundwater observed in the vicinity of the dispenser island and the discovery of MTBE in MW-8 (maximum 520 µg/l) a fate and transport model was also developed for an eastward movement of groundwater contamination from MW-8 towards the eastern property boundary, located approximately 23 feet from MW-8. The Quick Domenico modeling from those locations were done to evaluate if groundwater impacts will migrate to the downgradient sensitive receptors. The hydraulic gradients measured on June 12th, 2017 between MW-3 and MW-13 for the contaminant plumes migrating west (0.079 ft./ft.) and between MW-3 and MW-8 for the MTBE plume traveling east (0.015 ft./ft.) were used in the Quick Domenico Models.

The values for longitudinal dispersivity, transverse dispersivity, and vertical dispersivity were chosen as per the recommendations in the model instructions. Lambda and organic carbon partition coefficient values were obtained directly from Appendix A, Table 5 of the Act 2 regulations. Source width (variable with the orientation of groundwater flow direction), source thickness and hydraulic gradient were calculated from the site characterization data. Fraction organic carbon, soil bulk density, and effective porosity values were also obtained directly from the model instructions and represent conservative estimations, appropriate for the silty clay soil type observed at the Subject Property. The average hydraulic gradient from the monitoring wells (0.035 ft./ft.), in the direction based on the groundwater flow have been utilized for the wells completed in the shallow unconfined aquifer. The geometric mean of the groundwater seepage velocity is 0.249 feet per day.

Slug testing was initially conducted on three near-sources wells on the Subject Property. In order to evaluate the potential for the contaminants of concern to migrate off-Site, the geometric mean hydraulic conductivity of 1.104 ft./day (5.716^{-4} cm/sec) of these three wells was used in the Quick Domenico Modeling for the shallow unconfined aquifer. The porosity on the predominantly silty clay encountered at the Subject Property is estimated to be 0.35 percent for the shallow unconfined aquifer. Copies of the Quick Domenico fate and transport models are included in **Appendix J**.

Due to the abundant fill material, the use of the hydraulic conductivity from monitoring wells in the vicinity of the dispenser island generates a worse-case scenario for the migration of the contaminants of concern. However, the slow recharge of several of the wells located away from the dispenser island, (MW-8, MW-9, MW-10, MW-11 and MW-15) suggests that lower hydraulic conductivities are prevalent in the native materials away from the dispenser islands. Because the initial slug tests were conducted on monitoring wells located near the dispenser islands (MW-1, MW-2 and MW-4) in predominantly fill material, additional slug tests were conducted on September 7, 2017 on monitoring wells MW-10 and MW-11 to evaluate if the wells penetrating mostly natural unconsolidated soils would result in a lower hydraulic conductivity. The slug tests conducted on monitoring wells MW-10 and MW-11 indicated hydraulic conductivities that ranged from 0.04667 ft./day (1.646^{-5} cm/sec.) to 0.2697 ft./day (9.513^{-5} cm/sec.).

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The lower hydraulic conductivity was used in the Quick Domenico Modeling for benzene and MTBE plumes because the initial models, (using the higher hydraulic conductivity) indicated that benzene and MTBE should already be present in the three wells (MW-12, MW-13 and MW-14) located on the opposite side of the highway. In order to calibrate the models to better represent the actual conditions, including the lack of any detected contaminants in these downgradient wells, the lower hydraulic conductivity was utilized in the models. The selected benzene and MTBE Quick Domenico models suggest that the lower hydraulic conductivity has delayed the migration of the contaminants of concern toward the off-site wells in the case of the benzene plume and towards MW-15 in the case of the MTBE plume observed in MW-8.

Because no intermediate well exists downgradient of the source area (MW-3) that indicates decreased concentrations compared to the source area it is not feasible to accurately calibrate the Quick Domenico models, therefore, the results presented below represent worst-case scenarios based on the available data and commonly utilized default values. As part of the proposed remedial activities discussed in **Section 9.0**, Cribbs will attempt to install a calibration monitoring well in the turning lane of State Route 257 downgradient of the highly impacted wells. A PennDOT roadway occupancy permit will be required to install a monitoring well in the active roadway.

6.1.1 Benzene Model Results

Benzene concentrations in excess of the residential and non-residential SHS MSC have been observed in five of the monitoring wells including maximum recorded concentrations of 17,800 µg/l in MW-3 (October 4th, 2016). The Quick Domenico model for MW-3, (the highest benzene concentration at 17,800 µg/L, with the shortest distance to the unnamed tributary to Lower Twomile Run [107 feet]), and using the higher value for the hydraulic conductivity, predicts that the plume of benzene will expand to a length of up to 774 feet before reaching a point of equilibration at 15 years where the benzene concentration degrades to below the residential SHS MSC. This indicates that the benzene plume will extend beyond the nearest property boundary to the unnamed tributary to Lower Twomile Run.

Benzene concentrations in excess of the residential and non-residential SHS MSC have been observed in five of the monitoring wells including maximum recorded concentrations of 17,800 µg/l in MW-3 (October 4th, 2016). The Quick Domenico model for MW-3, (the highest benzene concentration at 17,800 µg/L, with the shortest distance to the unnamed tributary to Lower Twomile Run [107 feet]), and using the lower value for the hydraulic conductivity, predicts that the plume of benzene will expand to a length of up to 150 feet before reaching a point of equilibration at 20 years where the benzene concentration degrades to below the residential SHS MSC. The use of the lower hydraulic conductivity also predicts that the benzene plume will not reach the off-site downgradient wells until almost two years after the release, and will not reach the stream until almost five years have passed. This model still indicates that the benzene plume will extend beyond the nearest property boundary to the unnamed tributary to Lower Twomile Run.

The Quick Domenico modeling indicates that groundwater impacted by benzene will likely make it to the unnamed tributary to Lower Twomile Run. There is only a small watershed area above the Subject Property and a relatively small volume of water traveling past the Subject Property, therefore, it appears likely that benzene could adversely impact the surface water in the unnamed tributary to Lower Twomile Run.

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6.1.2 Ethylbenzene Model Results

Ethylbenzene concentrations in excess of the residential and non-residential SHS MSC were observed in three monitoring wells including maximum recorded concentrations of 4,410 µg/l in MW-3 (March 29th, 2017). MW-1, MW-4 and MW-5 also indicated ethylbenzene concentrations that exceeded the residential and non-residential SHS MSC. The Quick Domenico model for MW-3, the highest concentration observed on the Subject Property (4,410 µg/l), is located 107 feet from the unnamed tributary to Lower Twomile Run. The model, using the higher value for the hydraulic conductivity, predicts that the ethylbenzene plume will expand to a length of up to 39 feet before reaching a point of equilibration after ten years, where the ethylbenzene concentration is below the residential SHS MSC. Ethylbenzene concentrations in the groundwater should not reach the unnamed tributary or impact the surface water.

6.1.3 Toluene Model Results

Toluene concentrations in excess of the residential and non-residential SHS MSC have been observed in monitoring well MW-3 with a maximum recorded concentration of 10,500 µg/l (July 12th, 2016). The Quick Domenico model for MW-3, the highest concentration observed on the Subject Property (10,500 µg/l), is located 107 feet from the unnamed tributary to Lower Twomile Run. The model, using the higher value for the hydraulic conductivity, predicts that the toluene plume will expand to a length of up to 29 feet before reaching a point of equilibration after five years, where the toluene concentration is below the residential SHS MSC. Toluene concentrations in the groundwater should not reach the unnamed tributary or impact the surface water.

6.1.4 Total Xylene Model Results

Total xylenes concentrations in excess of the residential and non-residential SHS MSC have been observed in monitoring well MW-3 with a maximum recorded concentration of 23,900 µg/l (March 29th, 2017). The Quick Domenico model for MW-3, the highest concentration observed on the Subject Property (23,900 µg/l), is located 107 feet from the unnamed tributary to Lower Twomile Run. The model, using the higher value for the hydraulic conductivity, predicts that the total xylene plume will expand to a length of up to eighteen feet before reaching a point of equilibration after fifteen years, where the total xylene concentration is below the residential SHS MSC. Total xylene concentrations in the groundwater should not reach the unnamed tributary or impact the surface water.

6.1.5 MTBE Model Results

MTBE concentrations in excess of the residential and non-residential SHS MSC have been observed in five monitoring wells including maximum recorded concentrations of 520 µg/l, in MW-8 (April 25th, 2017). Because of the groundwater mounding in the vicinity of the dispenser island, the groundwater flow direction at MW-8 is to the east and the hydraulic gradient is only 0.016. The Quick Domenico model for MW-8 was run, using the higher value for the hydraulic conductivity and the highest concentration observed on the Subject Property (520 µg/l), with a distance of 23 feet from the property boundary. The model predicts that the MTBE plume will expand to a length of up to ninety-four feet before reaching a point of equilibration after ten years, where the MTBE concentration is below the residential SHS MSC. MTBE concentrations in the groundwater could reach the adjoining property to the east.

The Quick Domenico model for MW-8 was run, using the lower value for the hydraulic conductivity, and the highest concentration observed on the Subject Property (520 µg/l), with a distance of 23 feet from the property boundary. The model predicts that the MTBE plume will expand to a length of up to seventeen feet before reaching a point of equilibration after ten years, where the MTBE concentration is below the

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residential SHS MSC. MTBE concentrations in the groundwater would not reach the adjoining property to the east.

MTBE concentrations in excess of the residential and non-residential SHS MSC have been observed in the monitoring wells located adjoining State Route 257, including maximum recorded concentrations of: MW-5 (75.5 µg/l, October 4th, 2016), MW-3 (41.7 µg/l, July 12th, 2016), MW-2 (21.3 µg/l, October 4th, 2016), and MW-10 (21.3 µg/l, June 12th, 2017). The Quick Domenico model for MW-5, the highest concentration observed on the western portion of Subject Property (75.5 µg/l), and using the higher value for the hydraulic conductivity, with groundwater flow towards the west and the unnamed tributary to Lower Twomile Run is located approximately 107 feet from the unnamed tributary to Lower Twomile Run. The model predicts that the MTBE plume will expand to a length of up to fifty feet before reaching a point of equilibration after five years, where the MTBE concentration is below the residential SHS MSC. MTBE concentrations in the groundwater should not reach the unnamed tributary or impact the surface water.

6.1.6 Naphthalene Model Results

Naphthalene concentrations in excess of the residential and non-residential SHS MSC have been observed in five monitoring wells with the maximum concentration observed in MW-5 (4,470 µg/l, June 13th, 2017). The Quick Domenico naphthalene model for MW-5, located 107 feet from the unnamed tributary to Lower Twomile Run, and using the higher value for the hydraulic conductivity, predicts that the naphthalene plume will expand to a length of approximately fifty-seven feet before reaching a point of equilibration where the naphthalene concentration is below the residential SHS MSC. In this model, the naphthalene will reach its maximum extent in approximately ten years. Naphthalene concentrations in the groundwater should not reach the unnamed tributary or impact the surface water.

6.1.7 1,2,4-TMB Model Results

1,2,4-TMB concentrations in excess of the residential and non-residential SHS MSC have been observed in six of the monitoring wells during the SCR sampling events including maximum recorded concentrations of 4,920 µg/l in MW-3, March 29th, 2017. The 1,2,4-TMB Quick Domenico model for MW-3, which is located 107 feet from the unnamed tributary to Lower Twomile Run, and using the higher value for the hydraulic conductivity, predicts that the 1,2,4-TMB plume will expand to a length of approximately twelve feet before reaching a point of equilibration where the 1,2,4-TMB concentration is below the non-residential SHS MSC (62 µg/l). The plume will expand to a length of approximately thirty-two feet before reaching a point of equilibration where the 1,2,4-TMB concentration is below the residential SHS MSC (15 µg/l). In this model, the 1,2,4-TMB will reach its maximum extent in approximately five years. 1,2,4-TMB concentrations in the groundwater should not reach the unnamed tributary or impact the surface water.

6.1.8 1,3,5-TMB Model Results

1,3,5-TMB concentrations in excess of the residential or non-residential SHS MSC have been observed in two of the monitoring wells including maximum recorded concentrations of 1,590 µg/l in MW-3 (March 29th, 2017). The Quick Domenico model for MW-3, which is located 107 feet from the unnamed tributary to Lower Twomile Run, and using the higher value for the hydraulic conductivity, predicts that the 1,3,5-TMB plume will expand to a length of approximately nine feet before reaching a point of equilibration where the 1,3,5-TMB concentration is below the non-residential SHS MSC (1,200 µg/l). The plume will expand to a length of approximately thirty-nine feet before reaching a point of

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equilibration where the 1,3,5-TMB concentration is below the residential SHS MSC (420 µg/l). In this model, the 1,3,5-TMB will reach its maximum extent in approximately thirty years. 1,3,5-TMB concentrations in the groundwater should not reach the unnamed tributary or impact the surface water.

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7.0 CONCEPTUAL SITE MODEL

Based on data acquired during the SCR activities conducted at this Subject Property, residual contamination has been identified within soil and groundwater associated with the release of a petroleum product. Chemicals of concern (i.e., benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB) were identified at concentrations above residential and non-residential SHS MSCs in soil and groundwater following the removal of the former UST system and dispenser islands. In addition, soil gas samples exhibited concentration above the vapor intrusion screening values for both residential and non-residential uses.

The objective of a Conceptual Site Model (CSM) is to identify the contaminant source, migration pathways and receptors (human and environmental) to aid in determining an appropriate remediation technology. The CSM is completed through an exposure assessment in which assumptions are based on the current conditions and current and potential future land use [Pa. Code § 250.602(2)]. The purpose of an exposure assessment is to identify potential exposure pathways, consisting of the following four components:

- A contaminant source and mechanism of chemical release (e.g., accidental spills, tank leakage);
- An exposure retention or transport medium (e.g., contaminated groundwater and/or soil);
- A point of potential receptor contact with the contaminated medium, referred to as the exposure point (e.g., a site worker getting contaminated soils on his/her skin); and
- An exposure route (e.g., inhalation of indoor vapors).

If any one of the components is missing, the pathway is considered to be incomplete, and therefore, no risk is associated with that pathway. The risk-based corrective action procedures contained in ASTM's "*Standard Guide for Risk Corrective Action Applied at Petroleum Release Sites*" (ASTM E1739-95) were applied to the Site to obtain a quantitative analysis of potential exposure pathways and sensitive receptors. The following potential exposure pathways were evaluated:

- Ingestion, inhalation, and dermal contact from contaminants present in subsurface soils;
- Ingestion, inhalation, and dermal contact from contaminants present in groundwater;
- Ingestion, inhalation, and dermal contact from contaminants present in sediment;
- Ingestion, inhalation, and dermal contact from contaminants present in surface water;
- Vapor intrusion;
 - Inhalation of indoor vapors from contaminants present in subsurface soil;
 - Inhalation of indoor vapors from contaminants present in groundwater;
- Diffuse groundwater discharge to surface water and sediment.

Based on current and possible future use of the Subject Property, it was determined that the CSM would evaluate the following potential receptors:

- Construction Worker/Maintenance Worker;
- Occupational Worker;
- Visitor/Trespasser;
- Future Residential; and
- Ecological sensitive habitat.

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Table 7 presents a chart of the CSM and the various potential exposure pathways that are discussed in greater detail below.

7.1 Soil Exposure Pathways

Thirty-nine soil samples have been analyzed and are considered to be representative of the Subject Property. According to the analytical data (**Table 1**) obtained from the subsequent site characterization activities, all of the soil samples are below the non-residential Direct Contact SHS MSCs, with the exception being SB-15 (3.0'-4.0') with a concentration of 1,2,4-TMB at 895,000 µg/kg that exceeds the non-residential direct contact soil 2'-15' SHS MSC of 640,000 µg/kg.

Fourteen of the soil samples exceed the non-residential soil to groundwater, SHS MSCs for at least one or more of the parameters analyzed. Therefore, soils on the Subject Property, saturated and unsaturated, do not meet their respective residential and non-residential SHS MSCs for the "new" PADEP "shortlist" for unleaded gasoline parameters. The impacted soil is predominantly located along the western Subject Property boundary extending from SB-18 (north) to SB-22 (south) (**Figure 2**) between the former dispenser island and the edge of State Route 257. To the south of the dispenser island the impacted soil extends farther to the east (SB-3). The majority of the Seneca Mini Mart portion of the Subject Property where the impacted soils have been identified is surfaced with asphalt. A gravel surface exists where the former UST system was removed in September 2015 and covering most of the used car sales lot (Seneca Motors) that shares the parcel to the south of the Seneca Mini-Mart. As such, the surface and subsurface soil exposure direct contact pathways do not exist for the occupational site worker, or visitor/trespasser.

Only future construction/maintenance workers have the potential to be exposed to the impacted soil by direct contact and incidental ingestion. Those construction/maintenance workers can minimize their exposure to the known impacts through the use of the proper personal protective equipment and air monitoring during excavation activities.

7.2 Groundwater Exposure Pathways

Site groundwater is impacted with benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB. Monitoring well MW-3 has typically demonstrated the highest concentrations of the contaminants of concern, with the exception of MTBE. MTBE has the highest observed concentration in MW-5, and MW-8. With only two to four groundwater sampling events at each well, concentration trends cannot be reliably evaluated. Therefore, the concentrations of the contaminants of concern have fluctuated between the first, through fourth sampling events in monitoring wells MW-1, through MW-5. In MW-8, the concentration of MTBE (422 µg/l) appeared during the second sampling event after being below the laboratory method detection limits during the initial sampling event. For the two subsequent sampling events at MW-8, MTBE has remained at elevated concentrations, (520 µg/l and 421 µg/l). The concentrations of the contaminants of concern in MW-10, benzene and 1,2,4-TMB have decreased between the first, second and third sampling events, while MTBE concentrations have increased slightly. The results for the other wells (MW-6, MW-7, MW-9 and MW-11 through MW-15) have typically been below the laboratory method detection limits and/or the respective residential and non-residential SHS MSCs. Additional sampling events are needed to statistically demonstrate trends or attainment of the residential and non-residential SHS MSCs for these parameters.

Potable water is provided to the Subject Property and adjacent properties by the Seneca Municipal Authority. However, the township does not have a restriction on the installation of groundwater supply

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wells. Therefore, because groundwater contaminant concentrations for benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB do not meet the more stringent residential SHS MSCs, the migration of contaminants off-site within groundwater is considered a potential ingestion exposure pathway for occupational workers, visitors/trespassers, and future residents. Dermal contact with, and incidental ingestion of groundwater for on-site construction workers is considered to be a complete exposure pathway. However, groundwater exposure pathways via dermal contact and incidental ingestion by occupational workers and visitors/trespassers are considered to be incomplete, because no mechanism exists by which these receptors would be significantly exposed to groundwater (i.e., no exposure point).

7.3 Surface Water Exposure Pathways

As discussed in **Section 4.2**, several petroleum constituents are present in the groundwater in numerous shallow aquifer monitoring wells that exceed the residential and non-residential SHS MSCs. The nearest surface water is an unnamed tributary to the Lower Twomile Run, which is located approximately 100 feet to the west of the Subject Property.

The Quick Domenico fate and transport models projected that groundwater containing elevated benzene concentrations could potentially migrate beyond the property boundary and discharge to the unnamed tributary to Lower Twomile Run. The Quick Domenico models also predict that the other contaminants of concern (ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB) will likely migrate at elevated concentrations beyond the point of compliance (the monitoring wells are at or beyond the property boundary), but will degrade to below their respective residential SHS MSC before they reach the stream. As such, only the diffuse flow of benzene in the groundwater to surface water and associated sediment exposure pathway is considered complete. The pathway for all other contaminants is considered incomplete.

7.4 Vapor Intrusion Pathways

There are two conditions that must be met for the vapor intrusion pathway to be of potential concern. First, inhabited buildings must be close to a volatile/semi volatile source and, second, the source concentration must be above some threshold or screening concentration. To prevent unacceptable risk as a result of vapor intrusion of contaminants from soil and/or groundwater into indoor structures, the assessment of indoor air quality is required when a release with the potential for the volatilization of organic occurs within 100 feet of an occupied building. Therefore, the assessment techniques provided in the guidance document entitled; “*Land Recycling Program Technical Guidance Manual – Section IV.A.4., Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard*,” were utilized to evaluate the potential risk to indoor air quality caused by the documented release at the Subject Property and adjoining properties.

The non-residential vapor intrusion screening values were exceeded in both the soil (**Table 1**) and groundwater (**Table 3**) samples. The exceedance of the non-residential vapor intrusion screening values indicates that the potential for vapor intrusion exists and that vapor sampling is required. Analytical results on the soil vapor samples have not indicated the exceedance of even the most stringent of the applicable screening values (SSS non-residential sub-slab) (**Table 6**).

As per the guidance manual, comparison of specific media concentrations were made to conservative default screening values for groundwater and soil to identify chemicals of potential indoor air concern (COPIACs). The default screening values, which are provided in the guidance manual were calculated

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using Pennsylvania-specific parameters and the Johnson and Ettinger Vapor Intrusion model (USEPA, 2001). These values are used when this calculated screening level is lower than an MSC. However, the values can also be used to screen the concentration of COPIACs in a given medium to determine if additional evaluation or mitigation is warranted. A discussion of each potential soil vapor pathway is provided below.

7.4.1 Vapor Intrusion Via Soil

Based on confirmation soil sampling results from the site characterization activities, analytical data from the soil samples collected during monitoring well installation activities, as well as analytical data from the vapor point sampling, there are still soils on the Subject Property which exceed the residential and non-residential vapor intrusion screening values. The COPIACs remaining at the Subject Property include: benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB, as a result of contaminant concentrations in soil. Because of the absence of residential properties downgradient of the Subject Property, a non-residential land use designation was used in the vapor intrusion evaluation.

Two vapor points installed at the locations indicated on **Figure 2** have been sampled twice, October 4th, 2016 and May 3rd, 2017. VP-1 is located to the west of the on-site structure, immediately adjacent to the building and between the building and the former dispenser islands where the majority of the most heavily impacted soils have been observed. VP-2 is located on the concrete slab located on the south side of the building, immediately adjacent to the building between the former UST basin and the on-site structure.

Because the vapor points were installed through non-permeable surfaces (asphalt and concrete) that extend completely to the on-site structure the existing vapor points could still be utilized under the January 2017, Act 2 Technical Guidance Manual for Vapor Intrusion into Buildings regulations as sub-slab vapor points. The Non-Residential Sub-Slab vapor screening values are presented in **Table 6**. The site-specific standards for Non-Residential Sub-Slab vapor screening values are 1/10 of the sub slab screening values and are presented in **Table 6** to screen the soil vapor results.

Although minor concentrations of most of the parameters analyzed were detected, none of the soil vapor results exceeded the most stringent of the screening values (SSS non-residential sub-slab). However, because the minimum vapor sampling requirements as per the new regulations have not yet been met, vapor intrusion from the soil to groundwater is considered complete for the following receptors:

- Occupational Worker,
- Visitor/Trespasser,
- Future Resident.

7.4.2 Vapor Intrusion Via Groundwater

Because of the absence of residential structures downgradient of the Subject Property, a non-residential land use designation was used in the vapor intrusion evaluation. However, the groundwater vapor intrusion screening values were exceeded for benzene, ethylbenzene, total xylenes, naphthalene, 1,2,4-TMB and 1,3,5-TMB.

Because the vapor points were installed through non-permeable surfaces (asphalt and concrete) that extend completely to the on-site structure the existing vapor points could still be utilized under the January 2017, Act 2 Technical Guidance Manual for Vapor Intrusion into Buildings regulations as sub-slab vapor points. The Non-Residential Sub-Slab vapor screening values have been added to **Table 6**.

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The site-specific standards for Non-Residential Sub-Slab vapor screening values are 1/10 of the sub slab screening values and have also been added to **Table 6** to compare the soil vapor results. Although minor concentrations of most of the parameters analyzed for were detected, none of the soil vapor results exceeded the most stringent of the screening values (SSS non-residential sub-slab). However, because the minimum vapor sampling requirements as per the new regulations have not yet been met, vapor intrusion from the soil to groundwater is considered complete for the following receptors:

- Occupational Worker,
- Visitor/Trespasser,
- Future Resident.

As long as continued vapor sampling event results are consistent with the first two events no further remedial actions to address vapor in the site building will be required. However, if the vapor contaminant concentrations do exceed the Non-Residential Sub-Slab vapor screening values, a further evaluation regarding vapor intrusion will be required.

Because the depth of groundwater water is typically less than six feet below grade, the potential receptors (the existing site structure and the adjoining residential structures) may be separated vertically from the source by less than five feet of soil-like material. However, as per the indoor air quality decision matrix, further assessment of vapor intrusion into the adjoining residential structures is not required at this time because recent groundwater analysis indicates that although there are potentially contaminants of concern (benzene, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB) above the residential, used aquifer MSCs there are no adjoining residences within 100 feet of the plume. Quick Domenico modeling indicates that the groundwater benzene plume will not transgress on to the adjoining properties to the south or east. The Quick Domenico models of the eight contaminants of concern (benzene, ethylbenzene toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB) indicate that the contaminants will likely reach and migrate beyond the western property boundary before degrading to below their residential SHS MSCs. Only the benzene plume is projected to migrate under State Route 257 and extend to the unnamed tributary to Lower Twomile Run, located on the opposite side of the highway. All the other parameters are projected to degrade to below their respective residential SHS MSCs within 57 feet of the most heavily impacted monitoring wells. Only the MTBE plume based on the findings in MW-8 are projected to migrate to the east extending beyond the point of compliance in that direction.

7.4.3 Preferential Pathways

A preferential pathway is any structure such as a utility line, conduit, trench line, fracture or any other physical feature that would influence the migration of contamination via a path of lesser resistance. Preferential pathways could potentially decrease the amount of time required for a contaminant to migrate to a downgradient location or it could result in the migration of contaminant in a lateral or even an up-gradient direction if the porosity of the pathway is great enough. As prescribed in the Johnson and Ettinger Vapor Intrusion model, if a preferential pathway is located within 30 feet of a source and creates a pathway to a receptor such as an occupied building the indoor air quality decision matrix should not be used. Instead, either soil gas or indoor air sampling should be performed or a site-specific evaluation of indoor air should be conducted. As discussed in **Section 3.5** the natural gas service line and the municipal water service line are located within 30 feet of the known impacts to soil and/or groundwater. The two vapor points on the Subject Property have been sampled twice (October 4th, 2016 and May 3rd, 2017), and will continue to be sampled quarterly for four quarters following remedial activities at the Subject

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Property. Although minor concentrations of most of the parameters analyzed for were detected, none of the soil vapor results exceeded the most stringent of the screening values (SSS non-residential sub-slab).

7.4.4 Vapor Intrusion Summary

Based on the information provided in the above sections, it was necessary to perform vapor intrusion monitoring activities for the existing on-site structure. As described in **Section 4.3**, two vapor points were installed adjacent to the existing Subject Property buildings. The results of the vapor sampling are presented in **Table 6**. The initial soil vapor sampling event was compared to a value of 100 X the Residential Indoor Air Quality (IAQ) MSC listed on *Table 3 of the Land Recycling Program Technical Guidance Manual-Section IV.A.4. Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard*, dated January 24, 2004. As shown on the table, none of the constituents were detected at concentrations which exceed the above referenced screening level.

The Act 2 vapor regulations were modified in January 2017. Because the vapor points were installed immediately adjacent to the on-site building, through non-permeable surfaces (asphalt and concrete) that extend completely to the on-site structure the existing vapor points could still be utilized under the “new” January 2017, Act 2 Technical Guidance Manual for Vapor Intrusion into Buildings regulations as sub-slab vapor points. The Non-Residential Sub-Slab vapor screening values have been added to **Table 6**. The site-specific standards for Non-Residential Sub-Slab vapor screening values are 1/10 of the sub slab screening values and have also been added to **Table 6** to compare the soil vapor results. None of the soil vapor results exceeded the most stringent of the screening values (SSS non-residential sub-slab), therefore, vapor intrusion via any pathway does not appear to be complete. The “new” Act 2 vapor regulations require a minimum of eight samples (two vapor points with four quarterly samples) of vapor monitoring using the appropriate screening values for comparison, therefore, a minimum of four quarters of vapor samples will be collected from the two vapor points, using sub slab screening values, following the completion of the remedial activities at the Subject Property.

Because of the numerous electrical conduits connecting the existing former USTs to the fuel dispensing and management system inside the on-site building, a preferential pathway from the source area to the building would exist if there were any potential contaminants of concern above their respective threshold values. As such, analysis of the soil and groundwater samples collected from numerous monitoring wells and vapor points indicates that benzene, ethylbenzene, total xylenes, MTBE, and naphthalene are present in the groundwater at concentrations that exceed the respective residential and non-residential SHS MSC. However, the soil vapor sampling conducted at the Subject Property to date indicates that none of the constituents were detected at concentrations which exceed the Non-Residential Sub-Slab vapor screening values.

7.5 Ecological Receptors

PA Code Chapter 250.331 requires that ecological receptors be evaluated unless any of the following conditions are met:

- Jet fuel, gasoline, kerosene, #2 fuel oil or diesel fuel, are the only constituents detected on-site;
- The area of contaminated soil is less than two acres and the area of contaminated sediment are less than 1,000 square feet; or
- The Subject Property has features, such as buildings, parking lots or asphalt paved areas that eliminate potential exposure pathways (e.g. soil exposure).

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As discussed below, facility soil and groundwater are impacted with petroleum constituents typically associated with a release of unleaded gasoline. The area of impacted soil is less than two acres, and the facility is mostly paved. Based on these data, no additional ecological evaluation is required. The PNDE Ecological Receptor Evaluation discussed in **Section 5.3** indicated that there were no known impacts to threatened and endangered species and/or special concern species and resources within the project area.

7.6 CSM Summary

Based upon the information provided in the sections above and presented in **Table 7**, the following is a summary of potentially complete exposure pathways and their respective receptors:

Potentially Complete Exposure Pathway	Potential Receptors
Subsurface Soil	Construction/Maintenance Worker
Groundwater	Construction/Maintenance Worker, Occupational Worker, Visitor/Trespasser, Future Resident
Sediment	Visitor/Trespasser, Future Resident, Ecological
Surface Water	Visitor/Trespasser, Future Resident, Ecological
Vapor Intrusion (Soil & Groundwater)	Occupational Worker, Visitor/Trespasser, Future Resident

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8.0 POTENTIAL ATTAINMENT OF STANDARDS

To obtain environmental relief of liability, the Subject Property will attainment of a select cleanup standard for soil, groundwater and vapor intrusion. Cleanup standards are established in Act 2, which is codified in PA Code Chapter 250. The Act 2 regulations establish the following three potential standards for remediating a site. The responsible party/property owner has the ability to select one of the standards or a combination of standards, for attainment purposes. The cleanup standards include:

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

Each standard is associated with a unique set of compliance criteria that establish acceptable procedures for determining the concentrations of regulated substances allowed in various media, identify points of compliance, define attainment criteria, and specify reporting and public involvement requirements.

Since there is no indication that the Subject Property is being impacted by an off-site source, the background standard (BS) is eliminated from further consideration. Therefore, the remaining standards considered are the SHS and SSS.

8.1 Statewide Health Standard

Remediating the Subject Property to the SHS will require attainment of residential or non-residential SHS MSCs. SHS MSCs are the concentrations of regulated substances that must be achieved within each media of concern in order to demonstrate attainment of the SHS and obtain relief of liability for the Subject Property. Selection of the appropriate MSC depends upon the current or future land use of the property, the background groundwater quality of the aquifer for total dissolved solids, depth of soil contamination, and the current use or planned future use of the underlying aquifer.

8.2 Site Specific Standard

Remediating the Subject Property to the SSS requires a more detailed evaluation of potential receptors and exposure pathways. If complete exposure pathways exist after considering engineering and/or institutional controls, a human health risk assessment and possibly an ecological assessment are conducted to quantify environmental impacts to sensitive receptors and to develop site specific cleanup levels that are protective of human health and the environment.

8.3 Summary of the Selection and Attainment of Cleanup Standards

Based on the preceding discussion, and the current knowledge of the Subject Property, the property owner has selected the SHS cleanup standards for the Subject Property.

8.3.1 Subsurface Soil

The non-residential SHS soil remediation cleanup criteria are based on numerical values provided by the administration of the Land Recycling Program's 25 Pa Code 250 Subchapter C - medium specific concentrations (MSCs) - soil to groundwater pathway, for used aquifers within a non-residential setting with a total dissolved solids value of less than 2,500 mg/l. The select non-residential SHS MSCs are listed below:

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Non-Residential Statewide Human Health Standards for Soils -Facilities with Unleaded Gasoline - µg/kg (ppb)

Benzene	Toluene	Ethylbenzene	Total Xylene	MTBE
500	100,000	70,000	1,000,000	2,000
Naphthalene	Cumene	1,2,4-TMB	1,3,5-TMB	
25,000	2,500,000	35,000	210,000	

The COCs and soil samples which exhibited concentrations that exceeded the non-residential SHS MSCs are:

COCs Exceeding PADEP Non-Residential Used Aquifer MSCs	Soil Samples with Exceedance of PADEP Non-Residential Used Aquifer MSCs
Benzene	SB-3 (2.0' to 4.0'), SB-5 (2.0' to 4.0'), SB-8 (4.0' to 5.0'), SB-9 (3.0'-4.0'), SB-10 (4.0'-5.0'), SB-11 (3.0'-4.0'), SB-12 (3.0'-4.0'), SB-13 (3.0'4.0'), SB-14 (3.0'-4.0'), SB-15 (3.0'-4.0'), SB-16 (3.0'-4.0'), SB-17 (3.0'-4.0'), SB-18 (6.0'-8.0'), and SB-22 (6.0' to 8.0').
Ethylbenzene	SB-3 (2.0' to 4.0'), SB-5 (2.0' to 4.0'), SB-8 (4.0' to 5.0'), SB-11 (3.0'-4.0'), SB-13 (3.0'4.0'), SB-15 (3.0'-4.0'), SB-16 (3.0'-4.0'), and SB-17 (3.0'-4.0').
Toluene	SB-11 (3.0'-4.0'), and SB-15 (3.0'-4.0').
Total Xylenes	SB-3 (2.0' to 4.0'), and SB-15 (3.0'-4.0').
MTBE	SB-3 (2.0' to 4.0'), SB-11 (3.0'-4.0'), SB-13 (3.0'4.0'), and SB-15 (3.0'-4.0').
Naphthalene	SB-3 (2.0' to 4.0'), SB-5 (2.0' to 4.0'), SB-13 (3.0'4.0'), SB-15 (3.0'-4.0'), and SB-17 (3.0'-4.0').
1,2,4-TMB	SB-3 (2.0' to 4.0'), SB-8 (4.0' to 5.0'), SB-9 (3.0'-4.0'), SB-11 (3.0'-4.0'), SB-13 (3.0'4.0'), SB-14 (3.0'-4.0'), SB-15 (3.0'-4.0'), SB-16 (3.0'-4.0'), SB-17 (3.0'-4.0'), SB-18 (6.0'-8.0'), and SB-22 (6.0' to 8.0').
1,3,5-TMB	SB-15 (3.0'-4.0'),

Given that the area of known soil impacts surrounds the former dispenser island, which is limited to the unsaturated and shallow saturated zones, typically less than eight feet bgs, a remedial soil excavation is likely to be recommended to remove the impacted soil and the source material leaching into the groundwater.

8.3.2 Groundwater

The residential SHS groundwater remediation cleanup criteria are based on numerical values provided by the administration of the Land Recycling Programs 25 Pa Code 250 Subchapter C - MSCs – Organic Regulated Substances in Groundwater, for used aquifers within a residential setting with a total dissolved solids value of less than 2,500 mg/l for all chemicals of concern. The select SHS MSCs are listed below:

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Residential Statewide Human Health Standards for Groundwater,
Used Aquifer, TDS <2500
-Facilities with Unleaded Gasoline-
µg/l (ppb)

Benzene	Toluene	Ethylbenzene	Total Xylene	MTBE
5	1,000	700	10,000	20
Naphthalene		Cumene	1,2,4-TMB	1,3,5-TMB
100		840	15	420

The groundwater samples from the facility that exhibited concentrations that exceeded the residential SHS MSCs are:

COCs Exceeding PADEP Non-Residential Used Aquifer MSCs	Monitoring Wells with Exceedance of PADEP Non-Residential Used Aquifer MSCs (times exceeded/times sampled)
Benzene	MW-1 (4/4), MW-2 (4/4), MW-3 (4/4), MW-4 (4/4), MW-5(4/4) and MW-10 (3/3).
Ethylbenzene	MW-1 (1/4), MW-2 (1/4), MW-3 (4/4), MW-4 (2/4), and MW-5(4/4).
Toluene	MW-3 (4/4).
Total Xylenes	MW-3 (4/4).
MTBE	MW-2 (1/4), MW-3 (4/4), MW-5(4/4), MW-8 (3/4), and MW-10 (1/3).
Naphthalene	MW-1 (2/4), MW-2 (2/4), MW-3 (4/4), MW-4 (4/4), and MW-5 (4/4).
1,2,4-TMB	MW-1 (4/4), MW-2 (4/4), MW-3 (4/4), MW-4 (4/4), MW-5 (4/4), and MW-10 (2/3).
1,3,5-TMB	MW-3 (4/4), and MW-5(4/4).

Not enough groundwater sampling events have been conducted to obtain a statistically valid sample set, (a minimum of eight sampling events are required) under 25 Pa Code Chapter 250, Subchapter G, Section 250.704.

Measured liquid phase hydrocarbons (LPH) have been recorded in MW-3 and product recovery efforts have been conducted since November 2016. A sheen of LPH has been observed in monitoring wells MW-1, MW-2, MW-4 and MW-5 as well. The remedial soil excavation will also remove existing monitoring wells MW-1 through MW-5 and the LPH that has been observed on the Subject Property.

Following the excavation of the impacted soil, the monitoring wells will be replaced and additional groundwater sampling events will be conducted to statistically demonstrate attainment for the parameters of concern at the point of compliance wells. Additional quarterly groundwater sampling events will have to be completed to obtain a statistically valid data set. The groundwater at the Subject Property will be closed as described in the Pennsylvania Administration of the Land Recycling Programs 25 Pa Code 250 Subchapter G – Demonstration of Attainment – Subsection 704, General Attainment Requirements for Groundwater including:

- Collecting a sufficient number of samples to comply with 25 PA Code 205.707, Statistical Tests.

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8.3.3 Vapor

Not enough vapor sampling events have been conducted to obtain a statistically valid sample set, a minimum of eight samples are required under 25 PA Code Chapter 250, Subchapter G. None of the soil vapor results exceeded the most stringent of the screening values (SSS non-residential sub-slab), therefore, vapor intrusion via any pathway does not appear to be complete. However, the “new” Act 2 vapor regulations require a minimum of eight samples (two vapor points with four quarterly samples) of vapor monitoring using the appropriate screening values for comparison, therefore, a minimum of four quarters of vapor samples will be collected from the two vapor points, using sub slab screening values, following the completion of the remedial activities at the Subject Property. Values for each applicable constituent in soil vapor for this facility are listed below:

Non-Residential Sub-Slab Vapor Screening Values,
Site Specific Standards (1/10th Table 4 Sub-Slab Values)
mg/m³

Benzene	Toluene	Ethylbenzene	Total Xylene	MTBE
0.20	280	0.63	5.60	6.10
Naphthalene	Cumene	1,2,4-TMB	1,3,5-TMB	
0.046	2.20	0.390	0.390	

Additional quarterly vapor sampling events will have to be completed to obtain a statistically valid data set. The vapor at the Subject Property will be closed as described in the Pennsylvania Administration of the Land Recycling Programs 25 Pa. Code 250 Subchapter G – Demonstration of Attainment – subsection 704, General Attainment Requirements for Groundwater including:

- Collecting a sufficient number of samples to comply with 25 PA Code 205.707, Statistical Tests.

8.4 Recommended Remedial Actions to Obtain Closure

Concentrations of benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene 1,2,4-TMB and 1,3,5-TMB were observed in the soil samples in the vicinity of the former dispenser islands and along the frontage to State Route 257 at concentrations that exceed the non-residential SHS MSCs. Current groundwater impacts that exceed their non-residential SHS MSCs include benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB. The most highly impacted groundwater is concentrated in monitoring wells MW-1 through MW-5, but also includes MTBE in MW-8 and low concentrations of benzene, MTBE and 1,2,4-TMB in MW-10. Vapor analytical result to date do not exceed the SSS for Non-Residential Sub-Slab vapor screening values that are 1/10 of the sub slab screening values.

Quick Domenico modeling utilizing the historic high concentrations observed at the facility predicts that many of the parameters of concern will migrate beyond the property boundary (point of compliance) as monitoring wells MW-2 through MW-5 are located on the property boundary, however, only the benzene plume is projected to extend to the west across the width of State Route 257, potentially intersecting the unnamed tributary to Lower Twomile Run.

In order to meet the non-residential SHS MSCs, a remedial soil excavation of approximately 4,300 square feet in area covering the vicinity of the former dispenser islands and the frontage along State Route 257 is recommended in order to reduce the concentration of the contaminants of concern in the soil and groundwater at the facility. The volume of impacted soil is estimated at approximately 1,200 to 1,250 cubic yards. **Figure 15** presents the footprint of the proposed soil excavation. The soil impacts are

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predominantly in the fill material and the immediately underlying brown and gray silty clay inside the 4,300-square foot area. The proposed soil excavation area also includes monitoring wells MW-1 through MW-5 where sheen and LPH have been identified along with the elevated concentrations of the contaminants of concern.

The western edge of the excavation will be the curb at the shoulder of State Route 257. As a portion of the Right of Way for State Route 257 is part of the proposed soil remediation excavation a right of way entry permit will have to be obtained from the Pennsylvania Department of Transportation (PennDOT). The appropriate PATA Traffic Control Plan (likely PATA 101) will be used to designate the work zone and alert traffic. The northern, eastern and southern limits of the excavation are approximated in **Figure 15**; however, the soils will be field screened using a PID to evaluate the limits of impacted soil in those directions. The groundwater elevations in the vicinity of the dispenser island (MW-1 through MW-5) is comparatively high compared to the other monitoring wells at the Subject Property. The elevated water table appears to be the result of precipitation discharging from the canopy infiltrating the fill material (the roof drain discharges directly into the location of the former dispenser).

By diverting the inflow of precipitation from the canopy away from the fill material in the months leading up to the excavation activities and conducting the excavation activities in a dry season such as late summer or fall the objective is to remove up to eight feet of soil from the excavation area.

Prior to initiating the soil excavation activities, six representative soil samples will be collected and submitted to Pace Analytical Laboratories and analyzed for Form FC-1 parameters. Arrangements will be made with Waste Management's Northwest Sanitary Landfill to have the impacted soil pre-approved so that it can be direct loaded and transported for disposal as it is excavated. Waste Management will also be contracted to provide the transportation (4-5 trucks per day, making multiple trips per day). The total number of truckloads is estimated to be between 53 and 65, (depending on the weight of the soil).

The soil excavation will be broken down into daily stages limiting the area of open excavation so that backfill material can be brought in, placed and compacted at the end of each day. This will insure that the portion of the excavation adjoining State Route 257 will not remain open longer than absolutely necessary, preventing collapse of the sidewalls or someone driving into an open excavation. Clean local fill will be placed in one-foot lifts and compacted to within one foot of the existing ground surface. Eight inches of 2B limestone gravel will be compacted in place to provide a gravel subbase for the asphalt surface to replace the former asphalt and concrete of the dispenser islands. The concrete and dispenser islands will not be replaced.

As the soil excavation activities are conducted, a minimum of twelve post-remediation soil samples will be collected from the open excavation and submitted for laboratory analysis. Six samples from the side walls (two from each on the long sides and one for each short side) and six samples from the excavation base will be analyzed to demonstrate attainment of the non-residential SHS MSCs for soils. The twelve post-remediation soil samples will be biased samples collected from the excavation based on PID screening. Each of these twelve samples will need to meet the SHS MSCs to demonstrate attainment. If the biased samples should fail to demonstrate attainment, but conditions appear favorable to utilize random systematic soil sampling (RSSS), twelve random sample will be collected in the shoulder and travel lanes of State Route 257 using a Geoprobe sampling rig. This will require a PennDOT highway occupancy permit. The analytical data will subsequently be evaluated using the 75%, 2X rule (for off-site attainment). If this statistical evaluation for attainment fails, other alternatives such as SSS may be considered.

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The monitoring wells destroyed by the excavation activities will be replaced at the same locations and to the same depth as the original monitoring wells. A minimum of eight rounds of quarterly groundwater sampling events will be conducted to document that the point of compliance wells are below the residential SHS MSCs. If the contaminants are detected at concentrations above the residential SHS MSCs in the point of compliance wells, an additional downgradient groundwater monitoring well may be installed near the concrete median between the travel lanes of State Route 257. This monitoring well will assist in the evaluation of whether a SHS closure or SSS closure would be more reasonable. This well could also be utilized as a fate and transport calibration well if a SSS closure is necessary.

A minimum of four quarterly rounds of vapor samples from both vapor points (eight samples - minimum) will be collected and analyzed. Remedial Action Progress Reports will be submitted to PADEP on a quarterly basis detailing the remedial actions undertaken during the quarter and the analytical results of the sampling activities. Once the attainment of the selected standards has been achieved a Remedial Action Completion Report (RACR) will be prepared and submitted to the PADEP. Once attainment of soil, groundwater and vapor intrusion Cleanup Standard selected in the RAP has been documented, Harper Oil will request a release of liability under Act 2 for this facility.

While there is no guarantee that these activities will produce the desired results needed to obtain Site closure under Act 2, Cribbs & Associates believes that this approach provides the best path to closure with the minimal overall expenditure.

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9.0 REFERENCES

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TABLES

Table 1
Soil Analytical Results - PA Short List - Unleaded Gasoline
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart
3390 State Route 257
Seneca Borough, Venango County, Pennsylvania
PADEP Facility ID # 61-18854

Parameter	UNITS	Residential Soil to Groundwater	Non-Residential Soil to Groundwater	Residential Direct Contact (0-15'	Non-Residential Surface Soil 0-2'	Non-Residential Surface Soil 2-15'	Non-Residential Vapor Intrusion Screening Value	SB-1 (8.0'-10.0')	SB-2 (2.0'-4.0')	SB-3 (2.0'-4.0')	SB-3 (6.0'-8.0')	SB-4 (4.0'-6.0')	SB-4 (6.0'-8.0')	SB-5 (2.0'-4.0')	SB-6 (2.0'-4.0')	SB-7 (3.0'-4.0')	SB-7 (7.0'-8.0')
Date Sampled								4/27/2016	4/27/2016	4/27/2016	4/27/2016	4/27/2016	4/27/2016	4/29/2016	4/29/2016	6/14/2016	6/14/2016
VOCs																	
Benzene	ug/kg	500	500	57,000	290,000	330,000	130	<5.9	<241	2,430	<4.1	<255	<4.3	553	<4.1	<206	<4.8
Ethylbenzene	ug/kg	70,000	70,000	180,000	890,000	1,000,000	46,000	<5.9	<241	316,000	11.6	<255	<4.3	135,000	<4.1	4,060	<4.8
Isopropylbenzene (Cumene)	ug/kg	600,000	2,500,000	7,700,000	10,000,000	10,000,000	2,500,000	<5.9	333	27,700	<4.1	<255	<4.3	15,800	<4.1	487	<4.8
Methyl tert-Butyl Ether (MTBE)	ug/kg	2,000	2,000	1,700,000	8,600,000	9,900,000	1,400	<5.9	<241	2,430	<4.1	<255	<4.3	<291	<4.1	<206	<4.8
Naphthalene	ug/kg	25,000	25,000	160,000	760,000	190,000,000	25,000	<5.9	<241	64,900	<4.1	<255	<4.3	33,100	<4.1	1,100	<4.8
Toluene	ug/kg	100,000	100,000	10,000,000	10,000,000	10,000,000	44,000	<5.9	<241	<2,430	<4.1	<255	<4.3	<291	<4.1	<206	<4.8
1,2,4-Trimethylbenzene	ug/kg	8,400	35,000	130,000	560,000	640,000	35,000	<5.9	<241	567,000	7.6	<255	<4.3	3,000	<4.1	<206	<4.8
1,3,5-Trimethylbenzene	ug/kg	74,000	210,000	2,200,000	10,000,000	10,000,000	210,000	<5.9	<241	194,000	<4.1	<255	<4.3	1,610	<4.1	<206	<4.8
Xylene (Total)	ug/kg	1,000,000	1,000,000	1,900,000	8,000,000	9,100,000	990,000	<17.8	<724	1,110,000	27.2	<766	<12.8	<873	<12.2	<617	<14.4
PID								4.8	30.8	>5000	19.4	121	12.3	443	22.5	230	18.0

Parameter	UNITS	Residential Soil to Groundwater	Non-Residential Soil to Groundwater	Residential Direct Contact (0-15'	Non-Residential Surface Soil 0-2'	Non-Residential Surface Soil 2-15'	Non-Residential Vapor Intrusion Screening Value	SB-8 (4.0'-5.0')	SB-9 (3.0'-4.0')	SB-10 (4.0'-5.0')	SB-11 (3.0'-4.0')	SB-11 (7.0'-8.0')	SB-12 (3.0'-4.0')	SB-13 (3.0'-4.0')	SB-14 (3.0'-4.0')	SB-15 (3.0'-4.0')	SB-16 * (3.0'-4.0')
Date Sampled								6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016
VOCs																	
Benzene	ug/kg	500	500	57,000	290,000	330,000	130	1,940	2,370	2,390	35,300	<6.1	76,700	36,300	52,500	101,000	29,300
Ethylbenzene	ug/kg	70,000	70,000	180,000	890,000	1,000,000	46,000	91,400	60,300	5,750	108,000	<6.1	14,700	178,000	57,000	397,000	87,100
Isopropylbenzene (Cumene)	ug/kg	600,000	2,500,000	7,700,000	10,000,000	10,000,000	2,500,000	8,880	10,600	634	9,410	<6.1	844	14,700	4,600	32,700	7,150
Methyl tert-Butyl Ether (MTBE)	ug/kg	2,000	2,000	1,700,000	8,600,000	9,900,000	1,400	<317	<239	10.0	<2,070	<6.1	<277	<2,280	<250	<25,100	<181
Naphthalene	ug/kg	25,000	25,000	160,000	760,000	190,000,000	25,000	23,200	19,300	1,360	24,400	<6.1	1,870	41,900	16,800	119,000	22,600
Toluene	ug/kg	100,000	100,000	10,000,000	10,000,000	10,000,000	44,000	<317	<239	9.8	115,000	<6.1	1,900	6,110	1,490	327,000	4,460
1,2,4-Trimethylbenzene	ug/kg	8,400	35,000	130,000	560,000	640,000	35,000	207,000	49,800	11,500	190,000	<6.1	8,790	266,000	98,300	895,000	176,000
1,3,5-Trimethylbenzene	ug/kg	74,000	210,000	2,200,000	10,000,000	10,000,000	210,000	63,800	640	134	89,800	<6.1	1,970	128,000	31,200	291,000	62,400
Xylene (Total)	ug/kg	1,000,000	1,000,000	1,900,000	8,000,000	9,100,000	990,000	88,100	2,460	2,690	434,000	<18.3	16,600	523,000	87,100	2,030,000	319,000
PID								3,360	3,140	58.6	1,811	4.1	2,274	1,521	349	3,970	3,460

Table 1
Soil Analytical Results - PA Short List - Unleaded Gasoline
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart
3390 State Route 257
Seneca Borough, Venango County, Pennsylvania
PADEP Facility ID # 61-18854

Parameter	UNITS	Residential Soil to Groundwater	Non-Residential Soil to Groundwater	Residential Direct Contact (0-15')	Non-Residential Surface Soil 0-2'	Non-Residential Surface Soil 2-15'	Non-Residential Vapor Intrusion Screening Value	SB-16 * (7.0'-8.0')	SB-17 (3.0'-4.0')	SB-18 (6.0'-8.0')	SB-19 (0.0'-2.0')	SB-22 (6.0'-8.0')	SB-24 (6.0'-8.0')	MW-7 (2.5'-4.5')	MW-9 (0.5'-2.5')	MW-8 / SS-7 (14.0'-16.0')
Date Sampled								6/14/2016	6/14/2016	9/14/2016	9/14/2016	9/14/2016	9/14/2016	10/17/2016	10/18/2016	11/1/2016
VOCs																
Benzene	ug/kg	500	500	57,000	290,000	330,000	130	12.7	50,600	1,170	27.9	963	214	5.2	<5.0	10.9
Ethylbenzene	ug/kg	70,000	70,000	180,000	890,000	1,000,000	46,000	28.1	113,000	22,300	<4.3	18,500	8,110	<5.1	<5.0	<4.6
Isopropylbenzene (Cumene)	ug/kg	600,000	2,500,000	7,700,000	10,000,000	10,000,000	2,500,000	<4.9	12,600	2,840	49.7	1,470	817	<5.1	<5.0	<4.6
Methyl tert-Butyl Ether (MTBE)	ug/kg	2,000	2,000	1,700,000	8,600,000	9,900,000	1,400	11.7	<227	<223	<4.3	<198	<195	<5.1	<5.0	166
Naphthalene	ug/kg	25,000	25,000	160,000	760,000	190,000,000	25,000	<4.9	30,210	5,850	10.5	2,920	1,970	<5.1	<5.0	<4.6
Toluene	ug/kg	100,000	100,000	10,000,000	10,000,000	10,000,000	44,000	<4.9	2,640	<223	<4.3	<198	<195	<5.1	<5.0	<4.6
1,2,4-Trimethylbenzene	ug/kg	8,400	35,000	130,000	560,000	640,000	35,000	47.1	191,000	42,900	9.3	40,000	17,500	<5.1	<5.0	<4.6
1,3,5-Trimethylbenzene	ug/kg	74,000	210,000	2,200,000	10,000,000	10,000,000	210,000	17.6	77,900	7,810	<4.3	14,600	5,490	<5.1	<5.0	<4.6
Xylene (Total)	ug/kg	1,000,000	1,000,000	1,900,000	8,000,000	9,100,000	990,000	112	297,000	5,080	18.1	37,000	9,470	<15.3	<14.9	<10.9
PID								13.8	2,875	952	139	396	824	2.4	9.0	3.7

Parameter	UNITS	Residential Soil to Groundwater	Non-Residential Soil to Groundwater	Residential Direct Contact (0-15')	Non-Residential Surface Soil 0-2'	Non-Residential Surface Soil 2-15'	Non-Residential Vapor Intrusion Screening Value	MW-6 (4.0'-6.0')	MW-6 (8.0'-10.0')	MW-10 (6.0'-8.0')	MW-10 (8.0'-10.0')	MW-11 (4.0'-6.0')	MW-11 (6.0'-8.0')	MW-12 (4.0'-6.0')	MW-13 (1.0'-2.0')	MW-14 (1.0'-2.0')
Date Sampled								11/15/2016	11/15/2016	11/15/2016	11/15/2016	11/15/2016	11/15/2016	1/24/2017	1/24/2017	1/25/2017
VOCs																
Benzene	ug/kg	500	500	57,000	290,000	330,000	130	<5.4	<4.4	<4.8	<230	<5.4	<4.3	<5.9	<5.7	<10.7
Ethylbenzene	ug/kg	70,000	70,000	180,000	890,000	1,000,000	46,000	<5.4	<4.4	<4.8	<230	<5.4	<4.3	<5.9	<5.7	<10.7
Isopropylbenzene (Cumene)	ug/kg	600,000	2,500,000	7,700,000	10,000,000	10,000,000	2,500,000	<5.4	<4.4	<4.8	<230	<5.4	<4.3	<5.9	<5.7	<10.7
Methyl tert-Butyl Ether (MTBE)	ug/kg	2,000	2,000	1,700,000	8,600,000	9,900,000	1,400	<5.4	<4.4	<4.8	<230	<5.4	<4.3	<5.9	<5.7	<10.7
Naphthalene	ug/kg	25,000	25,000	160,000	760,000	190,000,000	25,000	5.5	<4.4	<4.8	<230	<5.4	<4.3	<5.9	<5.7	<10.7
Toluene	ug/kg	100,000	100,000	10,000,000	10,000,000	10,000,000	44,000	<5.4	<4.4	<4.8	<230	<5.4	<4.3	<5.9	<5.7	<10.7
1,2,4-Trimethylbenzene	ug/kg	8,400	35,000	130,000	560,000	640,000	35,000	<5.4	<4.4	<4.8	<230	<5.4	<4.3	<5.9	<5.7	<10.7
1,3,5-Trimethylbenzene	ug/kg	74,000	210,000	2,200,000	10,000,000	10,000,000	210,000	<5.4	<4.4	<4.8	<230	<5.4	<4.3	<5.9	<5.7	<10.7
Xylene (Total)	ug/kg	1,000,000	1,000,000	1,900,000	8,000,000	9,100,000	990,000	<16.1	<13.3	<14.3	<691	<16.3	<12.8	<17.6	<17.1	<32.1
PID								1.7	0.0	2.7	0.0	0.0	0.0	8.7	1.0	<1.0

Notes:
All organic contaminant constituents reported in ug/kg. Lead reported in mg/kg.
NA Denotes Not Analyzed, Not Available, or Not Applicable
Blue - Denotes exceedance of Residential Soil to Groundwater Statewide Health Standard.
Blue & Bold - Denotes exceedance of Non-Residential Soil to Groundwater Statewide Health Standard.
Green - Denotes exceedance of Residential Direct-Contact, 0-15' Statewide Health Standard.
Red - Denotes exceedance of Non-Residential Direct-Contact, 0-2' Statewide Health Standard.
Red & Bold - Denotes exceedance of Non-Residential Direct-Contact, 2'-15' Statewide Health Standard.
- Denotes exceeds two or more Statewide Health Standards.
Highlighted value exceeds Non-Residential Vapor Intrusion screening value Statewide Health Standard.
* Soil samples SB-16 (3.0'-4.0') and SB-16 (7.0'-8.0') labiles inadvertently reversed to laboratory, this Table presents corrected data.

Table 2
Historic Groundwater Elevations
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart
3390 State Route 257
Seneca Borough, Venango County, Pennsylvania
PADEP Facility ID # 61-18854

Monitoring Well	Date	TOC Elevation (feet)	Total Depth of Well (feet)	Depth to Top of Water (feet)	Product Thickless (feet)	Corrected Static Water Level (feet)	Groundwater Elevation (feet)
MW-1	7/12/2016	1450.44	8.0	1.72	0.00	1.72	1448.72
MW-1	10/4/2016	1450.44	8.0	1.66	0.00	1.66	1448.78
MW-1	1/17/2017	1450.44	8.0	1.16	0.00	1.16	1449.28
MW-1	3/29/2017	1450.44	8.0	1.53	0.00	1.53	1448.91
MW-1	6/12/2017	1450.44	8.0	1.53	Sheen	1.53	1448.91
MW-2	7/12/2016	1449.80	8.0	5.50	0.00	5.50	1444.30
MW-2	10/4/2016	1449.80	8.0	1.57	0.00	1.57	1448.23
MW-2	1/17/2017	1449.80	8.0	0.89	0.00	0.89	1448.91
MW-2	3/29/2017	1449.80	8.0	1.03	0.00	1.03	1448.77
MW-2	6/12/2017	1449.80	8.0	1.07	Sheen	1.07	1448.73
MW-3	7/12/2016	1450.14	8.0	5.51	0.00	5.51	1444.63
MW-3	10/4/2016	1450.14	8.0	2.32	0.82	1.72	1448.42
MW-3	1/17/2017	1450.14	8.0	1.02	0.01	1.01	1449.13
MW-3	3/29/2017	1450.14	8.0	0.95	0.01	0.94	1449.20
MW-3	6/12/2017	1450.14	8.0	1.02	Sheen	1.02	1449.12
MW-4	7/12/2016	1449.99	8.0	1.19	0.00	1.19	1448.80
MW-4	10/4/2016	1449.99	8.0	1.89	0.00	1.89	1448.10
MW-4	1/17/2017	1449.99	8.0	0.96	0.00	0.96	1449.03
MW-4	3/29/2017	1449.99	8.0	1.01	0.00	1.01	1448.98
MW-4	6/12/2017	1449.99	8.0	0.98	Sheen	0.98	1449.01
MW-5	7/12/2016	1449.93	8.0	5.72	0.00	5.72	1444.21
MW-5	10/4/2016	1449.93	8.0	1.03	0.00	1.03	1448.90
MW-5	1/17/2017	1449.93	8.0	1.08	0.00	1.08	1448.85
MW-5	3/29/2017	1449.93	8.0	1.21	0.00	1.21	1448.72
MW-5	6/12/2017	1449.93	8.0	1.14	Sheen	1.14	1448.79
MW-6	1/17/2017	1450.52	9.8	3.48	0.00	3.48	1447.04
MW-6	3/28/2017	1450.52	9.8	3.43	0.00	3.43	1447.09
MW-6	6/12/2017	1450.52	9.8	3.45	0.00	3.45	1447.07
MW-7	1/17/2017	1451.98	10.0	3.30	0.00	3.30	1448.68
MW-7	3/29/2017	1451.98	10.0	3.30	0.00	3.30	1448.68
MW-7	6/12/2017	1451.98	10.0	3.45	0.00	3.45	1448.53
MW-8	12/6/2016	1449.95	16.0	11.60	0.00	11.60	1438.35
MW-8	1/17/2017	1449.95	16.0	3.95	0.00	3.95	1446.00
MW-8	3/28/2017	1449.95	16.0	2.61	0.00	2.61	1447.34
MW-8	4/25/2017	1449.95	16.0	2.42	0.00	2.42	1447.53
MW-8	6/12/2017	1449.95	16.0	2.28	0.00	2.28	1447.67

Table 2
Historic Groundwater Elevations
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart
3390 State Route 257
Seneca Borough, Venango County, Pennsylvania
PADEP Facility ID # 61-18854

Monitoring Well	Date	TOC Elevation (feet)	Total Depth of Well (feet)	Depth to Top of Water (feet)	Product Thickness (feet)	Corrected Static Water Level (feet)	Groundwater Elevation (feet)
MW-9	12/6/2016	1448.91	12.5	10.18	0.00	10.18	1438.73
MW-9	1/17/2017	1448.91	12.5	2.51	0.00	2.51	1446.40
MW-9	3/28/2017	1448.91	12.5	3.86	0.00	3.86	1445.05
MW-9	6/12/2017	1448.91	12.5	3.96	0.00	3.96	1444.95
MW-10	12/6/2016	1448.39	9.9	8.15	0.00	8.15	1440.24
MW-10	1/17/2017	1448.39	9.9	6.72	0.00	6.72	1441.67
MW-10	3/28/2017	1448.39	9.9	4.32	0.00	4.32	1444.07
MW-10	4/25/2017	1448.39	9.9	3.53	0.00	3.49	1444.90
MW-10	6/12/2017	1448.39	9.9	3.53	0.00	3.53	1444.86
MW-11	12/6/2016	1447.56	9.9	9.90	0.00	DRY	DRY
MW-11	1/17/2017	1447.56	9.9	9.90	0.00	DRY	DRY
MW-11	2/22/2017	1447.56	9.9	8.90	0.00	8.90	1438.66
MW-11	3/28/2017	1447.56	9.9	7.65	0.00	7.65	1439.91
MW-11	4/25/2017	1447.56	9.9	7.65	0.00	7.65	1439.91
MW-11	6/12/2017	1447.56	9.9	6.85	0.00	6.85	1440.71
MW-12	2/1/2017	1447.76	8.0	4.01	0.00	4.01	1443.75
MW-12	3/28/2017	1447.76	8.0	4.15	0.00	4.15	1443.61
MW-12	6/12/2017	1447.76	8.0	4.25	0.00	4.25	1443.51
MW-13	2/1/2017	1447.48	8.0	3.16	0.00	3.16	1444.32
MW-13	3/28/2017	1447.48	8.0	3.78	0.00	3.78	1443.70
MW-13	6/12/2017	1447.48	8.0	4.06	0.00	4.06	1443.42
MW-14	2/1/2017	1448.07	8.0	3.50	0.00	3.50	1444.57
MW-14	3/28/2017	1448.07	8.0	3.83	0.00	3.83	1444.24
MW-14	6/12/2017	1448.07	8.0	5.61	0.00	5.61	1442.46
MW-15	6/12/2017	1450.80	12.5	10.76	0.00	10.76	1440.04
MW-15	7/31/2017	1449.53	12.5	1.67	0.00	1.67	1447.86

1/17/2017 - MW-6 and MW-7 sampled, all other wells gauged.

4/25/2017 - MW-8 sampled, MW-10 and MW-11 gauged only.

MW-15 PVC cut down by 1.27' between initial sampling event and surveying MW-15.

TABLE 3
Groundwater Analytical Results
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart
3390 State Route 257
Seneca Borough, Venango Co., PA
PADEP Facility ID # 61-18854

Monitoring Well	Date	Benzene	Ethylbenzene	Cumene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	Total Xylenes
SHS MSC Residential		5	700	840	20	100	1,000	15	420	10,000
SHS MSC Non-Residential		5	700	3,500	20	100	1,000	62	1,200	10,000
Non-Residential Vapor Intrusion Screening Values		350	860	24,000	96,000	1,300	430,000	750	1,200	12,000
MW-1	7/12/2016	63.2	321	17.5	<5.0	94.3	<5.0	301	81.5	694
MW-1	10/4/2016	92.1	1,100	53.7	6.2	233	9.8	604	214	1,270
MW-1	3/29/2017	76.2	638	43.2	9.3	179	<5.0	573	219	497
MW-1	6/13/2017	45.9	370	30.1	<5.0	93.6	<5.0	297	69.1	325
MW-2	7/12/2016	664	509	39.5	12.3	170	106	1,100	328	2,210
MW-2	10/4/2016	1,800	752	66.5	21.3	134	83	635	264	740
MW-2	3/29/2017	783	250	18.8	14.8	37.4	<5.0	118	97.7	91.1
MW-2	6/13/2017	884	319	23.6	15.9	46.5	10.5	179	87.3	290
MW-3	7/12/2016	15,000	3,070	85.0	41.7	<500	10,500	2,320	595	15,600
MW-3	10/4/2016	17,800	3,000	88.2	39.7	411	10,200	2,020	557	15,600
MW-3	3/29/2017	13,400	4,410	191	<25	880	8,810	4,920	1,590	23,900
MW-3	6/13/2017	17,000	2,980	73.4	<25	537	7,270	2,730	595	16,800
MW-4	7/12/2016	2,240	1,240	81.3	7.8	291	667	1,200	300	3,070
MW-4	10/4/2016	1,200	485	55.1	<5.0	133	170	313	103	922
MW-4	3/29/2017	1,760	764	71.9	5.1	145	47.0	394	133	1,400
MW-4	6/13/2017	1,600	626	66.5	<5.0	153	25.7	289	86.7	856
MW-5	7/12/2016	3,940	2,140	96.3	51.7	150	85.2	1,570	485	8,130
MW-5	10/4/2016	9,860	2,300	99.2	75.5	384	32.1	1,950	554	6,450
MW-5	3/29/2017	9,180	2,420	100	40.6	386	27.3	2,010	585	3,220
MW-5	6/13/2017	10,500	3,020	109	61.3	4,470	53.9	3,510	1,040	8,660
MW-6	1/17/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-6	3/29/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-6	6/13/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-7	1/17/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-7	3/29/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-7	6/13/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	12/6/2016	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	3/28/2017	<5.0	<5.0	<5.0	422	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	4/25/2017	<5.0	<5.0	<5.0	520	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	6/12/2017	<5.0	<5.0	<5.0	421	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	12/6/2016	<5.0	<5.0	<5.0	10.4	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	3/28/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0

TABLE 3
Groundwater Analytical Results
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart
3390 State Route 257
Seneca Borough, Venango Co., PA
PADEP Facility ID # 61-18854

Monitoring Well	Date	Benzene	Ethylbenzene	Cumene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	Total Xylenes
SHS MSC Residential		5	700	840	20	100	1,000	15	420	10,000
SHS MSC Non-Residential		5	700	3,500	20	100	1,000	62	1,200	10,000
Non-Residential Vapor Intrusion Screening Values		350	860	24,000	96,000	1,300	430,000	750	1,200	12,000
MW-10	12/6/2016	16.3	315	59.4	15.9	99.3	<5.0	260	9.2	8.3
MW-10	3/28/2017	8.9	141	23.1	16.3	31.5	<5.0	22.3	2.6	<5.0
MW-10	6/12/2017	5.3	81.8	14.4	21.3	11.1	<5.0	6.4	1.9	<5.0
MW-11	12/6/2016	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
MW-11	2/22/2017	<5.0	<5.0	<5.0	11.6	<5.0	<5.0	<1.0	<1.0	<5.0
MW-11	3/28/2017	<5.0	<5.0	<5.0	11.2	<5.0	<5.0	<1.0	<1.0	<5.0
MW-11	6/12/2017	<5.0	<5.0	<5.0	13.2	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	2/1/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	3/28/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	2/1/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	3/28/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-14	2/1/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-14	3/28/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-14	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-15	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-15	7/31/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Upstream	10/4/2016	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Upstream	3/29/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Upstream	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Downstream	10/4/2016	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Downstream	3/29/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Downstream	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0

All concentrations provided in micrograms per liter(ug/L).

TMB = Trimethylbenzene

NA indicates parameter not analyzed.

Red values denote exceedences of the Residential Statewide Health Standard.

Red Bolded values denote exceedences of the Residential Statewide Health Standard.

Highlighted value exceeds the Non-Residential Vapor Intrusion Screening Statewide Health Standard.

Table 4
Product Recovery
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart
3390 State Route 257
Seneca Borough, Venango County, Pennsylvania
PADEP Facility ID # 61-18854

Monitoring Well	Date	Well Diameter (inches)	Measured Product Thickness		Estimated LPH Volume in well and sandpack	Bailed (Yes/No)	Bailed LPH Volume Product / Water	Bailed LPH Volume Product Recovered	Adsorbent Socks Used (1= new 0= not changed)
			(inches)	(feet)	(gallons)		(gallons)	(gallons)	
MW-1	3/7/2017	2	Sheen	Sheen	NA	Y	0.5	0.0	0
MW-1	3/21/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-1	3/29/2017	2	0.00	0.00	NA	Y	1.0	0.0	1
MW-1	4/25/2017	2	0.00	0.00	NA	Y	0.0	0.0	1
MW-1	5/3/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-1	5/19/2017	2	Sheen	Sheen	NA	Y	0.5	0.0	1
MW-1	6/7/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-1	6/13/2017	2	Slight Sheen	Slight Sheen	NA	Y	1.0	0.0	0
MW-1	7/5/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-1	7/17/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-1	7/31/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-1	8/10/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-1									
MW-2	2/9/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-2	2/22/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-2	3/7/2017	2	Sheen	Sheen	NA	Y	1.0	0.0	1
MW-2	3/21/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-2	3/29/2017	2	0.00	0.00	NA	Y	1.0	0.0	1
MW-2	4/25/2017	2	0.00	0.00	NA	N	0.0	0.0	1
MW-2	5/3/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-2	5/19/2017	2	Sheen	Sheen	NA	Y	1.0	0.0	1
MW-2	6/7/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-2	6/13/2017	2	Mod. Sheen	Mod. Sheen	NA	Y	1.0	0.0	0
MW-2	7/5/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-2	7/17/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2	7/31/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2	8/10/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2									

Table 4
Product Recovery
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart
3390 State Route 257
Seneca Borough, Venango County, Pennsylvania
PADEP Facility ID # 61-18854

Monitoring Well	Date	Well Diameter (inches)	Measured Product Thickness		Estimated LPH Volume in well and sandpack (gallons)	Bailed (Yes/No)	Bailed LPH Volume Product / Water (gallons)	Bailed LPH Volume Product Recovered (gallons)	Adsorbent Socks Used (1= new 0= not changed)
			(inches)	(feet)					
MW-3	10/4/2016	2	9.84	0.82	0.59327	Y	1.0	0.5	1
MW-3	11/3/2016	2	NM	NM	NM	N	0.0	0.0	1
MW-3	11/10/2016	2	3.60	0.3	0.21705	Y	1.5	0.5	1
MW-3	11/15/2016	2	1.20	0.1	0.07235	Y	2.5	0.1	1
MW-3	11/22/2016	2	0.25	0.021	0.0151935	Y	2.0	0.015	1
MW-3	11/30/2016	2	0.25	0.021	0.0151935	Y	3.0	0.015	0
MW-3	12/6/2016	2	0.0625	0.0052	0.0037622	Y	1.5	0.003	1
MW-3	12/14/2016	2	0.0312	0.0026	0.0018811	Y	2.0	0.002	1
MW-3	1/4/2017	2	0.5000	0.0416	0.0300976	Y	3.0	0.03	1
MW-3	1/17/2017	2	0.1250	0.0104	0.0075244	Y	3.0	0.007	1
MW-3	2/1/2017	2	0.1250	0.0104	0.0075244	Y	2.5	0.007	1
MW-3	2/9/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-3	2/22/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-3	3/7/2017	2	0.1875	0.0156	0.0112866	Y	4.0	0.01	1
MW-3	3/21/2017	2	0.0312	0.0026	0.0018811	Y	1.5	0.002	1
MW-3	3/29/2017	2	Sheen	Sheen	NA	Y	1.0	0.0	1
MW-3	4/25/2017	2	Sheen	Sheen	NA	Y	3.0	0.0	1
MW-3	5/3/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-3	5/19/2017	2	Heavy Sheen	Heavy Sheen	NA	N	3.0	0.0	1
MW-3	6/7/2017	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-3	6/13/2017	2	Heavy Sheen	Heavy Sheen	NA	Y	1.0	0.0	0
MW-3	7/5/2017	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-3	7/17/2017	2	Heavy Sheen	Heavy Sheen	NA	Y	3.0	0.0	1
MW-3	7/31/2017	2	0.36	0.03	0.021705	Y	1.5	0.0217	1
MW-3	8/10/2017	2	0.72	0.06	0.04341	Y	1.5	0.0217	1
MW-3									
MW-3									
MW-4	2/9/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-4	2/22/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-4	3/7/2017	2	0.1875	0.0156	0.0112866	Y	2.0	0.01	1
MW-4	3/21/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-4	3/29/2017	2	0.00	0.00	NA	Y	1.0	0.0	1
MW-4	4/25/2017	2	0.00	0.00	NA	N	0.0	0.0	1
MW-4	5/3/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-4	5/19/2017	2	Slight Sheen	Slight Sheen	NA	Y	1.0	0.0	1
MW-4	6/7/2017	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-4	6/13/2017	2	Mod. Sheen	Mod. Sheen	NA	Y	1.0	0.0	0
MW-4	7/5/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-4	7/17/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-4	7/31/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-4	8/10/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-4									
MW-4									

Table 4
Product Recovery
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart
3390 State Route 257
Seneca Borough, Venango County, Pennsylvania
PADEP Facility ID # 61-18854

Monitoring Well	Date	Well Diameter (inches)	Measured Product Thickness		Estimated LPH Volume in well and sandpack	Bailed (Yes/No)	Bailed LPH Volume Product / Water	Bailed LPH Volume Product Recovered	Adsorbent Socks Used (1= new 0= not changed)
			(inches)	(feet)	(gallons)		(gallons)	(gallons)	
MW-5	2/22/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-5	3/7/2017	2	Sheen	Sheen	NA	Y	1.0	0.0	1
MW-5	3/21/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-5	3/29/2017	2	0.00	0.00	NA	Y	1.0	0.0	1
MW-5	4/25/2017	2	0.00	0.00	NA	Y	0.0	0.0	0
MW-5	5/3/2017	2	0.00	0.00	NA	N	0.0	0.0	0
MW-5	5/19/2017	2	Sheen	Sheen	NA	Y	0.75	0.0	1
MW-5	6/7/2017	2	Slight Sheen	Slight Sheen	NA	N	0.00	0.0	1
MW-5	6/13/2017	2	Slight Sheen	Slight Sheen	NA	Y	1.00	0.0	0
MW-5	7/5/2017	2	Slight Sheen	Slight Sheen	NA	N	0.00	0.0	1
MW-5	7/17/2017	2	Slight Sheen	Slight Sheen	NA	N	0.00	0.0	1
MW-5	7/31/2017	2	Heavy Sheen	Heavy Sheen	NA	N	0.00	0.0	0
MW-5	8/10/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.00	0.0	1
MW-5									
Cumulative Recovery (gallons) bailed plus socks							50.3	6.4794	41

Other Wells Checked for Product	Date	Observations
MW-2, & MW-4	11/3/2016-1/4/2017	No Sheen Reported
MW-1, MW-2, MW-4 & MW- 5	1/17/2017	Slight Sheen
MW-2 & MW-4	2/1/2017	Slight Sheen
MW-2 & MW-4	2/9/2017	Slight Sheen / Socks Installed
MW-5	2/22/2017	Slight Sheen / Sock Installed
MW-5	3/7/2017	Slight Sheen / Sock Installed
MW-1, MW-2, MW-3, MW-4, and MW-5	3/21/2017	Product in MW-3, moderate sheen in MW-2 & MW-4, slight sheen in MW-1 & MW-5
MW-1 through MW-14	3/29/2017	Sampling event, heavy sheen in MW-3.
MW-1 through MW-5	4/25/2017	Sheen/globules in MW-3.
MW-1 through MW-5	5/3/2017	Sheen/globules in MW-3.
MW-1 through MW-5	5/19/2017	Slight sheen in MW-1, MW-2, MW-4 and MW-5, heavy sheen in MW-3.
MW-1 through MW-5	6/7/2017	Strong odor in MW-1, and MW-3, mild odor in MW-4 and slight odor MW-2 and MW-5.
MW-1 through MW-15	6/13/2017	Sampling event, slight sheen in MW-1 and MW-5, moderate sheen in MW-2 and MW-4, heavy sheen in MW-3.
MW-1 through MW-5	7/5/2017	Strong odor in MW-1, and MW-2, moderate odor in MW-3, MW-4, and MW-5.
MW-1 through MW-5	7/17/2017	Strong odor in MW-3, and MW-4, moderate odor in MW-4 and slight odor MW-1 and MW-5.
MW-1 through MW-5	7/31/2017	Measurable product and very strong odor in MW-3. Sheen only in other MWs. Strong odor in MW-4, and MW-5, moderate odor in MW-2 and slight odor MW-1.
MW-1 through MW-5	8/10/2017	Measurable product and strong odor in MW-3. Sheen only in other MWs. Moderate odor in MW-4, and MW-5, slight odor in MW-1 and MW-2.

Each adsorbent sock recovers approximately one pint if fully saturated.

NM = not measured

Table 5

Aquifer Characteristics
 Harper Oil Company/Heath Oil Inc. - Seneca Mini-Mart
 3390 State Route 257
 Seneca, PA
 PADEP Facility ID 61-18854

Well ID	Date Tested	Test Type	TOC Elevation (ft)	Top of Well Screen (ft)	Total Depth (ft)	Test Duration (minutes)	Depth to Water (SWL) (ft)	Groundwater Elevation (ft)	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)	Estimated Porosity (%)	Hydraulic Gradient (ft/ft)	Groundwater Seepage Vel. (ft./day)
<i>Shallow Wells</i>													
MW-1	9/1/2016	Falling	1,450.44	2.0	8.3	62	2.06	1,448.38	6.588E-01	2.324E-04	35	0.079	1.487E-01
MW-1	9/1/2016	Rising	1,450.44	2.0	8.3	59	2.06	1,448.38	1.807E-01	6.372E-04	35	0.079	4.079E-02
MW-2	9/1/2016	Falling	1,449.80	2.0	8.1	39	2.45	1,447.35	6.122E-01	2.159E-04	35	0.079	1.382E-01
MW-2	9/1/2016	Rising	1,449.80	2.0	8.1	58	2.45	1,447.35	1.844E+00	6.503E-04	35	0.079	4.162E-01
MW-4	9/1/2016	Falling	1,449.99	2.0	8.3	51	1.51	1,448.48	3.666E+00	1.293E-03	35	0.079	8.275E-01
MW-4	9/1/2016	Rising	1,449.99	2.0	8.3	39	1.51	1,448.48	3.680E+00	1.298E-03	35	0.079	8.306E-01
Geo Mean									1.104E+00	5.716E-04	35	0.079	2.492E-01

Notes:

Top of casing elevations surveyed and provided by Morris Knowles & Associates, Inc.

Hydraulic Gradient based on measurements obtained on July 28th, 2016 between MW-3 and MW-14

TABLE 6
Soil Vapor Analytical Results
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart
3390 State Route 257
Seneca Borough, Venango County, Pennsylvania
PADEP Facility ID # 61-18854

Vapor Point	Date	Benzene	Ethylbenzene	Cumene	Total Xylenes	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB
Non-Residential Sub-Slab Vapor Screening Values		2.0	6.3	220	56	61	0.46	2,800	3.9	3.9
SSS Non-Residential Sub-Slab Vapor Screening Values (1/10th Table 4 values)		0.20	0.63	2.20	5.60	6.10	0.046	280	0.390	0.390
Non-Residential Near Source Vapor Screening Values		16.0	49.0	1,800	440	470	3.60	22,000	31.0	31.0
Residential MSC _{IAQ} *		0.0027	1.4000	0.5400	0.1400	0.0810	0.0042	0.5600	0.0083	0.0083
MSC _{SG} = Residential MSC _{IAQ} x 100**		0.2700	140.0000	54.0000	14.0000	8.1000	0.4200	56.0000	0.8300	0.8300
VP-1	10/4/2016	0.00098	<0.0018	<0.005	<0.0133	<0.0074	0.0072	0.0045	0.0200	0.0106
VP-1	5/3/2017	0.00051	<0.0014	<0.0039	0.0049	<0.0057	<0.0041	0.0027	0.0043	0.0020
VP-2	10/4/2016	0.00071	<0.0015	<0.0042	0.0111	<0.0062	0.0128	0.0041	0.0020	<0.0018
VP-2	5/3/2017	0.0011	<0.0014	<0.0040	0.0076	<0.0059	0.0045	0.0050	0.0043	0.0020

Residential MSC_{IAQ} * = Vapor Intrusion Into Buildings from Groundwater and Soil under PA Act 2 SHS, February 15, 2002

MSC_{SG} = Residential MSC_{IAQ} x 100** = Soil Vapor results compared to 100 X the residential indoor air quality MSC to account for dilution effects, as per RFP
Values in mg/m³

Bolded values denote exceedences of the respective Statewide Health Standard.

TMB = Trimethylbenzene

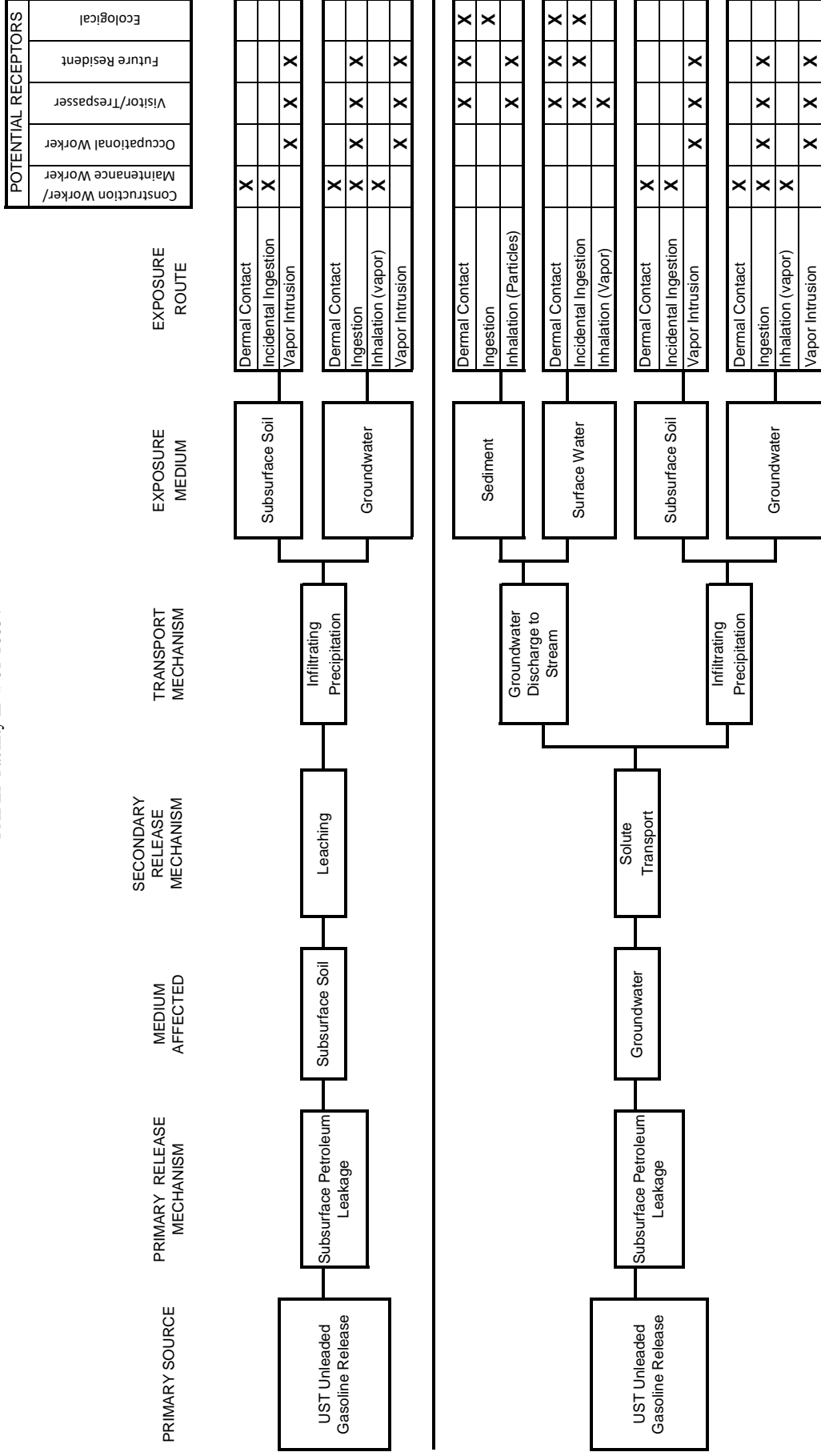
CONCEPTUAL SITE MODEL

Harper Oil Company/Heath Oil Inc. - Seneca Mini Mart

3390 State Route 257

Seneca Borough, Venango County, Pennsylvania

PADEP Facility ID # 61-18854



Blank space indicates incomplete exposure pathway or relatively insignificant, or not applicable potential exposure.

X = Potentially Complete Exposure Pathway

Site Characterization Report

Seneca Mini Mart

Seneca, Pennsylvania

FIGURES

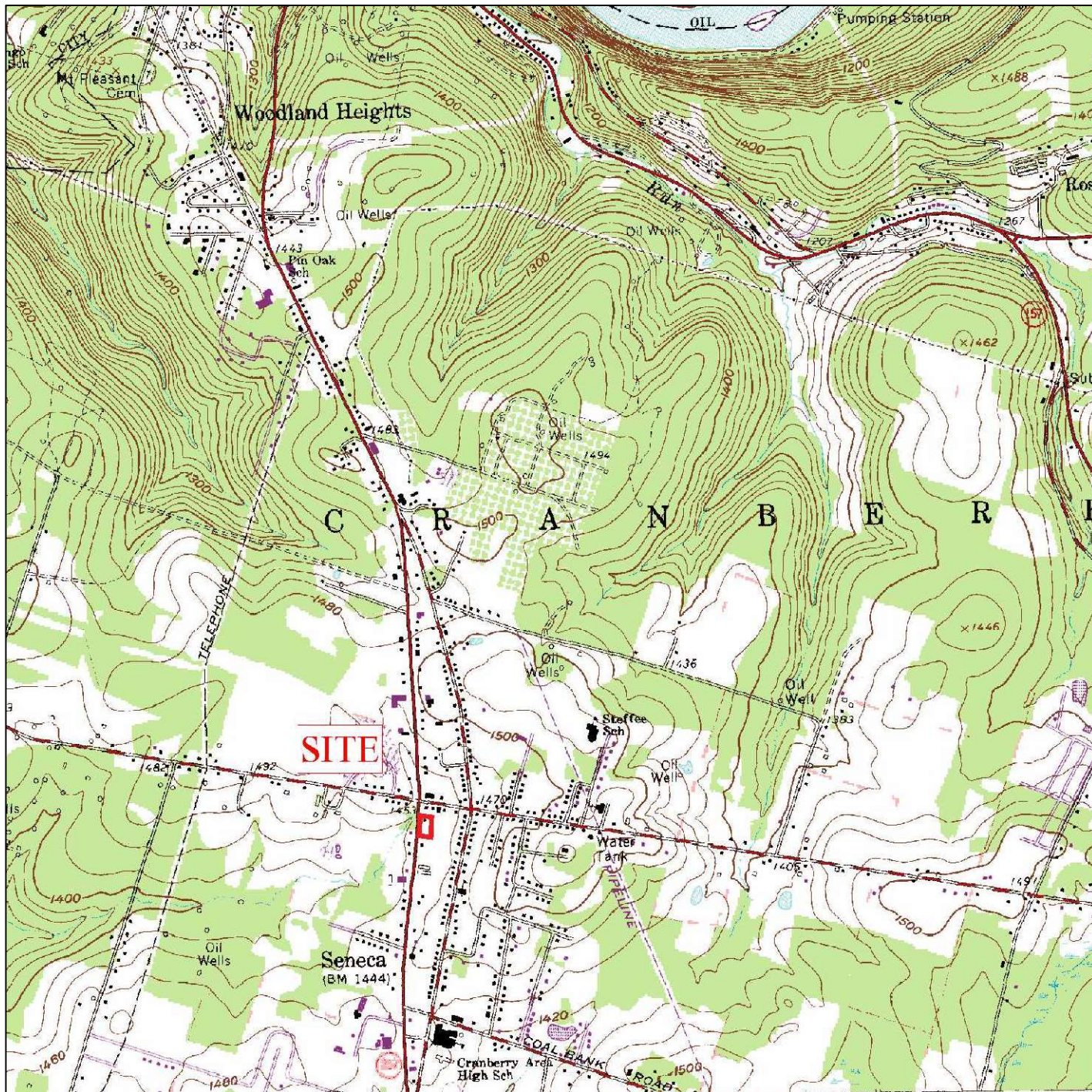


FIGURE 1
SITE LOCATION MAP

Site Characterization Report

Harper Oil Company/Heath Oil Inc., Seneca Mini Mart
3390 State Route 257
Seneca Borough, Venango Co., Pennsylvania



P.O. BOX 44
DELMONT, PA 15626
724.454.2310

REFERENCE:

OIL CITY, PENNSYLVANIA
USGS 7.5-Minute Quadrangle








SCALE:

1 inch equals 2000 feet



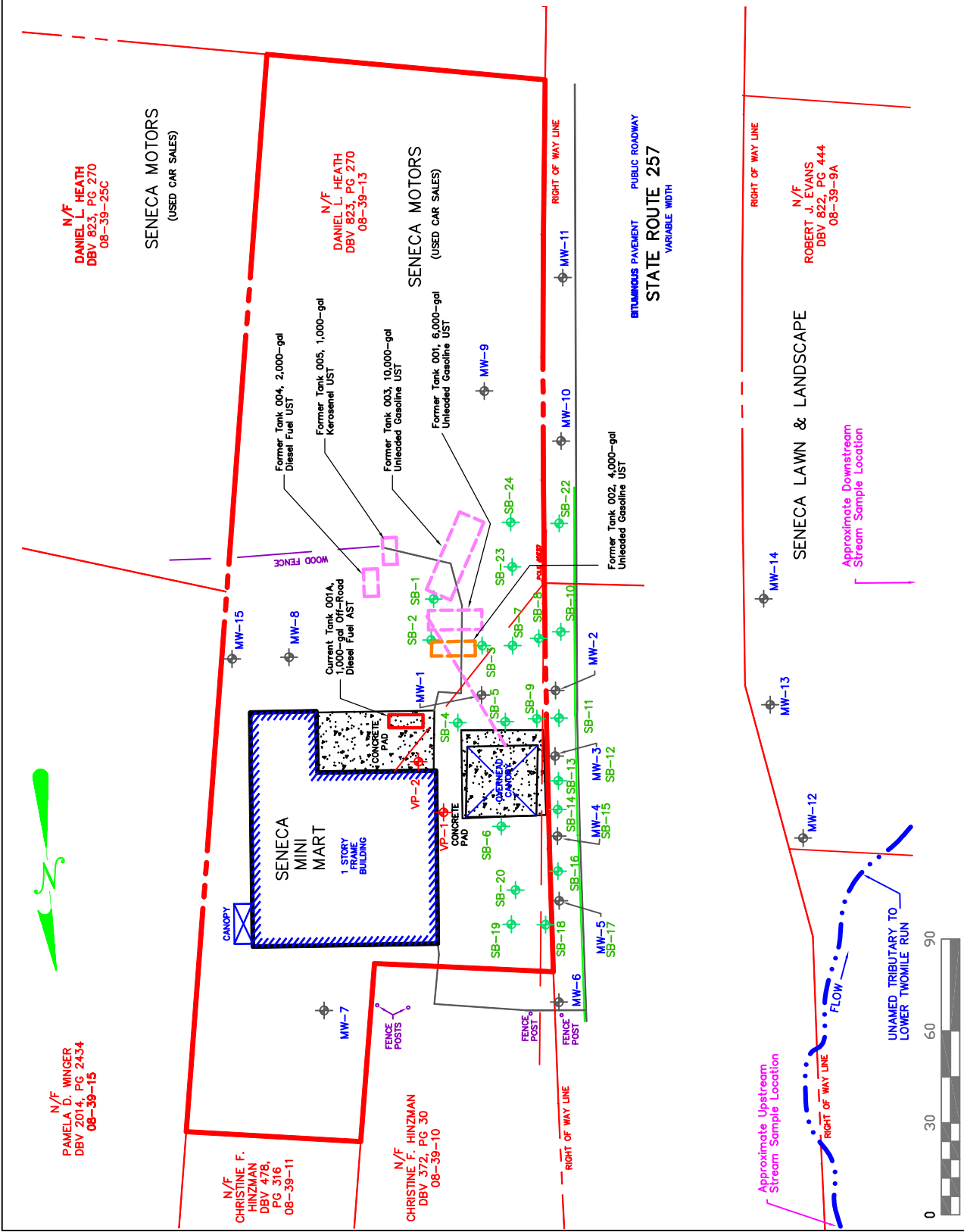
FIGURE 2 SITE PLAN - SOIL BORING AND MONITORING WELL LOCATION MAP	
SITE CHARACTERIZATION REPORT HARPER OIL COMPANY/HEATH OIL INC-SENECA MINI MART SENeca, PENNSYLVANIA PADDP FACILITY ID# 65-18854	DATE: 05/26/17 APPROX. SCALE: See Scale Bar
SENECA BOROUGH VENANGO COUNTY, PENNSYLVANIA	DRAWN BY: RRB

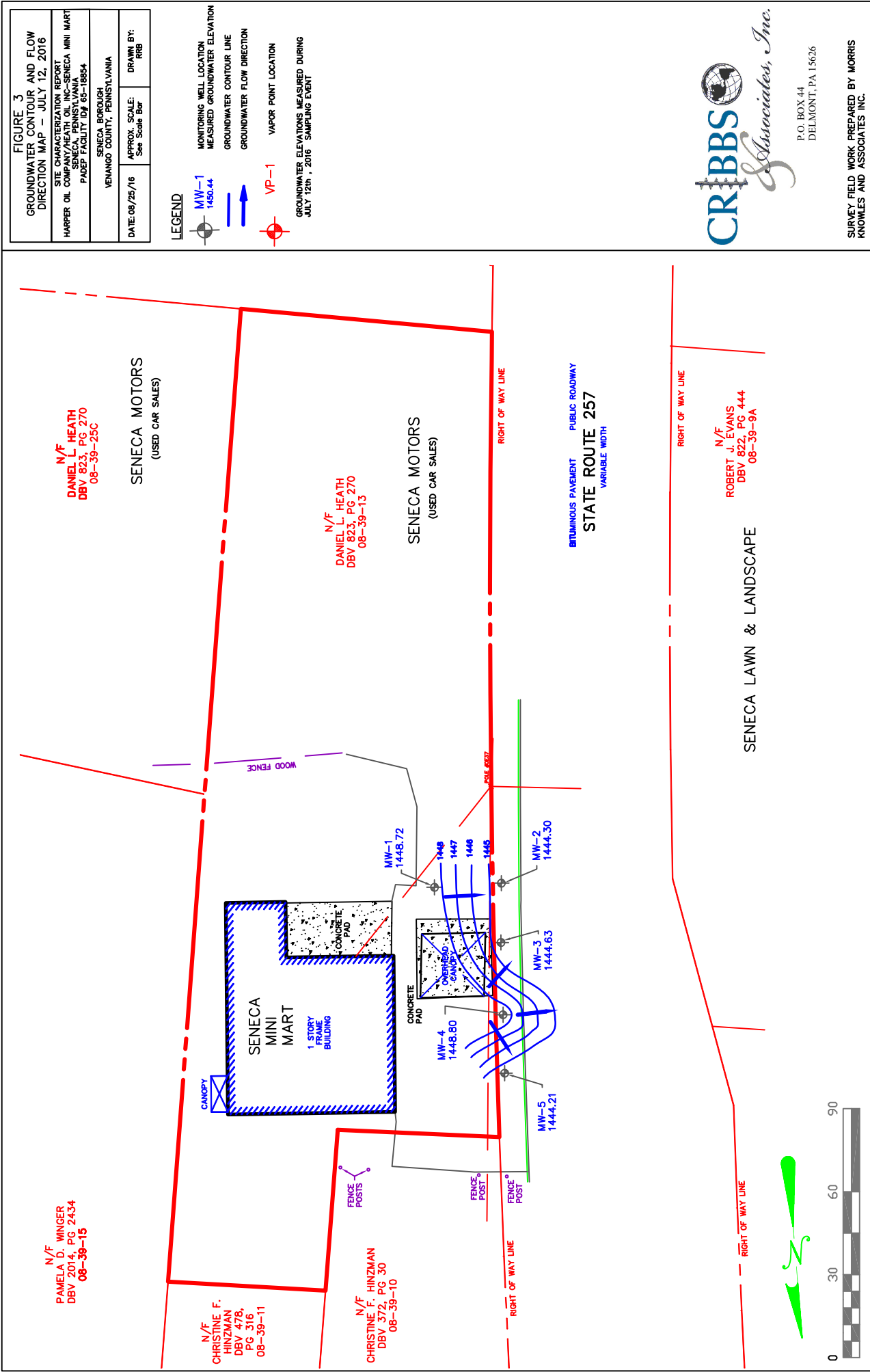
LEGEND

-  **MW-1**
 MONITORING WELL LOCATION
-  **SB-1**
 SOIL BORING LOCATION
-  **VP-1**
 VAPOR POINT LOCATION
-  **[]**
 FORMER UST LOCATION
 TANKS REMOVED
 SEPTEMBER 14-17, 2015
-  **[]**
 CURRENT AST LOCATION
-  **[]**
 FORMER PRODUCT LINE LOCATION
-  **[]**
 FORMER UST LOCATION
 TANK REMOVED
 FEBRUARY 11, 1989


CRBBS & Associates, Inc.
 P.O. BOX 44
 DELMONT, PA 15626

SURVEY FIELD WORK PREPARED BY MORRIS
 KNOWLES AND ASSOCIATES INC.





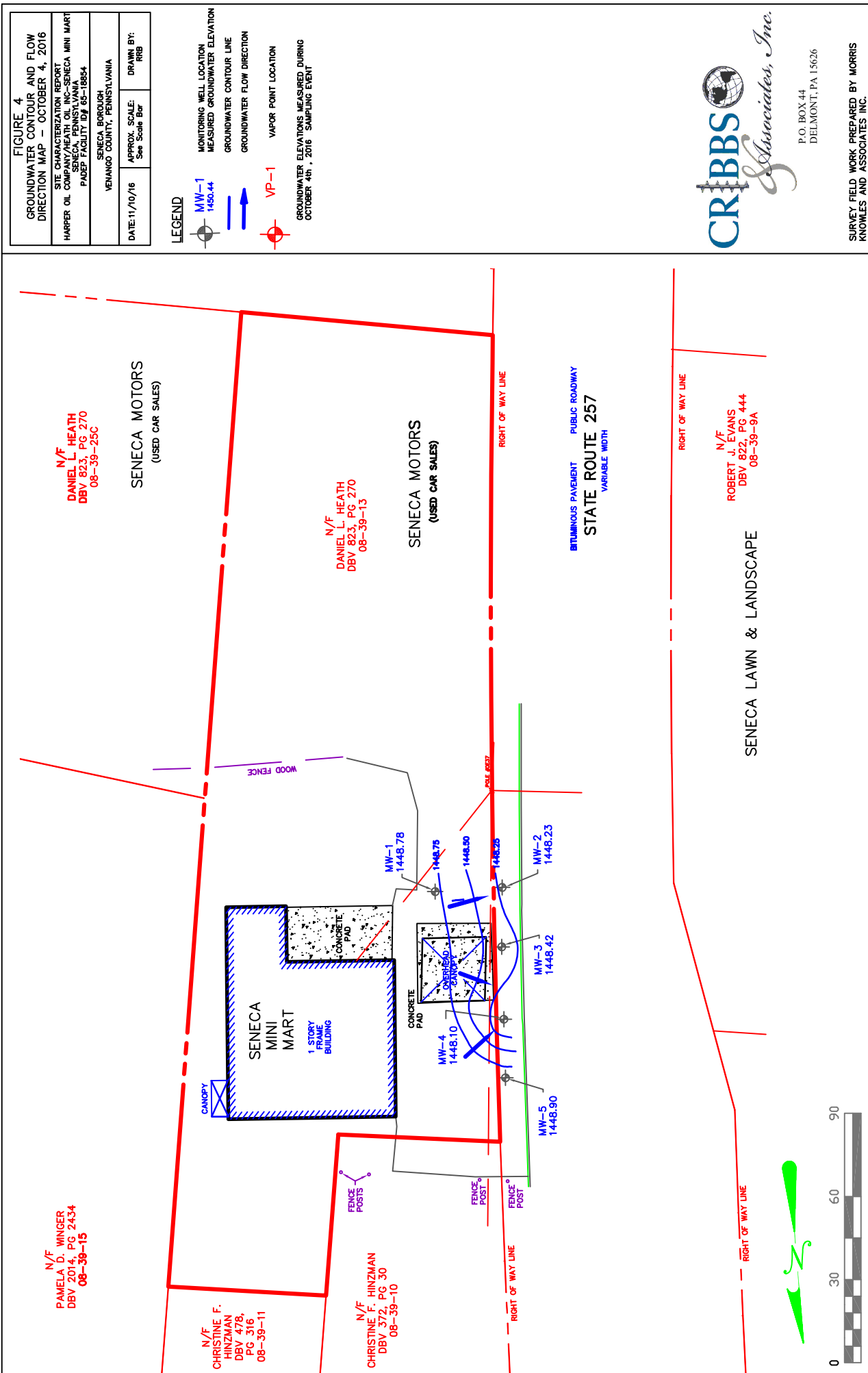


FIGURE 6	
GROUNDWATER CONTOUR AND FLOW DIRECTION	
MAP - MARCH 28-29, 2017	
SITE CHARACTERIZATION REPORT	
HARPER OIL COMPANY/HEATH OIL INC-SENECA MINI MART	
PADEP FACILITY ID# 65-18854	
SENECA BOROUGH	
VENANGO COUNTY, PENNSYLVANIA	
DATE: 4/14/2017	APPROX. SCALE: See Scale Bar
	DRAWN BY: RRB

LEGEND



MW-1
1450.44



GROUNDWATER CONTOUR LINE



GROUNDWATER FLOW DIRECTION



VP-1

MONITORING WELL LOCATION

MEASURED GROUNDWATER ELEVATION

GROUNDWATER CONTOUR LINE

GROUNDWATER FLOW DIRECTION

VAPOR POINT LOCATION

GROUNDWATER ELEVATIONS FOR ALL WELLS

MEASURED DURING MARCH 28th and 29th, 2017

SAMPLING EVENT.



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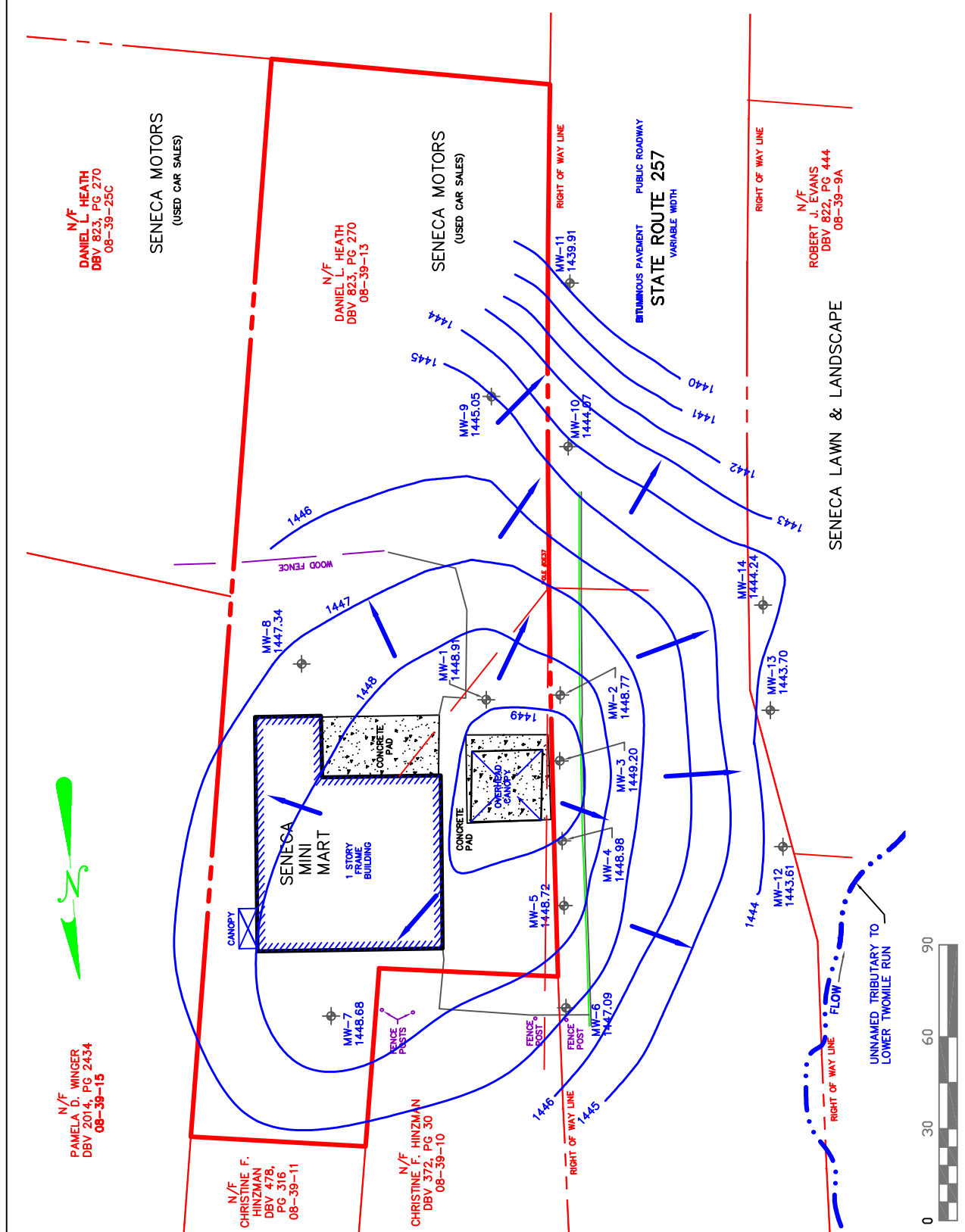
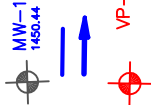


FIGURE 7 GROUNDWATER CONTOUR AND FLOW DIRECTION MAP - JUNE 12, 2017	
SITE CHARACTERIZATION REPORT HARPER OIL COMPANY/HEATH OIL INC.-SENECA MINI MART SENECA, PENNSYLVANIA PADEP FACILITY ID# 65-18854	
SENECA BOROUGH VENANGO COUNTY, PENNSYLVANIA	
DATE: 8/1/2017	DRAWN BY: RRB
APPROX. SCALE: See Scale Bar	

LEGEND



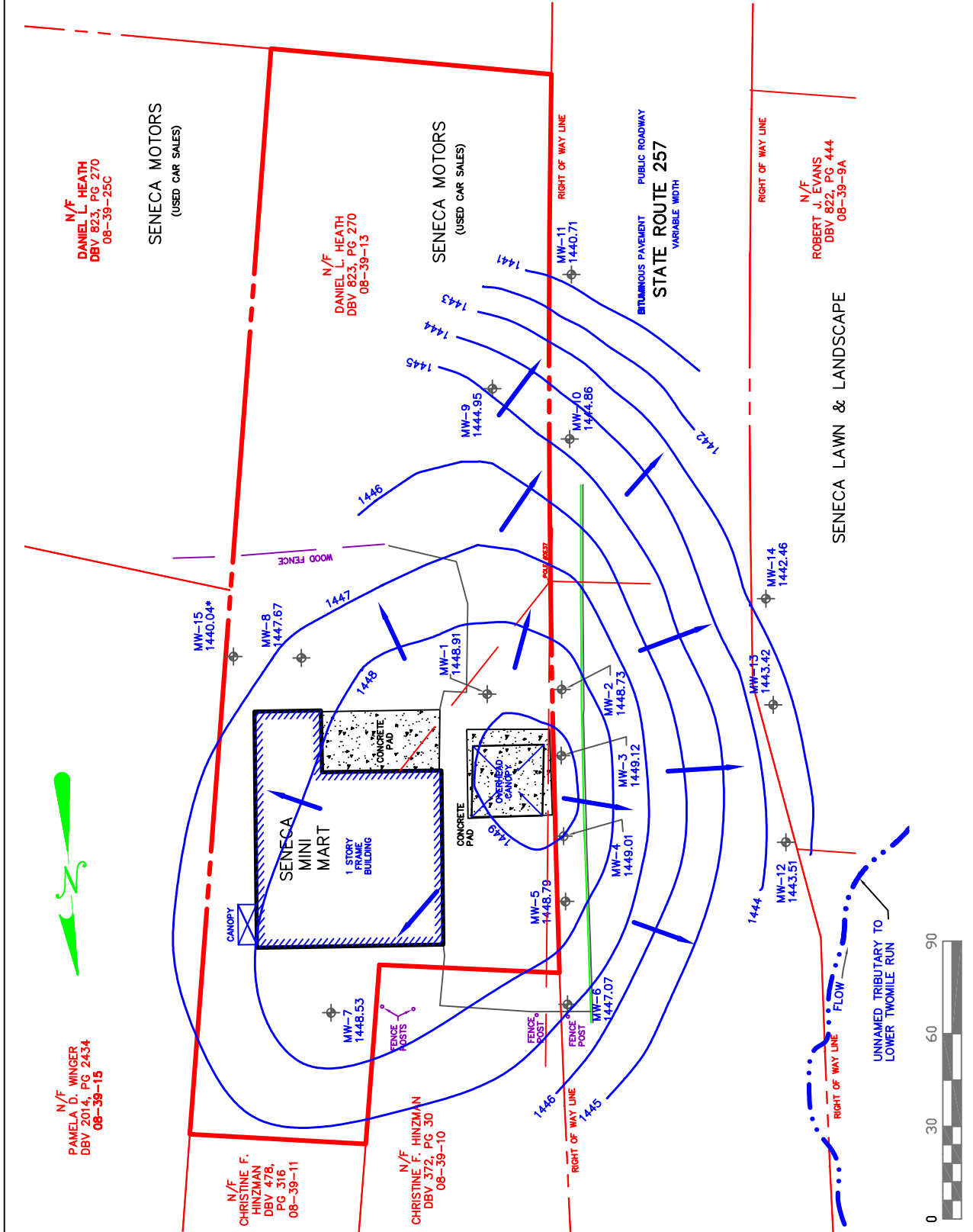
MONITORING WELL LOCATION
MEASURED GROUNDWATER ELEVATION
GROUNDWATER CONTOUR LINE
GROUNDWATER FLOW DIRECTION
VAPOR POINT LOCATION

* GROUNDWATER ELEVATIONS FROM MW-15, NOT USED FOR GROUNDWATER MONITORING MAP BECAUSE THE RECENTLY INSTALLED MONITORING WELL HAS NOT FULLY RECHARGED TO STATIC WATER LEVEL (GROUNDWATER ELEVATION IN MW-15 ROSE TO 1447.86 BY JULY 31st, 2017).



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1

SITE CHARACTERIZATION REPORT HARPER OIL COMPANY/HEATH OIL INC.-SENECA MINI MART SENECA, PENNSYLVANIA PADEP FACILITY ID# 65-18854	
SENECA BOROUGH VENANGO COUNTY, PENNSYLVANIA	
DATE: 07/12/17	APPROX. SCALE: See Scale Bar
DRAWN BY: RRB	

LEGEND



MONITORING WELL LOCATION



SOIL BORING LOCATION



VAPOR POINT LOCATION



FORMER UST LOCATION
TANKS REMOVED
SEPTEMBER 14-17, 2015



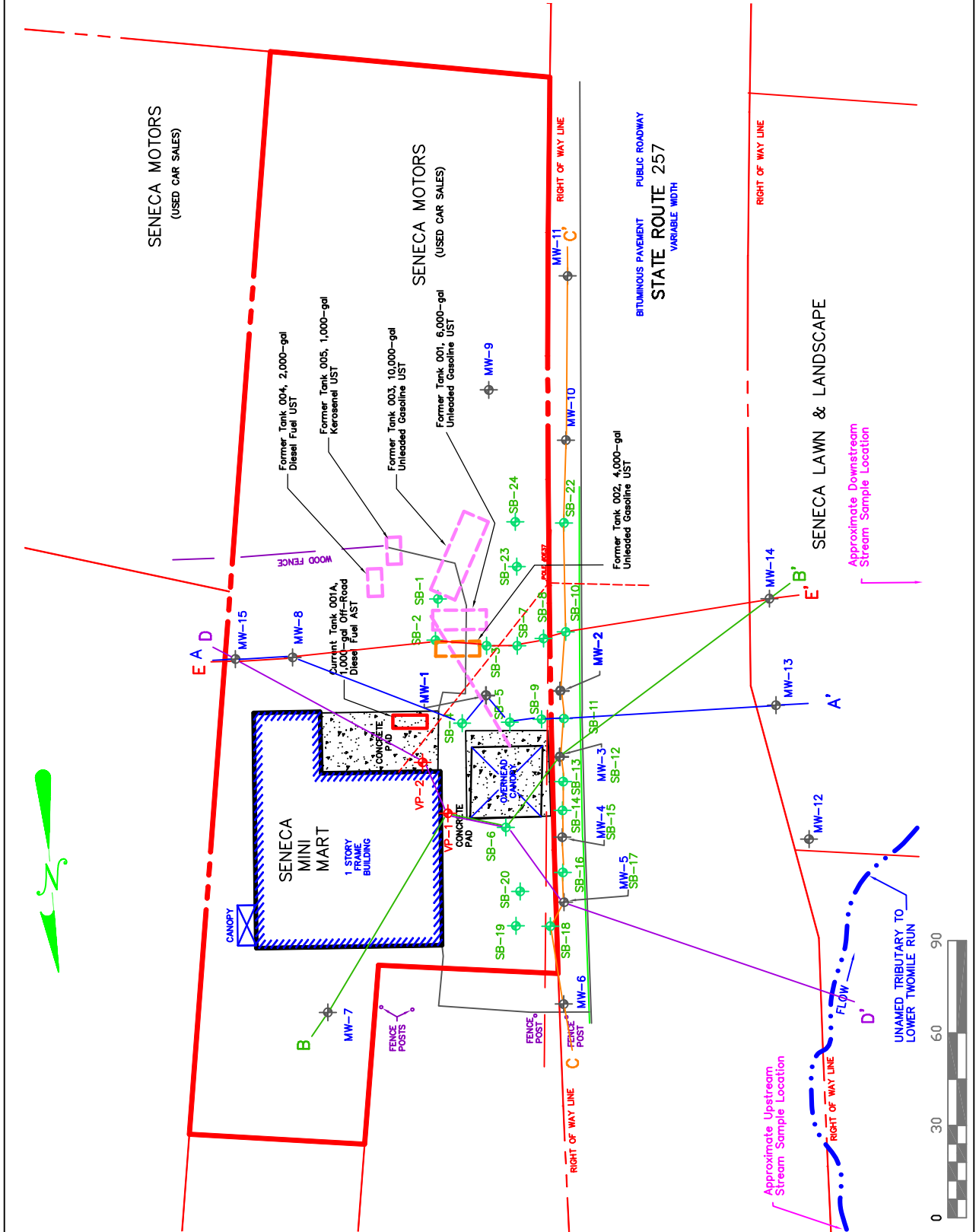
CURRENT AST LOCATION

FORMER PRODUCT
LINE LOCATION

FORMER UST LOCATION
TANK REMOVED
FEBRUARY 11, 1999

Cross Section Lines

- A-A', B-B', C-C', D-D', E-E'



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**SURVEY FIELD WORK PREPARED BY MORRIS
KNOWLES AND ASSOCIATES INC.**

A

A'

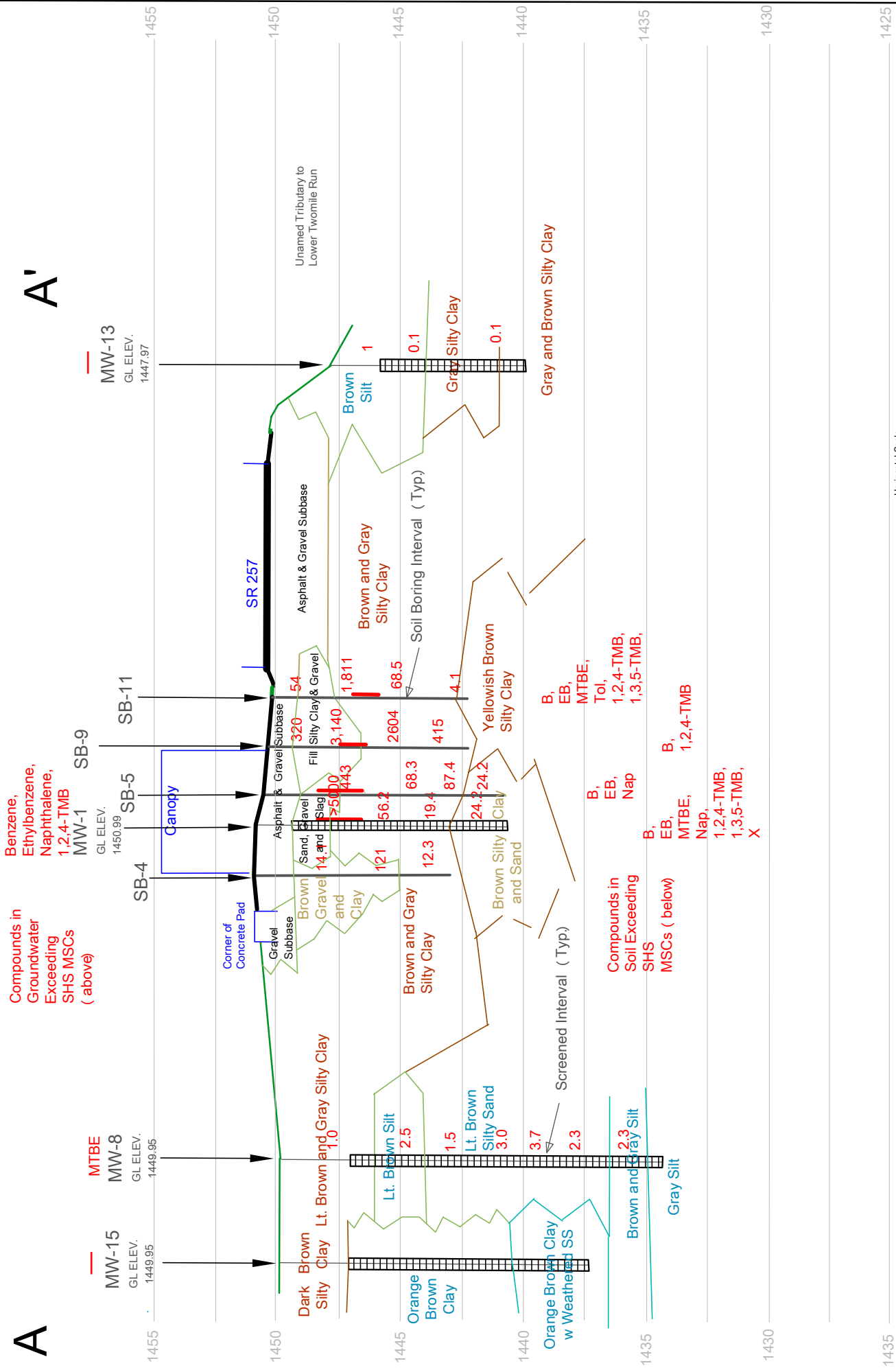


FIGURE 9

Cross Section A - A'

SITE CHARACTERIZATION REPORT
HARPER OIL COMPANY/HEATH OIL INC.
SENECA MINI MART, 3390 STATE ROUTE 257
SENECA BOROUGH, PENNSYLVANIA,
PADEP FACILITY ID# 61-18864



P.O. Box 44
Delmont, PA
888-316-0211

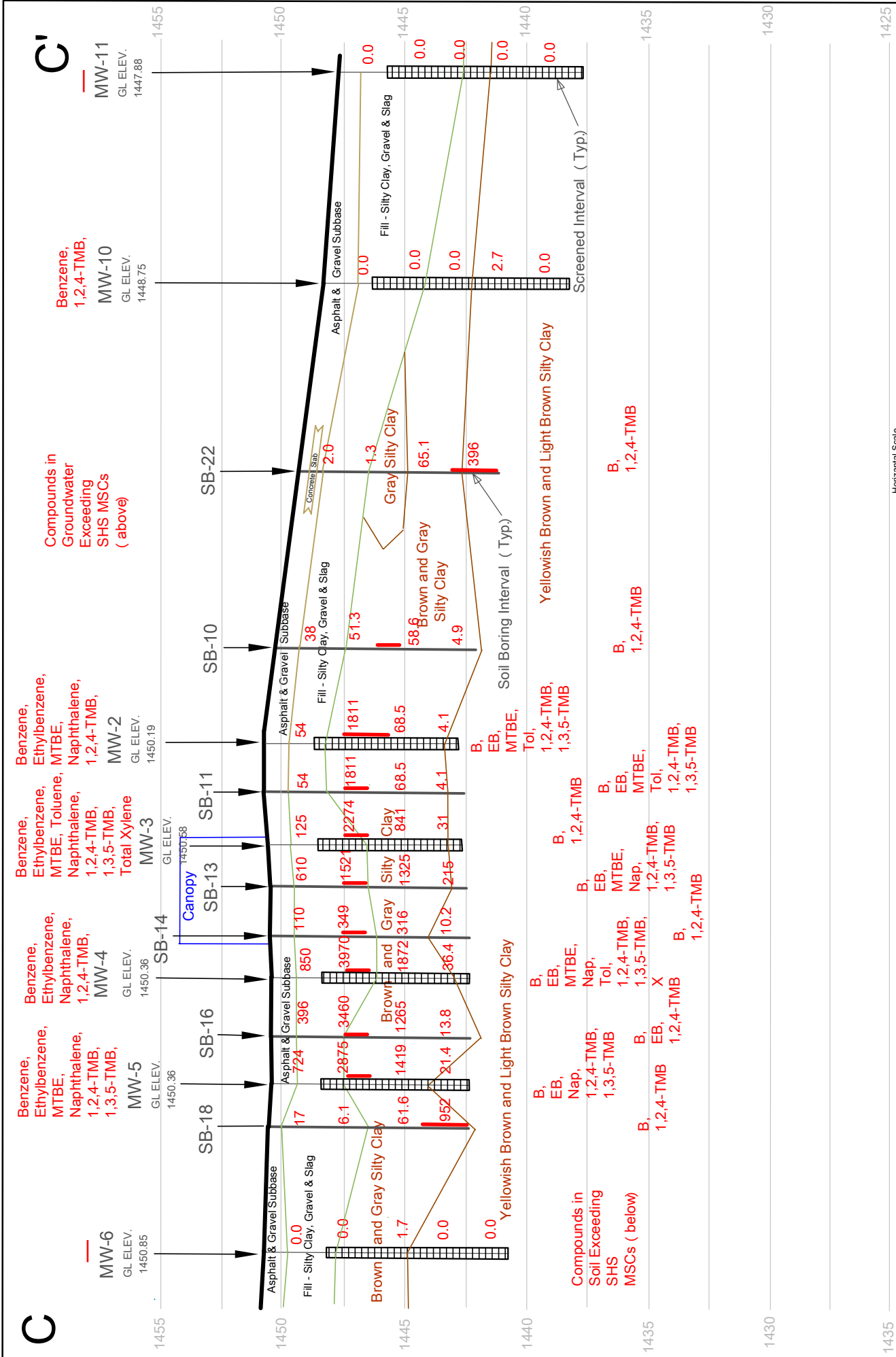
For Greater Detail See Boring Logs
Historical Groundwater Exceedances Listed Above Well/Boring
(Dash indicates no parameters exceed SHS MSCs)

Soil Sample Exceedances Listed Below

Well/Boring

PID Values Listed Beside Interval in ppm







Compounds in
Groundwater
Exceeding
SHS MSCs
(above)

Benzene,
Ethylbenzene,
MTBE,
Naphthalene,
1,2,4-TMB,
1,3,5-TMB

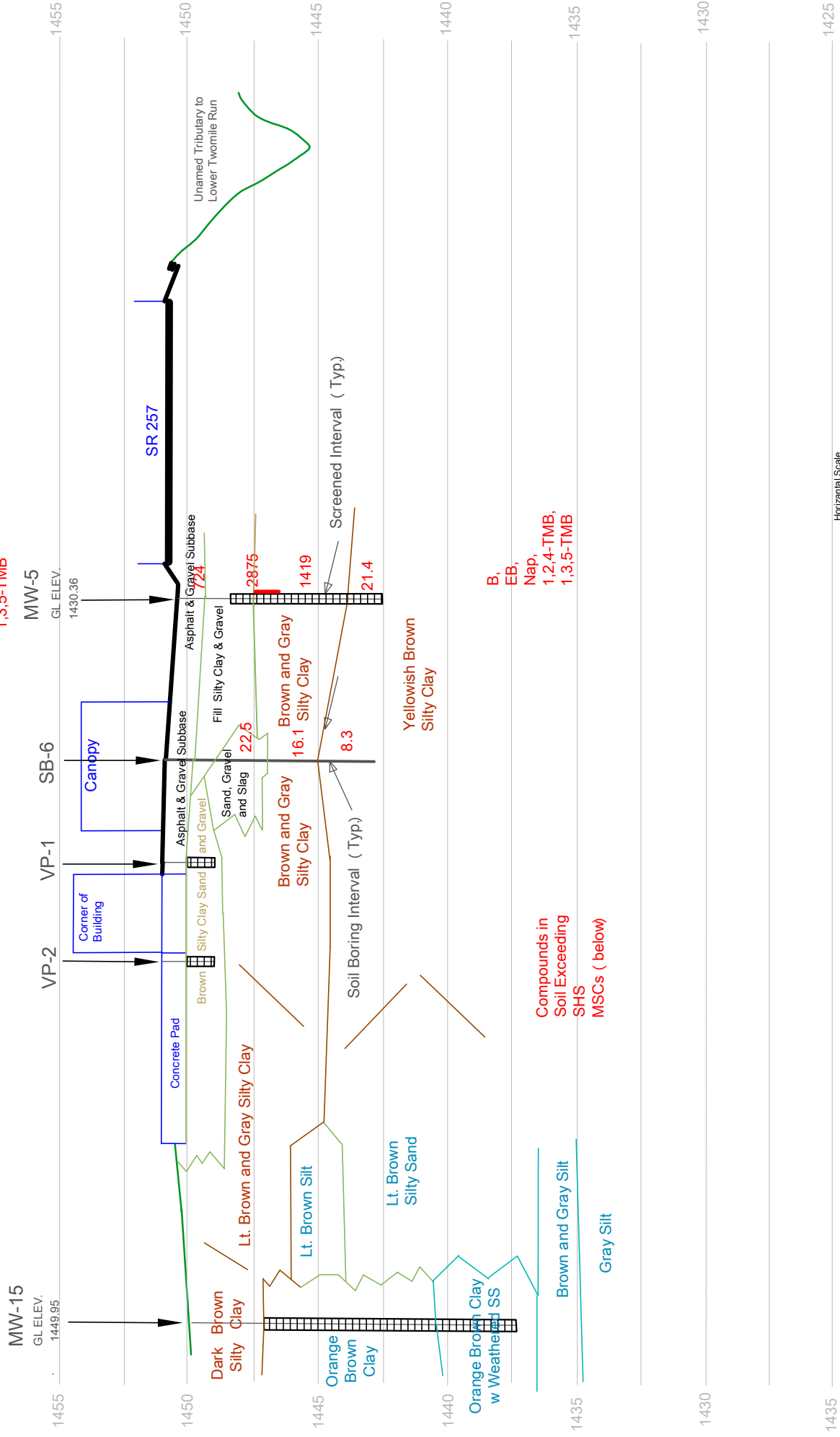


FIGURE 12

Cross Section D - D'

SITE CHARACTERIZATION REPORT
HARPER OIL COMPANY/HEATH OIL INC.
SENECA MINI MART, 3390 STATE ROUTE 257
SENECA BOROUGH, PENNSYLVANIA,
PADEP FACILITY ID#61-18854

CRBBS  *& Associates, Inc.*
P.O. Box 44
Delmont, PA
888-316-0211

For Greater Detail See Boring Logs

Soil Sample Exceedances Listed Below

PID Values Listed Beside Interval in ppm.

E

E'

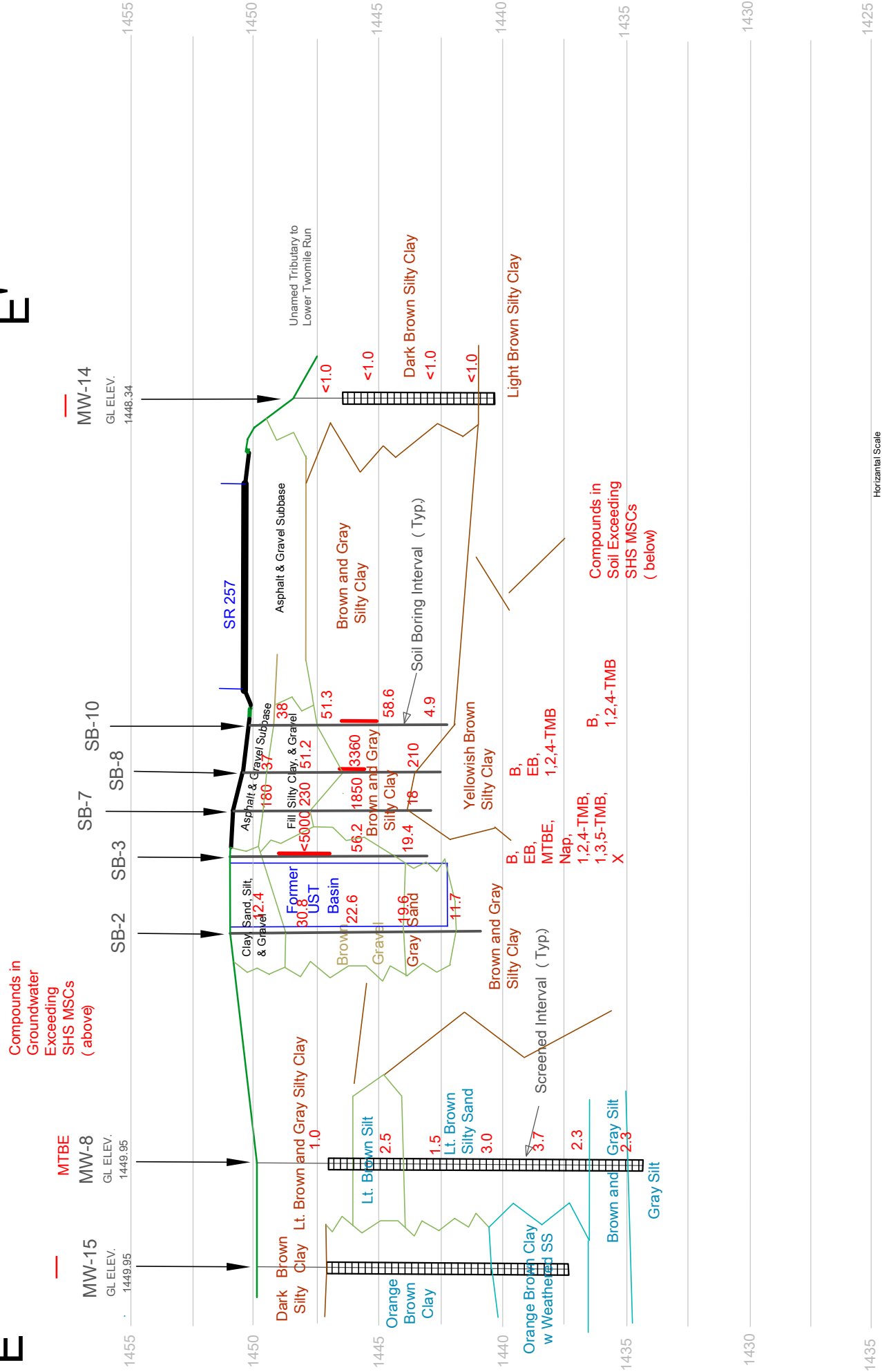


FIGURE 13

Cross Section E - E'

SITE CHARACTERIZATION REPORT
HARPER OIL COMPANY/HEATH OIL INC.
SENECA MINI MART, 3390 STATE ROUTE 257
SENECA BOROUGH, PENNSYLVANIA,
PADEP FACILITY (ID# 61-18864)

CRBBS
P.O. Box 44
Delmont, PA
888-316-0211

For Greater Detail See Boring Logs
Historical Groundwater Exceedances Listed Above Well/Boring
(Dash indicates no parameters exceed SHS MSCs)
Soil Sample Exceedances Listed Below
Well/Boring
PID Values Listed Beside Interval in ppm

FIGURE 14
GROUNDWATER ANALYTICAL MAP

SITE CHARACTERIZATION REPORT	
HARPER OIL COMPANY/NEATH OIL INC-SENECA MINI MART	
SENECA, PENNSYLVANIA	
PADEP FACILITY ID# 65-18854	
SENECA BOROUGH	
VENANGO COUNTY, PENNSYLVANIA	
DATE: 07/25/17	APPROX. SCALE: See Scale Bar
DRAWN BY: RRB	

LEGEND



MONITORING WELL LOCATION

SHS MSCs	Residential	Non-Residential
Benzene	5	5
Ethylbenzene	700	700
MTBE	700	700
Naphthalene	100	100
Toluene	1,000	1,000
1,2,4-TMB	15	62
1,3,5-TMB	420	1,200
Total Xylene	10,000	10,000

Analytical Results of Monitoring Wells with No Exceedance of the SHS MSCs are not shown

FORMER UST LOCATION
TANKS REMOVED
SEPTEMBER 14-17, 2015

CURRENT AST LOCATION

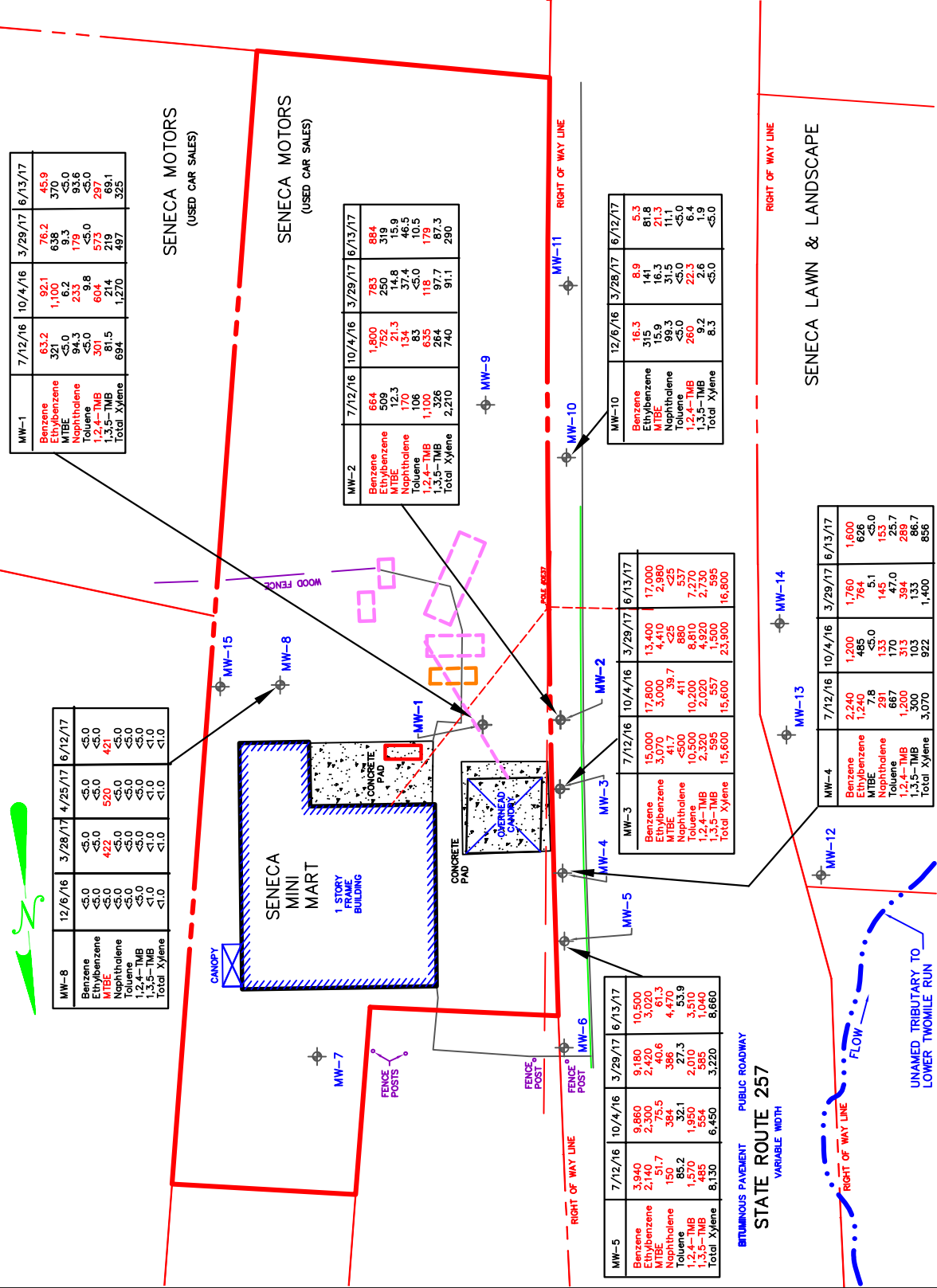
FORMER PRODUCT LINE LOCATION

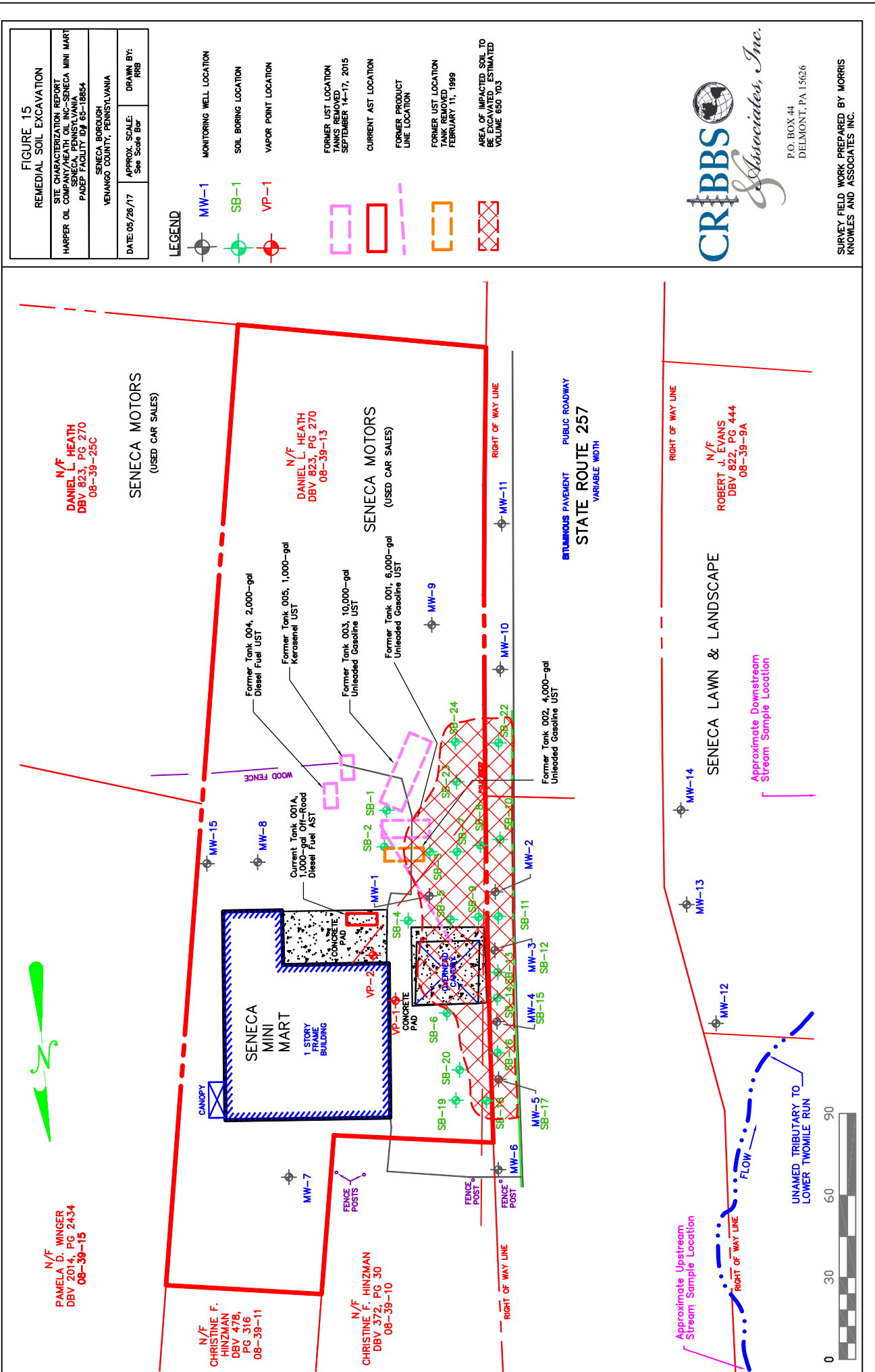
FORMER UST LOCATION
TANKS REMOVED
FEBRUARY 11, 1989



P.O. BOX 44
DELMONT, PA 15626

SURVEY FIELD WORK PREPARED BY MORRIS KNOWLES AND ASSOCIATES INC.





Site Characterization Report

Seneca Mini Mart

Seneca, Pennsylvania

APPENDICES

Site Characterization Report

Seneca Mini Mart

Seneca, Pennsylvania

APPENDIX A

**Underground Storage Tank Closure Report
and Reportable Release Form**



APPENDIX D

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

UNDERGROUND STORAGE TANK SYSTEM
CLOSURE REPORT FORM

61 - 18854	
Facility I.D.	
Seneca Mini Mart	
Facility Name	
Cranberry Township	Venango
Municipality	County
February 29, 2016	
Date Prepared	
John Koziara	
Name of Person Submitting Report (Please Print)	
Koziara Trucking and Excavating	
Company Name (If Applicable)	
Owner	
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

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 61 - 18854
2. Facility Name Seneca Mini Mart
3. Facility County Venango
4. Facility Municipality Cranberry Township
5. Facility Address 3390 State Route 257
6. Facility Contact Person Mr. Andrew A. Restauri
7. Facility Telephone Number (814) 437 - 7802
8. Owner Name Harper Oil Company
9. Owner Mailing Address P.O. Box 1128, Oil City, PA 16301
10. Description of Underground Storage Tanks (Complete for each tank closed)

DATE OF TANK CLOSURE (Month/Day/Year)		09 - 16 - 15	09 - 17 - 15	09 - 14 - 15	09 - 14 - 15
Tank Registration Number		001	003	004	005
Estimated Total Capacity (Gallons)		6,000	10,000	2,000	1,000
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 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 checked="" 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 checked="" 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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" 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)		No	No	No	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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	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:** _____

_____ This site was a gasoline and service station

- ☒ ☐ 12. A site location and sampling map of the site, drawn to scale, is attached. See page 11 of 11.
- ☒ ☐ 13. Original, color photographs of the closure process are attached (i.e., inside of excavation/piping runs, pit water, tanks showing condition).
- ☒ ☐ 14. An amended "Storage Tanks Registration/Permitting Application Form" was submitted to the DEP, Bureau of Environmental Cleanup and Brownfields, Division of Storage Tanks, P.O. Box 8762, Harrisburg, PA 17105-8762.
- Date: January 5, 2016
- ☒ ☐ 15. If a reportable release was confirmed, the appropriate regional office of DEP was notified by the owner or operator.
- Date: September 14, 2015 Office: Northwest - Meadville

Yes N/A

- ☒ ☐ 16. If tanks were cleaned on-site:
- a. Briefly describe the disposition of usable product: The usable product was taken to the Heath Oil, Barkeyville Bulk Plant to be recycled and resold.
- 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):
There was no unusable product, sludges, sediment or wastewater generated during the cleaning, the tanks were vacuumed dry and all contents were transported to the Heath Oil Barkeyville Bulk Plant to be recycled and re-used.
- c. If tank contents were determined/deemed to be hazardous waste, provide:
- (1) Generator ID Number: N/A
- (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):
The tanks and piping were cleaned on site and transported to the Heath Oil warehouse in Seneca where they were staged. These tank may be sent to the Heath Oil Barkeyville Bulk Plant for potential re-use on that facility.
- ☐ ☐ 19. If contaminated soil is excavated:
- a. Briefly describe the disposition and amount 430 (tons) of contaminated soil. Provide the name and permit number of the processing, treatment, storage or disposal facility. (Attach documentation of proper disposal):
Two piles were generated. The soil pile generated from the removal of the diesel and kerosene tanks contains approximately 80 tons, the gasoline pile contains approximately 350 tons. Analytical results indicate that both piles meet the re-use onsite standard, so they remain onsite encapsulated in 6-mil plastic.
- b. If contaminated soil is determined/deemed to be hazardous waste, provide:
- (1) Generator ID Number: _____
- (2) Licensed Hazardous Waste Transporter Name and ID Number: _____

Yes N/A

- ☐ ☐ 20. Briefly describe the disposition of and amount 50 (tons) of uncontaminated soil (attach analyses):

The uncontaminated soil was all clean soil and concrete cover. It was used to backfill the tank void.

I, Andrew A. Restauri, hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904
(Print Name)

(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.

Andrew A. Restauri

Signature of Tank Owner

3, 17, 16

Date

Harper Oil Company

Company Name
(If Applicable)

Vice President

Title

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

UNDERGROUND STORAGE TANK SYSTEM
CLOSURE REPORT FORM

SECTION II. Tank Handling Information

Facility ID Number 61 - 18854

Yes N/A

1. Briefly describe the excavation and initial on-site staging of uncontaminated/contaminated soil:
The concrete and clean soil above the tanks were separated from the soils surrounding and below the tanks.
The soil removed from the tank excavations was placed on 6-mil plastic and covered with 6-mil plastic.
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 drained into the tank and the tank was then emptied by vac truck before vapor freeing the tank.
3. Briefly describe the condition of the tanks and any problems encountered during tank removal:
All tanks and piping were in fair to good condition except tank 001 had a few small holes in the line and there was a leak at the fitting on Tank 003 near the pressure pump.
4. Briefly describe the method used to purge the tanks of and monitor for explosive vapors:
The tanks were vented using and air eductor (venturi)

- ☒ ☐ 5. If tanks were cleaned on-site:
- a. Briefly describe the tank cleaning process: Tanks were pumped out and there was no signs of any sludge in the bottom.
 - b. If subcontracted, name and address of company that performed the tank cleaning:

- ☐ ☒ 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, John Kozlars, hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904
(Print Name)
(relating to unsworn falsification to authorities) that I am the certified installer who performed the tank handling activities associated with the closure 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.

<u></u>	<u>3, 17, 16</u>
Signature of Certified Installer	Date
<u>2099</u>	<u>417</u>
Installer Certification Number	Company Certification Number
	<u>Kozlars Trucking and Excavating</u>
	Company Name
	<u>2073 U.S. #62</u>
	Street
	<u>Oil City, PA 16301</u>
	City/Town, State, Zip
	<u>814 - 676 - 5176</u>
	Phone

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 51 - 18854

- 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 N/A 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):

Holes in Piping

-----> 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).

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 61 - 18854

- 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 N/A 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):

Leak in a fitting near the pressure pump

-----→ 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).

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 61 - 18854

- 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 N/A 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):

-----→ 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).

UNDERGROUND STORAGE TANK CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 005 **(complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)**

Facility ID Number 61 - 18854

- 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 N/A 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):

-----→ 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 WASTE MANAGEMENT

UNDERGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

Sample/Analysis Information (Attachment for Section III.)

Facility ID Number 61-118854

Sample I.D. (See diagram)	Parameter	Analytical Method ¹		Media	Result (units)	Statewide Health Standard	Reuse Onsite	Date Sample Taken	Date Sample Analyzed
Sample #1	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	9/14/2015	9/29/2015
Sample #1	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	9/14/2015	9/29/2015
Sample #1	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	9/14/2015	9/29/2015
Sample #1	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	9/14/2015	9/29/2015
Sample #1	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	9/14/2015	9/29/2015
Sample #1	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	9/14/2015	9/29/2015
Sample #1	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	9/14/2015	9/29/2015
Sample #1	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	9/14/2015	9/29/2015
Sample #1	Xylenes (total)	8260	P	Soil	<100 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	9/14/2015	9/29/2015
Sample #2	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	9/14/2015	9/29/2015
Sample #2	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	9/14/2015	9/29/2015
Sample #2	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	9/14/2015	9/29/2015
Sample #2	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	9/14/2015	9/29/2015
Sample #2	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	9/14/2015	9/29/2015
Sample #2	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	9/14/2015	9/29/2015
Sample #2	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	9/14/2015	9/29/2015
Sample #2	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	9/14/2015	9/29/2015

Facility ID Number 61-18854

Sample I.D. (See diagram)	Parameter	Analytical Method ¹		Media	Result (units)	Statewide Health Standard	Reuse Onsite	Date Sample Taken	Date Sample Analyzed
Sample #3	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	9/14/2015	9/29/2015
Sample #3	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	9/14/2015	9/29/2015
Sample #3	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	9/14/2015	9/29/2015
Sample #3	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	9/14/2015	9/29/2015
Sample #3	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	9/14/2015	9/29/2015
Sample #3	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	9/14/2015	9/29/2015
Sample #3	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	9/14/2015	9/29/2015
Sample #3	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	9/14/2015	9/29/2015
Sample #4	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	9/14/2015	9/29/2015
Sample #4	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	9/14/2015	9/29/2015
Sample #4	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	9/14/2015	9/29/2015
Sample #4	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	9/14/2015	9/29/2015
Sample #4	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	9/14/2015	9/29/2015
Sample #4	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	9/14/2015	9/29/2015
Sample #4	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	9/14/2015	9/29/2015
Sample #4	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	9/14/2015	9/29/2015
Sample #4	Xylenes (total)	8260	P	Soil	<100 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	9/14/2015	9/29/2015
Sample #5	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	9/14/2015	9/29/2015
Sample #5	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	9/14/2015	9/29/2015
Sample #5	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	9/14/2015	9/29/2015
Sample #5	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	9/14/2015	9/29/2015
Sample #5	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	9/14/2015	9/29/2015
Sample #5	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	9/14/2015	9/29/2015
Sample #5	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	9/14/2015	9/29/2015
Sample #5	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	9/14/2015	9/29/2015
Sample #5	Xylenes (total)	8260	P	Soil	<100 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	9/14/2015	9/29/2015

Facility ID Number 61-18854

Sample I.D. (See diagram)	Parameter	Analytical Method ¹		Media	Result (units)	Statewide Health Standard	Reuse Onsite	Date Sample Taken	Date Sample Analyzed
Sample #6	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	9/14/2015	9/29/2015
Sample #6	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	9/14/2015	9/29/2015
Sample #6	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	9/14/2015	9/29/2015
Sample #6	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	9/14/2015	9/29/2015
Sample #6	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	9/14/2015	9/29/2015
Sample #6	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	9/14/2015	9/29/2015
Sample #6	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	9/14/2015	9/29/2015
Sample #6	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	9/14/2015	9/29/2015
Sample #6	Xylenes (total)	8260	P	Soil	<100 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	9/14/2015	9/29/2015
Sample #7	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	9/14/2015	9/29/2015
Sample #7	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	9/14/2015	9/29/2015
Sample #7	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	9/14/2015	9/29/2015
Sample #7	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	9/14/2015	9/29/2015
Sample #7	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	9/14/2015	9/29/2015
Sample #7	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	9/14/2015	9/29/2015
Sample #7	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	9/14/2015	9/29/2015
Sample #7	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	9/14/2015	9/29/2015
Sample #7	Xylenes (total)	8260	P	Soil	<100 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	9/14/2015	9/29/2015
Sample #8	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	9/14/2015	9/29/2015
Sample #8	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	9/14/2015	9/29/2015
Sample #8	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	9/14/2015	9/29/2015
Sample #8	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	9/14/2015	9/29/2015
Sample #8	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	9/14/2015	9/29/2015
Sample #8	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	9/14/2015	9/29/2015
Sample #8	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	9/14/2015	9/29/2015
Sample #8	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	9/14/2015	9/29/2015
Sample #8	Xylenes (total)	8260	P	Soil	<100 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	9/14/2015	9/29/2015

Facility ID Number 61 18854

Sample I.D. (See diagram)	Parameter	Analytical Method ¹		Media	Result (units)	Statewide Health Standard	Reuse Onsite	Date Sample Taken	Date Sample Analyzed
Sample #9	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	9/14/2015	9/29/2015
Sample #9	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	9/14/2015	9/29/2015
Sample #9	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	9/14/2015	9/29/2015
Sample #9	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	9/14/2015	9/29/2015
Sample #9	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	9/14/2015	9/29/2015
Sample #9	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	9/14/2015	9/29/2015
Sample #9	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	9/14/2015	9/29/2015
Sample #9	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	9/14/2015	9/29/2015
Sample #9	Xylenes (total)	8260	P	Soil	<100 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	9/14/2015	9/29/2015
Sample #10	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	9/14/2015	9/30/2015
Sample #10	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	9/14/2015	9/30/2015
Sample #10	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	9/14/2015	9/30/2015
Sample #10	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	9/14/2015	9/30/2015
Sample #10	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	9/14/2015	9/30/2015
Sample #10	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	9/14/2015	9/30/2015
Sample #10	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	9/14/2015	9/30/2015
Sample #10	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	9/14/2015	9/30/2015
Sample #10	Xylenes (total)	8260	P	Soil	<100 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	9/14/2015	9/30/2015
Sample #11	Benzene	8260	P	Soil	<300 ug/kg	500 ug/kg	500 ug/kg	9/14/2015	9/30/2015
Sample #11	Ethyl Benzene	8260	P	Soil	10,390 ug/kg	70,000 ug/kg	70,000 ug/kg	9/14/2015	9/30/2015
Sample #11	Cumene	8260	P	Soil	4933 ug/kg	600,000 ug/kg	84,000 ug/kg	9/14/2015	9/30/2015
Sample #11	MTBE	8260	P	Soil	<300 ug/kg	2000 ug/kg	2000 ug/kg	9/14/2015	9/30/2015
Sample #11	Naphthalene	8260	P	Soil	15,300 ug/kg	25,000 ug/kg	10,000 ug/kg	9/14/2015	9/30/2015
Sample #11	Toluene	8260	P	Soil	<300 ug/kg	100,000 ug/kg	100,000 ug/kg	9/14/2015	9/30/2015
Sample #11	1,2,4-TMB	8260	P	Soil	67,040 ug/kg	8400 ug/kg	1500 ug/kg	9/14/2015	9/30/2015
Sample #11	1,3,5-TMB	8260	P	Soil	23,790 ug/kg	2300 ug/kg	1300 ug/kg	9/14/2015	9/30/2015
Sample #11	Xylenes (total)	8260	P	Soil	25,910 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	9/14/2015	9/30/2015

Facility ID Number **61-18854**

Sample I.D. (See diagram)	Parameter	Analytical Method ¹		Media	Result (units)	Statewide Health Standard	Reuse Onsite	Date Sample Taken	Date Sample Analyzed
Sample #12	Benzene	8260	P	Soil	<300 ug/kg	500 ug/kg	500 ug/kg	9/17/2015	9/30/2015
Sample #12	Ethyl Benzene	8260	P	Soil	5346 ug/kg	70,000 ug/kg	70,000 ug/kg	9/17/2015	9/30/2015
Sample #12	Cumene	8260	P	Soil	2342 ug/kg	600,000 ug/kg	84,000 ug/kg	9/17/2015	9/30/2015
Sample #12	MTBE	8260	P	Soil	<300 ug/kg	2000 ug/kg	2000 ug/kg	9/17/2015	9/30/2015
Sample #12	Naphthalene	8260	P	Soil	16,650 ug/kg	25,000 ug/kg	10,000 ug/kg	9/17/2015	9/30/2015
Sample #12	Toluene	8260	P	Soil	<300 ug/kg	100,000 ug/kg	100,000 ug/kg	9/17/2015	9/30/2015
Sample #12	1,2,4-TMB	8260	P	Soil	48,100 ug/kg	8400 ug/kg	1500 ug/kg	9/17/2015	9/30/2015
Sample #12	1,3,5-TMB	8260	P	Soil	8644 ug/kg	2300 ug/kg	1300 ug/kg	9/17/2015	9/30/2015
Sample #12	Xylenes (total)	8260	P	Soil	6580 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	9/17/2015	9/30/2015
Sample #13	Benzene	8260	P	Soil	<400 ug/kg	500 ug/kg	500 ug/kg	10/22/2015	10/23/2015
Sample #13	Ethyl Benzene	8260	P	Soil	<400 ug/kg	70,000 ug/kg	70,000 ug/kg	10/22/2015	10/23/2015
Sample #13	Cumene	8260	P	Soil	1726 ug/kg	600,000 ug/kg	84,000 ug/kg	10/22/2015	10/23/2015
Sample #13	MTBE	8260	P	Soil	<5.6 ug/kg	2000 ug/kg	2000 ug/kg	10/22/2015	10/23/2015
Sample #13	Naphthalene	8260	P	Soil	31,260 ug/kg	25,000 ug/kg	10,000 ug/kg	10/22/2015	10/23/2015
Sample #13	Toluene	8260	P	Soil	<400 ug/kg	100,000 ug/kg	100,000 ug/kg	10/22/2015	10/23/2015
Sample #13	1,2,4-TMB	8260	P	Soil	144,500 ug/kg	8400 ug/kg	1500 ug/kg	10/22/2015	10/23/2015
Sample #13	1,3,5-TMB	8260	P	Soil	48,030 ug/kg	2300 ug/kg	1300 ug/kg	10/22/2015	10/23/2015
Sample #13	Xylenes (total)	8260	P	Soil	38,840 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	10/22/2015	10/23/2015
Sample #14	Benzene	8260	P	Soil	<400 ug/kg	500 ug/kg	500 ug/kg	10/22/2015	10/23/2015
Sample #14	Ethyl Benzene	8260	P	Soil	<400 ug/kg	70,000 ug/kg	70,000 ug/kg	10/22/2015	10/23/2015
Sample #14	Cumene	8260	P	Soil	766 ug/kg	600,000 ug/kg	84,000 ug/kg	10/22/2015	10/23/2015
Sample #14	MTBE	8260	P	Soil	<400 ug/kg	2000 ug/kg	2000 ug/kg	10/22/2015	10/23/2015
Sample #14	Naphthalene	8260	P	Soil	11,790 ug/kg	25,000 ug/kg	10,000 ug/kg	10/22/2015	10/23/2015
Sample #14	Toluene	8260	P	Soil	<400 ug/kg	100,000 ug/kg	100,000 ug/kg	10/22/2015	10/23/2015
Sample #14	1,2,4-TMB	8260	P	Soil	61,210 ug/kg	8400 ug/kg	1500 ug/kg	10/22/2015	10/23/2015
Sample #14	1,3,5-TMB	8260	P	Soil	31,350 ug/kg	2300 ug/kg	1300 ug/kg	10/22/2015	10/23/2015
Sample #14	Xylenes (total)	8260	P	Soil	24,080 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	10/22/2015	10/23/2015

Facility ID Number **61-18854**

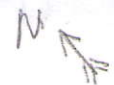
Sample I.D. (See diagram)	Parameter	Analytical Method ¹		Media	Result (units)	Statewide Health Standard	Reuse Onsite	Date Sample Taken	Date Sample Analyzed
Sample #15	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	10/22/2015	10/23/2015
Sample #15	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	10/22/2015	10/23/2015
Sample #15	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	10/22/2015	10/23/2015
Sample #15	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	10/22/2015	10/23/2015
Sample #15	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	10/22/2015	10/23/2015
Sample #15	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	10/22/2015	10/23/2015
Sample #15	1,2,4-TMB	8260	P	Soil	207 ug/kg	8400 ug/kg	1500 ug/kg	10/22/2015	10/23/2015
Sample #15	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	10/22/2015	10/23/2015
Sample #15	Xylenes (total)	8260	P	Soil	<100 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	10/22/2015	10/23/2015
Sample #16	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	10/22/2015	10/23/2015
Sample #16	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	10/22/2015	10/23/2015
Sample #16	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	10/22/2015	10/23/2015
Sample #16	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	10/22/2015	10/23/2015
Sample #16	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	10/22/2015	10/23/2015
Sample #16	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	10/22/2015	10/23/2015
Sample #16	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	10/22/2015	10/23/2015
Sample #16	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	10/22/2015	10/23/2015
Sample #16	Xylenes (total)	8260	P	Soil	<300 ug/kg	1,000,000 ug/kg	1,000,000 ug/kg	10/22/2015	10/23/2015
Sample #17	Benzene	8260	P	Soil	<100 ug/kg	500 ug/kg	500 ug/kg	10/22/2015	10/23/2015
Sample #17	Ethyl Benzene	8260	P	Soil	<100 ug/kg	70,000 ug/kg	70,000 ug/kg	10/22/2015	10/23/2015
Sample #17	Cumene	8260	P	Soil	<100 ug/kg	600,000 ug/kg	84,000 ug/kg	10/22/2015	10/23/2015
Sample #17	MTBE	8260	P	Soil	<100 ug/kg	2000 ug/kg	2000 ug/kg	10/22/2015	10/23/2015
Sample #17	Naphthalene	8260	P	Soil	<100 ug/kg	25,000 ug/kg	10,000 ug/kg	10/22/2015	10/23/2015
Sample #17	Toluene	8260	P	Soil	<100 ug/kg	100,000 ug/kg	100,000 ug/kg	10/22/2015	10/23/2015
Sample #17	1,2,4-TMB	8260	P	Soil	<100 ug/kg	8400 ug/kg	1500 ug/kg	10/22/2015	10/23/2015
Sample #17	1,3,5-TMB	8260	P	Soil	<100 ug/kg	2300 ug/kg	1300 ug/kg	10/22/2015	10/23/2015

¹ Where EPA Method 5035 is required, indicate sample collection option in the right hand box of this column using the following codes:

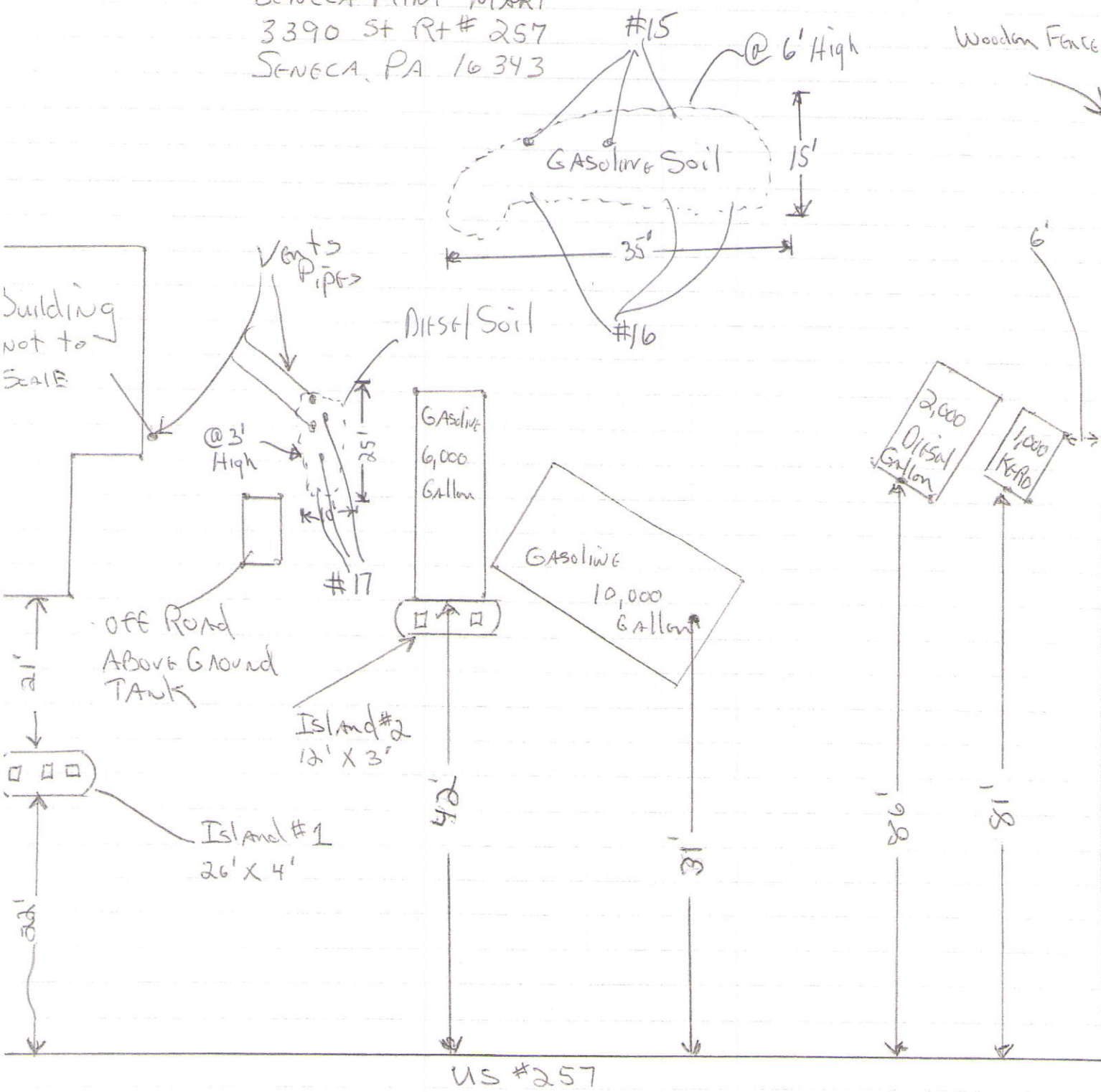
P - Samples placed in a soil sample vial with a preservative present.

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.



61-18854
SENECA Mini MART
3390 St Rt # 257
SENECA, PA 16343

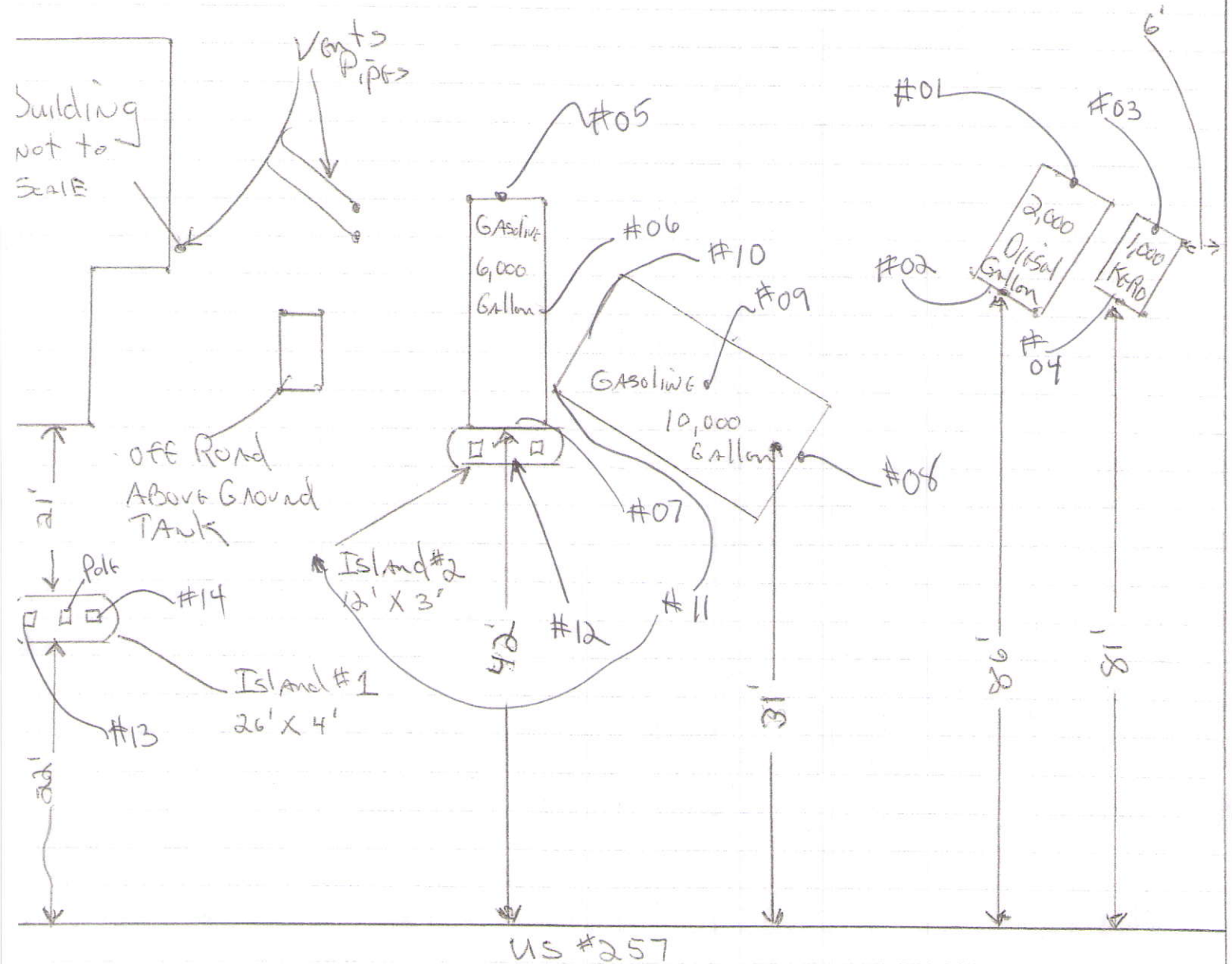


Soil MAP.

61-18854
SENECA Mini MART
3390 St Rt # 257
SENECA, PA 16343

Wooden Fence

Soil Samples



61-18854

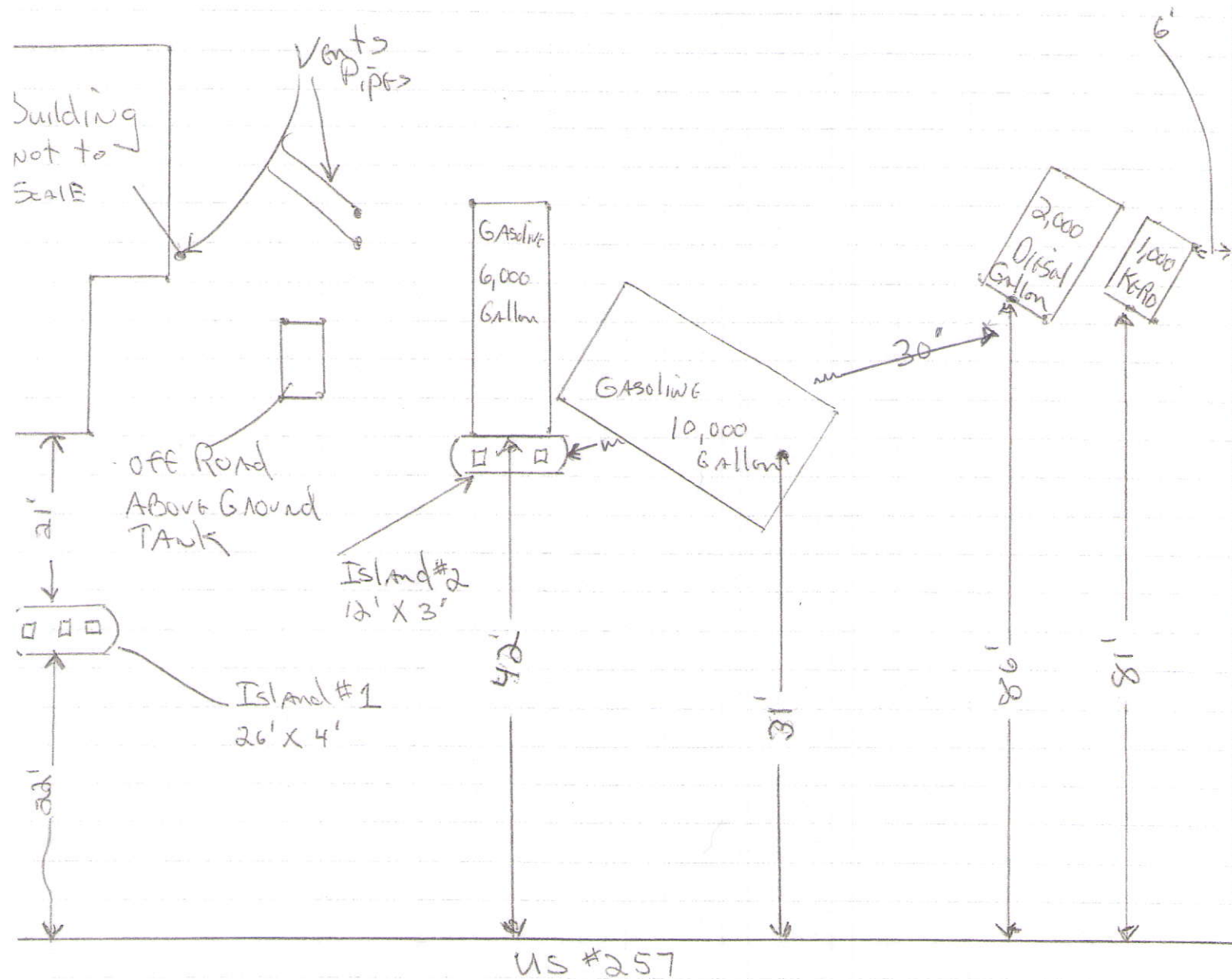
SENECA Mini MART

3390 St Rt # 257

SENECA, PA 16343

Wooden Fence

Site MAP



STEWART LABORATORIES, INC.

21639 ROUTE 322 • STRATTANVILLE, PENNSYLVANIA 16258 • PHONE (814) 379-3663 • FAX (814) 379-3601

SAMPLE NUMBER: SS-252900
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-01 @ 9'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Koziara; Date Sampled: Sep 14, 2015; Time: 1355
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	11.00	%	SM 2540 G	Sep 23	SMC
VOC	[UST New]					
Benzene	0.100	<0.100jy	mg/kg	SW-846 8260B	Sep 29	CMH
Toluene	0.100	<0.100jy	"	"	"	"
Ethylbenzene	0.100	<0.100jy	"	"	"	"
Isopropylbenzene	0.100	<0.100jy	"	"	"	"
Naphthalene	0.100	<0.100jy	"	"	"	"
Methyl-tert-butylether (MTBE)	0.100	<0.100jy	"	"	"	"
1,2,4-Trimethylbenzene	0.100	<0.100jy	"	"	"	"
1,3,5-Trimethylbenzene	0.100	<0.100jy	"	"	"	"

Result Flags For This Report

j - Result less than calibration
y - Sample expired before analysis

STEWART LABORATORIES, INC.

21639 ROUTE 322 • STRATTANVILLE, PENNSYLVANIA 16258 • PHONE (814) 379-3663 • FAX (814) 379-3601

SAMPLE NUMBER: SS-252901
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-02 @ 9'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Kozlara; Date Sampled: Sep 14, 2015; Time: 1400
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	13.30	%	SM 2540 G	Sep 23	SMC
VOC	[UST New]					
Benzene	0.100	<0.100jy	mg/kg	SW-846 8260B	Sep 29	CMH
Toluene	0.100	<0.100jy	"	"	"	"
Ethylbenzene	0.100	<0.100jy	"	"	"	"
Isopropylbenzene	0.100	<0.100jy	"	"	"	"
Naphthalene	0.100	<0.100jy	"	"	"	"
Methyl-tert-butylether (MTBE)	0.100	<0.100jy	"	"	"	"
1,2,4-Trimethylbenzene	0.100	<0.100jy	"	"	"	"
1,3,5-Trimethylbenzene	0.100	<0.100jy	"	"	"	"

Result Flags For This Report

j - Result less than calibration
y - Sample expired before analysis

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SAMPLE NUMBER: SS-252902
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-03 @ 9'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Koziara; Date Sampled: Sep 14, 2015; Time: 1515
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS	PARAMETER	QUAN	LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture		1.00		13.40	%	SM 2540 G	Sep 23	SMC
VOC	[UST New]							
Benzene		0.100		<0.100jy	mg/kg	SW-846 8260B	Sep 29	CMH
Toluene		0.100		<0.100jy	"	"	"	"
Ethylbenzene		0.100		<0.100jy	"	"	"	"
Isopropylbenzene		0.100		<0.100jy	"	"	"	"
Naphthalene		0.100		<0.100jy	"	"	"	"
Methyl-tert-butylether (MTBE)		0.100		<0.100jy	"	"	"	"
1,2,4-Trimethylbenzene		0.100		<0.100jy	"	"	"	"
1,3,5-Trimethylbenzene		0.100		<0.100jy	"	"	"	"

Result Flags For This Report

j - Result less than calibration
y - Sample expired before analysis

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SAMPLE NUMBER: SS-252903
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-04 @ 9'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Kozlars; Date Sampled: Sep 14, 2015; Time: 1520
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	13.10	%	SM 2540 G	Sep 23	SMC
VOC	[UST New]					
Benzene	0.100	<0.100jy	mg/kg	SW-846 8260B	Sep 29	CMH
Toluene	0.100	<0.100jy	"	"	"	"
Ethylbenzene	0.100	<0.100jy	"	"	"	"
Isopropylbenzene	0.100	<0.100jy	"	"	"	"
Naphthalene	0.100	<0.100jy	"	"	"	"
Methyl-tert-butylether (MTBE)	0.100	<0.100jy	"	"	"	"
1,2,4-Trimethylbenzene	0.100	<0.100jy	"	"	"	"
1,3,5-Trimethylbenzene	0.100	<0.100jy	"	"	"	"

Result Flags For This Report

j - Result less than calibration
y - Sample expired before analysis

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SAMPLE NUMBER: SS-252904
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-05 @ 9.5'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Koziara; Date Sampled: Sep 16, 2015; Time: 1200
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	11.10	%	SM 2540 G	Sep 23	SMC
VOC	[UST New]					
Benzene	0.100	<0.100j	mg/kg	SW-846 8260B	Sep 29	CMH
Toluene	0.100	<0.100j	"	"	"	"
Ethylbenzene	0.100	<0.100j	"	"	"	"
Xylenes(Total)	0.300	<0.300j	"	"	"	"
Isopropylbenzene	0.100	<0.100j	"	"	"	"
Naphthalene	0.100	<0.100j	"	"	"	"
Methyl-tert-butylether (MTBE)	0.100	<0.100j	"	"	"	"
1,2,4-Trimethylbenzene	0.100	<0.100j	"	"	"	"
1,3,5-Trimethylbenzene	0.100	<0.100j	"	"	"	"

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SAMPLE NUMBER: SS-252905
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-06 @ 9.5'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Koziara; Date Sampled: Sep 16, 2015; Time: 1210
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	14.50	%	SM 2540 G	Sep 23	SMC
VOC	[UST New]					
Benzene	0.100	<0.100]	mg/kg	SW-846 8260B	Sep 29	CMH
Toluene	0.100	<0.100]	"	"	"	"
Ethylbenzene	0.100	<0.100]	"	"	"	"
Xylenes(Total)	0.300	<0.300]	"	"	"	"
Isopropylbenzene	0.100	<0.100]	"	"	"	"
Naphthalene	0.100	<0.100]	"	"	"	"
Methyl-tert-butylether(MTEE)	0.100	<0.100]	"	"	"	"
1,2,4-Trimethylbenzene	0.100	<0.100]	"	"	"	"
1,3,5-Trimethylbenzene	0.100	<0.100]	"	"	"	"

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SAMPLE NUMBER: SS-252906
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-07 @ 9.5'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Koziara; Date Sampled: Sep 16, 2015; Time: 1220
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	12.50	%	SM 2540 G	Sep 28	SMC
VOC	[UST New]					
Benzene	0.100	<0.100]	mg/kg	SW-846 8260B	Sep 29	CMH
Toluene	0.100	<0.100]	"	"	"	"
Ethylbenzene	0.100	<0.100]	"	"	"	"
Xylenes(Total)	0.300	<0.300]	"	"	"	"
Isopropylbenzene	0.100	<0.100]	"	"	"	"
Naphthalene	0.100	<0.100]	"	"	"	"
Methyl-tert-butylether (MTBE)	0.100	<0.100]	"	"	"	"
1,2,4-Trimethylbenzene	0.100	<0.100]	"	"	"	"
1,3,5-Trimethylbenzene	0.100	<0.100]	"	"	"	"

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SAMPLE NUMBER: SS-252907
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-08 @ 13.5'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Koziara; Date Sampled: Sep 17, 2015; Time: 1200
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS	PARAMETER	QUAN	LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture		1.00		12.90	%	SM 2540 G	Sep 28	SMC
VOC	[UST New]							
Benzene		0.100	<0.100]		mg/kg	SW-846 8260B	Sep 29	CMH
Toluene		0.100	<0.100]		"	"	"	"
Ethylbenzene		0.100	<0.100]		"	"	"	"
Xylenes(Total)		0.300	<0.300]		"	"	"	"
Isopropylbenzene		0.100	<0.100]		"	"	"	"
Naphthalene		0.100	<0.100]		"	"	"	"
Methyl-tert-butylether (MTBE)		0.100	<0.100]		"	"	"	"
1,2,4-Trimethylbenzene		0.100	<0.100]		"	"	"	"
1,3,5-Trimethylbenzene		0.100	<0.100]		"	"	"	"

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SAMPLE NUMBER: SS-252908
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-09 @ 14'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Koziara; Date Sampled: Sep 17, 2015; Time: 1210
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis. Naphthalene CCV high.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	13.10	%	SM 2540 G	Sep 28	SMC
VOC	[UST New]					
Benzene	0.100	<0.100]	mg/kg	SW-846 8260B	Sep 30	CMH
Toluene	0.100	<0.100]	"	"	"	"
Ethylbenzene	0.100	<0.100]	"	"	"	"
Xylenes(Total)	0.300	<0.300]	"	"	"	"
Isopropylbenzene	0.100	<0.100]	"	"	"	"
Naphthalene	0.100	<0.100]	"	"	"	"
Methyl-tert-butylether (MTBE)	0.100	<0.100]	"	"	"	"
1,2,4-Trimethylbenzene	0.100	<0.100]	"	"	"	"
1,3,5-Trimethylbenzene	0.100	<0.100]	"	"	"	"

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SAMPLE NUMBER: SS-252909
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-010 @ 14'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Kozlars; Date Sampled: Sep 17, 2015; Time: 1215
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis. Naphthalene CCV high.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	11.70	%	SM 2540 G	Sep 28	SMC
VOC	[UST New]					
Benzene	0.100	<0.100j	mg/kg	SW-846 8260B	Sep 30	CMH
Toluene	0.100	<0.100j	"	"	"	"
Ethylbenzene	0.100	<0.100j	"	"	"	"
Xylenes(Total)	0.300	<0.300j	"	"	"	"
Isopropylbenzene	0.100	<0.100j	"	"	"	"
Naphthalene	0.100	<0.100j	"	"	"	"
Methyl-tert-butylether(MTBE)	0.100	<0.100j	"	"	"	"
1,2,4-Trimethylbenzene	0.100	<0.100j	"	"	"	"
1,3,5-Trimethylbenzene	0.100	<0.100j	"	"	"	"

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SAMPLE NUMBER: SS-252910
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-011 @ 4'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Koziara; Date Sampled: Sep 17, 2015; Time: 1320
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis. Naphthalene CCV high.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	15.80	%	SM 2540 G	Sep 28	SMC
VOC [UST New]	0.300	<0.300j	mg/kg	SW-846 8260B	Sep 30	CMH
Benzene	0.300	<0.300j	"	"	"	"
Toluene	0.300	10.39	"	"	"	"
Ethylbenzene	0.900	25.91	"	"	"	"
Xylenes(Total)	0.300	4.933	"	"	"	"
Isopropylbenzene	0.300	15.30	"	"	"	"
Naphthalene	0.300	<0.300j	"	"	"	"
Methyl-tert-butylether (MTBE)	0.300	67.04	"	"	"	"
1,2,4-Trimethylbenzene	0.300	23.79	"	"	"	"
1,3,5-Trimethylbenzene						

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SAMPLE NUMBER: SS-252911
DATE RECEIVED: Sep 23, 2015
DATE REPORTED: Oct 06, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-012 @ 9'
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: John Koziara; Date Sampled: Sep 17, 2015; Time: 1400
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis. Naphthalene CCV high.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	11.80	%	SM 2540 G	Sep 28	SMC
VOC	[UST New]					
Benzene	0.300	<0.300j	mg/kg	SW-846 8260B	Sep 30	CMH
Toluene	0.300	<0.300j	"	"	"	"
Ethylbenzene	0.300	5.346	"	"	"	"
Xylenes(Total)	0.900	6.580	"	"	"	"
Isopropylbenzene	0.300	2.342	"	"	"	"
Naphthalene	0.300	16.65	"	"	"	"
Methyl-tert-butylether(MTBE)	0.300	<0.300j	"	"	"	"
1,2,4-Trimethylbenzene	0.300	48.10	"	"	"	"
1,3,5-Trimethylbenzene	0.300	8.644	"	"	"	"

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Heath Oil
PO Box 1128
Oil City, PA 16301

SAMPLE NUMBER: SS-253955
DATE RECEIVED: Oct 22, 2015
DATE REPORTED: Nov 03, 2015

ID: 61-18854-13
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: J. Koziara; Date Sampled: Oct 22, 2015; Time: 0830
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	14.00	%	SM 2540 G	Oct 27	SMC
VOC [UST New]						
Benzene	0.400	<0.400]	mg/kg	SW-846 8260B	Oct 23	CMH
Toluene	0.400	<0.400]	"	"	"	"
Ethylbenzene	0.400	<0.400]	"	"	"	"
Xylenes(Total)	1.200	38.84	"	"	"	"
Isopropylbenzene	0.400	1.726	"	"	"	"
Naphthalene	0.400	31.26	"	"	"	"
Methyl-tert-butylether (MTBE)	0.400	<0.400]	"	"	"	"
1,2,4-Trimethylbenzene	0.400	144.5	"	"	"	"
1,3,5-Trimethylbenzene	0.400	48.03	"	"	"	"

2 Parameters; 11 Lines; j - Result less than calibration
Page 1 of 1 DEP Certification: 16-00328


Paul Bookmyer QA/QC Director

D.E.P. Certified in Microbiology/Inorganic/Organic

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SAMPLE NUMBER: SS-253956
DATE RECEIVED: Oct 22, 2015
DATE REPORTED: Nov 03, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-14
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: J. Koziara; Date Sampled: Oct 22, 2015; Time: 0840
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	12.70	%	SM 2540 G	Oct 27	SMC
VOC [UST New]						
Benzene	0.400	<0.400]	mg/kg	SW-846 8260B	Oct 23	CMH
Toluene	0.400	<0.400]	"	"	"	"
Ethylbenzene	0.400	<0.400]	"	"	"	"
Xylenes(Total)	1.200	24.08	"	"	"	"
Isopropylbenzene	0.400	0.766	"	"	"	"
Naphthalene	0.400	11.79	"	"	"	"
Methyl-tert-butylether(MTBE)	0.400	<0.400]	"	"	"	"
1,2,4-Trimethylbenzene	0.400	61.21	"	"	"	"
1,3,5-Trimethylbenzene	0.400	31.35	"	"	"	"

2 Parameters; 11 Lines; j - Result less than calibration
Page 1 of 1 DEP Certification: 16-00328

Paul Bookmyer QA/QC Director

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SAMPLE NUMBER: SS-253957
DATE RECEIVED: Oct 22, 2015
DATE REPORTED: Nov 03, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-15
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: J. Koziara; Date Sampled: Oct 22, 2015; Time: 0850
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	19.20	%	SM 2540 G	Oct 27	SMC
VOC [UST New]						
Benzene	0.100	<0.100]	mg/kg	SW-846 8260B	Oct 23	CMH
Toluene	0.100	<0.100]	"	"	"	"
Ethylbenzene	0.100	<0.100]	"	"	"	"
Xylenes(Total)	0.300	<0.300]	"	"	"	"
Isopropylbenzene	0.100	<0.100]	"	"	"	"
Naphthalene	0.100	<0.100]	"	"	"	"
Methyl-tert-butylether(MTBE)	0.100	<0.100]	"	"	"	"
1,2,4-Trimethylbenzene	0.100	0.207	"	"	"	"
1,3,5-Trimethylbenzene	0.100	<0.100]	"	"	"	"

2 Parameters; 11 Lines; j - Result less than calibration
Page 1 of 1 DEF Certification: 16-00328

Paul Bookmyer QA/QC Director

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SAMPLE NUMBER: SS-253958
DATE RECEIVED: Oct 22, 2015
DATE REPORTED: Nov 03, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-16
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: J. Kozlars; Date Sampled: Oct 22, 2015; Time: 0900
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	18.00	%	SM 2540 G	Oct 27	SMC
VOC [UST New]						
Benzene	0.100	<0.100]	mg/kg	SW-846 8260B	Oct 23	CMH
Toluene	0.100	<0.100]	"	"	"	"
Ethylbenzene	0.100	<0.100]	"	"	"	"
Xylenes(Total)	0.300	<0.300]	"	"	"	"
Isopropylbenzene	0.100	<0.100]	"	"	"	"
Naphthalene	0.100	<0.100]	"	"	"	"
Methyl-tert-butylether(MTBE)	0.100	<0.100]	"	"	"	"
1,2,4-Trimethylbenzene	0.100	<0.100]	"	"	"	"
1,3,5-Trimethylbenzene	0.100	<0.100]	"	"	"	"

2 Parameters; 11 Lines; j - Result less than calibration
Page 1 of 1
DEP Certification: 16-00328

Paul Bookmyer QA/QC Director

D.E.P. Certified in Microbiology/Inorganic/Organic

STEWART LABORATORIES, INC.

21639 ROUTE 322 • STRATTANVILLE, PENNSYLVANIA 16258 • PHONE (814) 379-3663 • FAX (814) 379-3601

SAMPLE NUMBER: SS-253959
DATE RECEIVED: Oct 22, 2015
DATE REPORTED: Nov 03, 2015

Heath Oil
PO Box 1128
Oil City, PA 16301

ID: 61-18854-17
Harper Oil Inc.
Seneca Mini Mart

SAMPLE DATA

Source: (Not Entered); Type: Grab Sample
Container(s): 40 mL Glass Vial(s), Half Pint (8 oz) Glass
Sampled By: J. Kozlars; Date Sampled: Oct 22, 2015; Time: 0915
Matrix: Soil/Oil/Solid; Preservation: Cool 4 Degrees C
Sampler Notes: (None)
Analyst Notes: Results are dry weight basis.
Report Type: Standard; Extractions: Methanol Extraction

CERTIFICATE OF ANALYSIS

ANALYSIS PARAMETER	QUAN LIMIT	RESULTS	UNITS	METHOD	DATE/TIME	ANALYST
Moisture	1.00	19.10	%	SM 2540 G	Oct 27	SMC
VOC [UST New]						
Benzene	0.100	<0.100]	mg/kg	SW-846 8260B	Oct 23	CMH
Toluene	0.100	<0.100]	"	"	"	"
Ethylbenzene	0.100	<0.100]	"	"	"	"
Isopropylbenzene	0.100	<0.100]	"	"	"	"
Naphthalene	0.100	<0.100]	"	"	"	"
Methyl-tert-butylether (MTBE)	0.100	<0.100]	"	"	"	"
1,2,4-Trimethylbenzene	0.100	<0.100]	"	"	"	"
1,3,5-Trimethylbenzene	0.100	<0.100]	"	"	"	"



Photograph #1 – Removal of product from tanks



Photograph #2 – Removal product from lines



Photograph #3 – Removal of Tank #005 (1000 gallon kerosene)



Photograph #4 – Removal of Tank #004 (2,000 gallon diesel)



Photograph #5 – Impacted soil near pressure pump on Tank #001



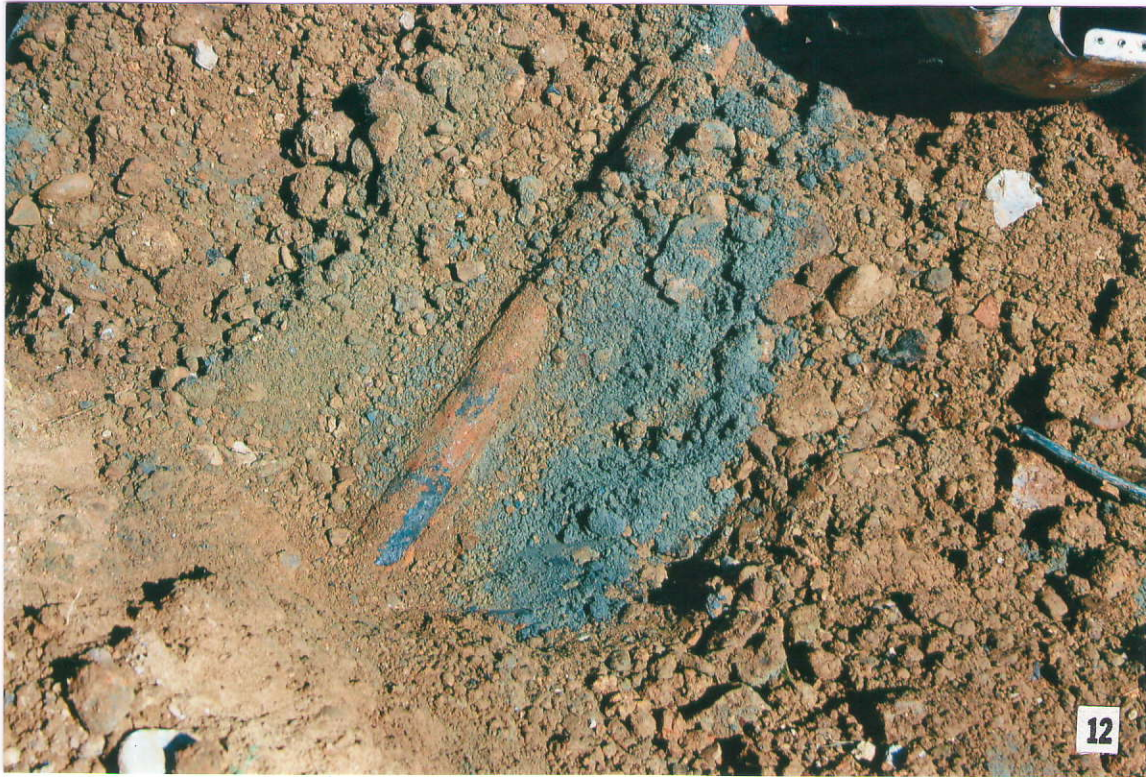
Photograph #6 – Vapor removal from tanks



Photograph #7 – Removal of Tank #001 (6000 gallon gasoline)



Photograph #8 – Removal of Tank #003 (10,000 gallon gasoline)



Photograph #9 – Contaminated soil around supply line from Tank #004



Photograph #10 – Holes in supply line from Tank #004



Photograph #11 – Leaking fitting on Tank #003



Photograph #12 – Contaminated soil pile

NOTIFICATION OF REPORTABLE RELEASE (Owners and Operators)

☒ Initial
☐ Follow-Up

NOTIFICATION OF CONTAMINATION (Certified Installers and Inspectors)

NOTIFICATION OF REPORTABLE RELEASE (Owners and Operators)

The Storage Tank Program's Corrective Action Process (CAP) regulations establish release reporting requirements for owners and operators of storage tanks and storage tank facilities.

Subsection 245.305(a) of the regulations requires owners or operators to notify the appropriate regional office of the Department as soon as practicable, but no later than 24 hours after the confirmation of a reportable release.

Subsection 245.305(d) requires owners or operators to provide an initial written notification to the Department, each municipality in which the reportable release occurred, and each municipality where that release has impacted environmental media or water supplies, buildings, or sewer or other utility lines, within 15 days of the notice required by subsection 245.305(a).

Subsection 245.305(e) requires owners or operators to provide follow-up written notification to the Department and to each impacted municipality of new impacts to environmental media or water supplies, buildings, or sewer or other utility lines discovered after the initial written notification required by subsection 245.305(d). Written notification is to be made within 15 days of the discovery of the new impact.

This form may be used to comply with subsections 245.305(d) and (e).

OWNERS AND OPERATORS (O/O)

INDICATE IF THIS IS AN INITIAL OR FOLLOW-UP NOTIFICATION BY MARKING THE APPROPRIATE BOX FOUND IN THE TOP RIGHT-HAND CORNER OF THIS FORM. PLEASE COMPLETE ALL INFORMATION IN SECTIONS I, II, IIIA, IIIB, IV, V, VII and VIII.

NOTIFICATION OF CONTAMINATION (Certified Installers and Inspectors)

The Storage Tank Program's Certification regulations establish standards of performance for certified installers and inspectors of storage tanks and storage tank facilities.

Subsection 245.132(a)(4) of the regulations requires certified installers and inspectors to report to the Department a release of a regulated substance or confirmed or suspected contamination of soil, surface or groundwater from regulated substances observed while performing services as a certified installer or inspector.

This form may be used to comply with subsection 245.132(a)(4). Subsection 245.132(a)(4) requires submission of the form within 48 hours of observing suspected or confirmed contamination. Where there is a reportable release, the form may be submitted jointly by the owner, operator, certified installer and certified inspector. In this instance, the form must be received by the appropriate regional office within 15 days of the notice required by subsection 245.305(a).

CERTIFIED INSTALLERS AND INSPECTORS (I/I)
PLEASE COMPLETE ALL INFORMATION IN SECTIONS I, II, IIIA, IIIC, VI, VII and VIII.

INSTRUCTIONS

- I. **FACILITY INFORMATION** - Record the name, I.D. number and physical location (not P.O. Box) of the facility at which a reportable release has been confirmed or at which suspected or confirmed contamination has been observed. Include the name and phone number of a person to contact at the facility.
- II. **OWNER/OPERATOR INFORMATION** - Record the name, business address and telephone number of the owner of the facility identified in Section I. Also, record the name and telephone number of the operator of the facility.
- III. **REGULATED SUBSTANCE INFORMATION** - Indicate to the best of your knowledge: A) the type of product or products involved; B) the quantity of product or products released; and C) whether the contamination is suspected or confirmed.
- IV. **REPORTABLE RELEASE INFORMATION** - Record the date of confirmation of the reportable release, e.g., "9/18/01"; the date and regional office notified; and the date the local municipality(ies) [provide name of municipality(ies)] was/were sent a copy of this form. Indicate to the best of your knowledge the source/cause of the release, how the release was discovered and the environmental media affected and impacts.
- V. **INTERIM REMEDIAL ACTIONS** - Indicate the interim remedial actions planned, initiated or completed.
- VI. **SUSPECTED/CONFIRMED CONTAMINATION INFORMATION** - Record the date of observation of the suspected or confirmed contamination, e.g., "11/24/01". Indicate to the best of your knowledge the indications of a suspected release or extent of confirmed contamination resulting from the release of the regulated substance.
- VII. **ADDITIONAL INFORMATION** - Provide any additional, relevant, available information concerning the reportable release or suspected or confirmed contamination. Include in this section specific details or problems about the release. For example, if the piping was the source of the release and the cause was corrosion of a metal connector or flexible connector, it is important to include that information here. Use additional 8½" x 11" sheets of paper, if necessary.
- VIII. **CERTIFICATION** - Please print your name, and provide your signature and date of signature. If a certified installer/inspector, provide certification number and company certification number.
- IX. **ATTACHMENT** - If a certified installer/inspector, provide a copy of failed valid tightness test(s), if applicable.

PLEASE SEND COMPLETED ORIGINAL FORM TO:

PA Department of Environmental Protection
Environmental Cleanup and Brownfields Program
Storage Tank Section
(and the appropriate address below,
depending on where the FACILITY is located)

Southeast Region
2 East Main Street
Norristown, PA 19401
PHONE: 484-250-5900
FAX: 484-250-5961
Counties
Bucks, Chester, Delaware,
Montgomery, Philadelphia

Northeast Region
2 Public Square
Wilkes-Barre, PA 18711-1915
PHONE: 570-826-2511
FAX: 570-820-4907
Counties
Carbon, Lackawanna, Lehigh,
Luzerne, Monroe, Northampton,
Pike, Schuylkill, Susquehanna,
Wayne, Wyoming

South-central Region
909 Elmerton Avenue
Harrisburg, PA 17110
PHONE: 866-825-0208
FAX: 717-705-4830
Counties
Adams, Bedford, Berks, Blair, Cum-
berland, Dauphin, Franklin, Fulton,
Huntingdon, Juniata, Lancaster,
Lebanon, Mifflin, Perry, York

North-central Region
208 W. Third Street, Suite 101
Williamsport, PA 17701
PHONE: 570-321-6525/327-3636
FAX: 570-327-3420
Counties
Bradford, Cameron, Centre,
Clinton, Clearfield, Columbia,
Lycoming, Montour,
Northumberland, Potter, Snyder,
Sullivan, Tioga, Union

Southwest Region
400 Waterfront Drive
Pittsburgh, PA 15222
PHONE: 412-442-4091/4000
FAX: 412-442-4328
Counties
Allegheny, Armstrong,
Beaver, Cambria, Fayette,
Greene, Indiana, Somerset,
Washington, Westmoreland

Northwest Region
230 Chestnut Street
Meadville, PA 16335-3481
PHONE: 814-332-6945
800-373-3398
FAX: 814-332-6121
Counties
Butler, Clarion, Crawford, Elk,
Erie, Forest, Jefferson,
Lawrence, McKean, Mercer,
Venango, Warren

I. FACILITY INFORMATION (Both O/O and I/I)			II. OWNER/OPERATOR INFORMATION (Both O/O and I/I)		
Facility Name Seneca Mini Mart		Facility I.D. Number 61-18854	Owner Name Harper Oil Company		
Street Address (P.O. Box not acceptable) 3390 State Route 257			Address P.O. Box 1128		
City Seneca	State PA	Zip Code 16346 -	City Oil City		
County Venango	Municipality Cranberry Township		Telephone Number (814) 437 - 7802		
Contact Person Andrew A. Restauri, Agent	Telephone Number (814) 437 - 7802		Operator Name Christine Hinzman		
			Telephone Number (814) 437 - 7802		
III. REGULATED SUBSTANCE INFORMATION					
A. Type of Product(s) Involved (Mark All That Apply ☒): Both O/O and I/I		B. Quantity (Gallons) of Product(s) Released: O/O Only		C. Contamination Suspected [S] or Confirmed [C] (Mark All That Apply ☒): I/I Only	
Leaded Gasoline ..... ☐		..... U N K N O W N .....		..... ☐ [S] ☐ [C]	
Unleaded Gasoline ..... ☒		..... U N K N O W N .....		..... ☒ [S] ☐ [C]	
Aviation Gasoline ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
Kerosene ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
Jet Fuel ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
Diesel Fuel ..... ☒		..... U N K N O W N .....		..... ☒ [S] ☐ [C]	
New Motor Oil ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
Used Motor Oil ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
Fuel Oil No. 1 ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
Fuel Oil No. 2 ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
Fuel Oil No. 4 ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
Fuel Oil No. 5 ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
Fuel Oil No. 6 ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
Other (Specify) ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
Unknown ..... ☐		..... .....		..... ☐ [S] ☐ [C]	
IV. REPORTABLE RELEASE INFORMATION (O/O Only)					
Date Reportable Release was Confirmed: <u>9 / 14 / 2015</u> m d y			Date Owner/Operator Sent Copy of this Written Notification to Local Municipality(ies) and Name of Municipality(ies) Notified:		
Date Owner/Operator Verbally Notified Appropriate Regional Office of Reportable Release and Office Notified:			Municipality <u>Cranberry Township</u>		
Date: <u>9 / 14 / 2015</u> Office <u>Meadville Regional Office</u> m d y			Date: ____ / ____ / ____ Municipality _____ m d y		
Source (Mark All That Apply ☒):		How Discovered (Mark All That Apply ☒):		Environmental Media Affected and Impacts (Mark All That Apply ☒):	
Tank (DEP Assigned Nos. 001/003/004) ... ☒		During Closure ☒		Soil ☒	
Piping System (Aboveground Regulated) ☐		Lining Installation ☐		Sediment ☐	
Piping System (Underground Regulated) ☒		Routine Leak Detection ☐		Surface Water ☐	
Piping System (Non-Regulated) ☐		Third Party Inspection ☐		Ground Water ☐	
Dispenser/Dispensing Equipment ☐		Tightness Testing Activities ☐		Bedrock ☐	
Spill Catchment Basin ☐		Visible Product or Odor Reports ☐		Water Supplies ☐	
Accident/Natural Disaster ☐		Water in Tank ☐		Vapors/Product in Buildings ☐	
Submersible Turbine Pump Head/Fittings ☐		Construction ☐		Vapors/Product in Sewer/Utility Lines ☐	
Containment/Sump Failure ☐		Upgrade/Repair ☐		Ecological Receptors ☐	
Other (Specify) ☐		Supply Well Sample Results ☐			
Unknown ☐		Monitoring Well Sample Results ☐			
Cause (Mark All That Apply ☒):		Property Transfer ☐			
Faulty Installation ☐		Other (Specify) ☐			
Corrosion ☒		Unknown ☐			
Physical/Mechanical Failure ☐					
Spill During Delivery ☐					
Overfill at Delivery ☐					
Vehicle Gas Tank Overfill ☐					
Product Delivery Hose Rupture ☐					
Other (Specify) ☐					
Unknown ☒					

V. INTERIM REMEDIAL ACTIONS (O/O Only)(Mark All That Apply ☒):

	Planned	Initiated	Completed	Not Applicable
Regulated Substance Removed from Storage Tanks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fire, Explosion and Safety Hazards Mitigated	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contaminated Soil Excavated	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Free Product Recovered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water Supplies Identified and Sampled	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Temporary Water Supplies Provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other (Specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

VI. SUSPECTED / CONFIRMED CONTAMINATION INFORMATION (I/I Only)Date of Observation of Suspected/Confirmed Contamination: 9 / 14 / 2015
m d yIndication of Suspected Contamination (Mark All That Apply ☒):

- Unusual Level of Vapors ☒
- Erratic Behavior of Product Dispensing Equipment ☐
- Release Detection Results Indicate a Release ☐
- Discovery of Holes in the Storage Tank ☐
- Other (Specify) Tank Closure Activities ☒

Extent of Confirmed Contamination (Mark All That Apply ☒):

- Product Stained or Product Saturated Soil or Backfill ☒
- Ponded Product ☐
- Free Product or Sheen on Ponded Water ☐
- Free Product or Sheen on the Ground Water Surface ☐
- Free Product or Sheen on Surface Water ☐
- Other (Specify) ☐

VII. ADDITIONAL INFORMATION (Both O/O and I/I)

Provide any additional, relevant, available information concerning the reportable release or suspected or confirmed contamination. Include specific details or problems about the release. For example, if the piping was the source of the release and the cause was corrosion of a metal connector or flexible connector, it is important to include that information here. Provide DEP-assigned and owner/operator-assigned tank number(s), where applicable. Use additional 8½" x 11" sheets of paper, if necessary.

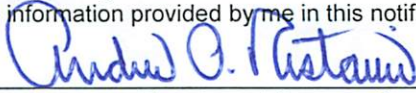
Tank Closure Activities commenced on September 14, 2015. Contaminated soil was detected near tank 001 and 003. Mr. John Koziara verbally notified Susan Frey of the DEP regional office in Meadville, PA of the suspected/confirmed contamination on September 14, 2015. All potentially contaminated soil excavated is contained on 6 mil plastic and segregated. The diesel soil is located near the side of the building and the gasoline soil is located near the rear of the building.

VIII. CERTIFICATION (Both O/O and I/I)

I, Andrew A. Restauri, hereby certify, under penalty of law as provided in 18 Pa.

(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the owner or operator of the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.



Signature of Owner or Operator

9 / 16 / 2015

Date

I, John Koziara/Koziara Trucking and Excavating, hereby certify, under penalty of law as provided in 18 Pa.

(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified installer who performed tank handling activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.



Signature of Certified Installer

9 / 16 / 2015

Date

2099

Installer Certification Number

417

Company Certification Number

I, _____, hereby certify, under penalty of law as provided in 18 Pa.

(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified inspector who performed inspection activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Signature of Certified Inspector

/ /
Date

Inspector Certification Number

Company Certification Number

Site Characterization Report

Seneca Mini Mart

Seneca, Pennsylvania

APPENDIX B

Boring Logs and Monitoring Well Installation Details

CLIENT: Heath Oil PROJECT # DATE DRILLED: 4/27/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Mobile B-57 BOREHOLE: 6" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Hollow Stem Auger WATER LEVEL: 3.0' bgs
 SAMPLING PROCEDURE: 2" Split Spoon SAMPLING INTERVAL: Continuous TOTAL DEPTH: 10 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION West of 6,000-gallon gasoline UST under dispenser	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1		(0.0' - 3.0') Yellowish Brown, Clay, Sand, Silt and Gravel (Fill) , cohesive, damp, no odor, no staining.	Auger	1	
	2				2	
	3	1.2	becomes wet at 3.0' (Fill)	1	3	10
	4		(3.0' - 4.5') Brown rounded Gravel , with minor clay, sand and silt, wet, no odor, no staining.	1	4	
	5		(Fill)	2		
	6	1.6	(4.5' - 8.5') Gray fine grained Sand , wet, no odor, no staining.	1	5	2
	7			3	6	
	8	2.7		2	7	16
	9		(Fill)	1	8	
	10	4.8	(8.5' - 10.0') Medium brown/gray, mottled, Silty Clay , damp, no odor, no staining.	2	9	19
	11		<i>Soil Sample SB-1 (8.0'-10.0') collected at 12:15.</i>	4	10	
	12		(Native soil)	12		
	13			19		
	14		Bottom of Boring at 10.0'			
	15					
	16					
	17					
	18					
	19					
	20					

CLIENT: Heath Oil PROJECT # DATE DRILLED: 4/27/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Mobile B-57 BOREHOLE: 6" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Hollow Stem Auger WATER LEVEL: 3.0' bgs
 SAMPLING PROCEDURE: 2" Split Spoon SAMPLING INTERVAL: Continuous TOTAL DEPTH: 10 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION North of dispenser for the 6,000-gallon gasoline UST	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)	
	1	12.4	(0.0' - 2.0') Yellowish Brown, Clay, Sand, Silt and Gravel (Fill) , cohesive, damp, no odor, no staining.	Auger	1		
	2		(Fill)		2		
	3	30.8	(3.0' - 7.0') Brown rounded Gravel , with clay, non-cohesive, wet, no odor, no staining. <i>Soil Sample SB-2 (2.0'-4.0') collected at 13:30.</i>	1	19		
	4			1			
	5			22.6		2	23
	6					1	
	7	19.6	(Fill)	3	17		
	8		(7.0' - 9.0') Light gray Sand , fine grained with some silt and clay, non-cohesive, wet, no odor, no staining.	4			
	9	11.7	(Native soil)	6	19		
	10		(9.0' - 10.0') Medium brown, Silty Clay , few shale fragments, damp, no odor, no staining.	10			
	11	Bottom of Boring at 10.0'					
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						

CLIENT: <u>Heath Oil</u>	PROJECT # <u> </u>	DATE DRILLED: <u>4/27/2016</u>
SITE: <u>Seneca Mini Mart</u>	LOCATION: <u>Seneca, PA</u>	
DRILLING COMPANY: <u>Cribbs & Associates</u>	RIG <u>Mobile B-57</u>	BOREHOLE: <u>6" Diameter</u>
LOGGED BY: <u>Gary Cribbs</u>	DRILLING METHOD: <u>Hollow Stem Auger</u>	WATER LEVEL: <u>3.6' bgs</u>
SAMPLING PROCEDURE: <u>2" Split Spoon</u>	SAMPLING INTERVAL: <u>Continuous</u>	TOTAL DEPTH: <u>8.0 Feet</u>

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION of dispenser line west	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1		(0.0' - 1.0') Asphalt and gravel sub-base.	Auger	1	
	2		(1.0' - 6.5') Brown Clay and Gravel , cohesive, moist, strong odor, slight sheen.		2	
	3	>5000		12		
	4		Soil Sample SB-3 (2.0'-4.0') collected at 14:45.	8	3	19
	5			4		
	6	56.2	Odor decreases, becomes wet at 5.0'.	2	4	
	7		(Fill)	1		
	8	19.4	(6.5' - 8.0') Brown and gray, mottled Silty Clay , damp no odor, no staining. Soil Sample SB-3 (6.0'-8.0') collected at 15:20.	1	5	20
	9		(Native soil)	3	6	
	10		Bottom of Boring at 8.0'	7		
	11			8	7	24
	12			14		
	13			13	8	
	14					
	15					
	16					
	17					
	18					
	19					
	20					

CLIENT: <u>Heath Oil</u>	PROJECT # <u></u>	DATE DRILLED: <u>4/27/2016</u>
SITE: <u>Seneca Mini Mart</u>	LOCATION: <u>Seneca, PA</u>	
DRILLING COMPANY: <u>Cribbs & Associates</u>	RIG <u>Mobile B-57</u>	BOREHOLE: <u>6" Diameter</u>
LOGGED BY: <u>Gary Cribbs</u>	DRILLING METHOD: <u>Hollow Stem Auger</u>	WATER LEVEL: <u></u>
SAMPLING PROCEDURE: <u>2" Split Spoon</u>	SAMPLING INTERVAL: <u>Continuous</u>	TOTAL DEPTH: <u>8.0 Feet</u>

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION east of dispenser line near canopy	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1		(0.0' - 1.5') Asphalt and gravel sub-base.	Auger	1	
	2		(1.5' - 6.0') Brown Gravel, Clay with brick fragments, non-cohesive, damp, no odor, no staining.	8	2	
	3	14.1		6	3	9
	4			4	4	
	5			1	5	19
	6	12.1	Soil Sample SB-4 (4.0'-6.0') collected at 16:15. becomes wet-saturated, slight petroleum odor. (Fill)	2	6	
	7		(6.0' - 8.0') Brown and gray mottled Silty Clay , damp, no odor, no staining.	8	7	22
	8	12.3	Soil Sample SB-4 (6.0'-8.0') collected at 16:30. (Native soil)	9	8	
	9		Bottom of Boring at 8.0'	12	9	
	10			16	10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: <u>Heath Oil</u>	PROJECT # <u></u>	DATE DRILLED: <u>4/28/2016</u>
SITE: <u>Seneca Mini Mart</u>	LOCATION: <u>Seneca, PA</u>	
DRILLING COMPANY: <u>Cribbs & Associates</u>	RIG <u>Mobile B-57</u>	BOREHOLE: <u>6" Diameter</u>
LOGGED BY: <u>Gary Cribbs</u>	DRILLING METHOD: <u>Hollow Stem Auger</u>	WATER LEVEL: <u>7.0' bgs</u>
SAMPLING PROCEDURE: <u>2" Split Spoon</u>	SAMPLING INTERVAL: <u>Continuous</u>	TOTAL DEPTH: <u>8.0 Feet</u>

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION west of dispenser line near canopy	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	—		(0.0' - 1.5') Asphalt and gravel sub-base.		—	
	1			Auger	1	
	—				—	
	2		(1.5' - 3.0') Gray and brown Sand, Gravel and Slag , non-cohesive, dry to damp, no odor, no staining.	12	2	
	—				—	
	3	443	<i>Soil Sample SB-5 (2.0'-4.0') collected at 11:00. (Fill)</i>	13	3	16
	—				—	
	4		(3.0' - 8.0') Brown and gray, Silty Clay , with some shale fragments, moist to wet, strong odor.	10	4	
	—			8	—	
	5	68.3		4	5	12
	—			2	—	
	6			2	6	
	—				—	
	7	87.4	becomes mottled, wet-saturated at 7.0'.	12	7	19
	—			11	—	
	8		(Native soil)	11	8	
	—			14	—	
	9	24.2	(8.0' - 10.0') Brown Silty Clay and Sand , few black shale fragments, stiff, damp to dry, no odor.	18	9	21
	—			16	—	
	10		(Native soil)	14	10	
	—			19	—	
	11		Bottom of Boring at 10.0'		11	
	—				—	
	12				12	
	—				—	
	13				13	
	—				—	
	14				14	
	—				—	
	15				15	
	—				—	
	16				16	
	—				—	
	17				17	
	—				—	
	18				18	
	—				—	
	19				19	
	—				—	
	20				20	

CLIENT: Heath Oil	PROJECT #	DATE DRILLED: 4/28/2016
SITE: Seneca Mini Mart	LOCATION: Seneca, PA	
DRILLING COMPANY: Cribbs & Associates	RIG: Mobile B-57	BOREHOLE: 6" Diameter
LOGGED BY: Gary Cribbs	DRILLING METHOD: Hollow Stem Auger	WATER LEVEL: 4.0' bgs
SAMPLING PROCEDURE: 2" Split Spoon	SAMPLING INTERVAL: Continuous	TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION north of dispenser canopy	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1		(0.0' - 2.0') Asphalt and gravel sub-base.	Auger	1	
	2				2	
	3	22.5	(2.0' - 4.0') Brown Sand, Gravel, and Slag , non-cohesive, dry to damp, soft.	2	3	17
	4		<i>Soil Sample SB-6 (2.0'-4.0') collected at 13:30.</i>	4	4	
			(Fill)	1		
				2	4	
	5	16.1	(4.0' - 7.0') Brown and gray Silty Clay , with few shale fragments, soft, wet.	2	5	18
	6		(Native soil)	1	6	
				2		
	7	8.3	(7.0' - 8.0') Yellow brown and gray Silty Clay , with shale and sandstone fragments, damp to dry, no odor, no staining.	2	7	14
	8		(Native soil)	12	8	
				18		
				21		
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 6/14/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 3" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Geoprobe WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	180	(0.0' - 1.0') Asphalt and Gravel subbase.		1	
	2		(1.0' - 3.0') Gray/Brown Fill Silty Clay and gravel, damp, strong product odor.	NA	2	48
	3	230	(Fill)		3	
	4		(3.0'-7.0') Gray Brown Silty Clay , some shale fragments, wet, strong odor. <i>Soil Sample SB-7 (3.0'-4.0') collected at 8:00.</i>		4	
	5	1850			5	
	6			NA	6	48
	7	18	(Native soil)		7	
	8		(7.0' - 8.0') Yellow/brown with gray motteling, Silty Clay , with shale fragments, damp, no odor. (Native soil)		8	
	9		<i>Soil Sample SB-7 (7.0'-8.0') collected at 8:15.</i> Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 6/14/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 3" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Geoprobe WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	37	(0.0' - 1.0') Asphalt and Gravel subbase.		1	
	2		(1.0' - 4.5') Gray/Brown Fill Silty Clay and gravel, damp, slight product odor.	NA	2	44.4
	3	51.2			3	
	4				4	
	5	3360	<i>Soil Sample SB-8 (4.0'-6.0') collected at 9:05.</i> (Fill)		5	
	6		(4.5'-7.0') Gray Brown Silty Clay , some shale fragments, becomes wet at 5.0'.	NA	6	48
	7	210	(Native soil)		7	
	8		(7.0' - 8.0') Yellow/brown with gray motteling, Silty Clay , with shale fragments, damp, no odor. (Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 6/14/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 3" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Geoprobe WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	320	(0.0' - 1.0') Asphalt and Gravel subbase.		1	
	2		(1.0' - 4.0') Gray/Brown Fill Silty Clay and gravel, damp, slight product odor.	NA	2	42
	3	3140			3	
	4		<i>Soil Sample SB-9 (3.0'-4.0') collected at 9:40.</i> (Fill)		4	
	5	2604	(4.0'-7.0') Gray Brown Silty Clay , some sand and shale fragments, wet, product odor		5	
	6			NA	6	43.2
	7	415	Sand content decreases.		7	
	8		(Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: <u>Heath Oil</u>	PROJECT # <u> </u>	DATE DRILLED: <u>6/14/2016</u>
SITE: <u>Seneca Mini Mart</u>	LOCATION: <u>Seneca, PA</u>	
DRILLING COMPANY: <u>Cribbs & Associates</u>	RIG <u>Geoprobe</u>	BOREHOLE: <u>3" Diameter</u>
LOGGED BY: <u>Gary Cribbs</u>	DRILLING METHOD: <u>Geoprobe</u>	WATER LEVEL: <u> </u>
SAMPLING PROCEDURE: <u>4' Macro Core</u>	SAMPLING INTERVAL: <u>Continuous</u>	TOTAL DEPTH: <u>8.0 Feet</u>

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	38	(0.0' - 1.0') Asphalt and Gravel subbase.		1	
	2		(0.0' - 3.0') Black/Gray/ Fill gravel, damp, no odor.	NA	2	42
	3	51.3	(Fill)		3	
	4		(4.0'-8.0') Gray/Brown mottled Silty Clay , some gravel, moist, slight odor.		4	
	5	58.6	Soil Sample SB-10 (4.0'-5.0') collected at 10:30.		5	
	6			NA	6	43.2
	7	4.9			7	
	8		(Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

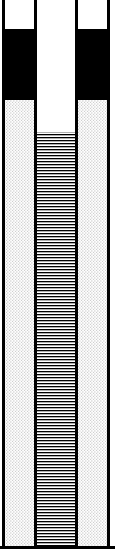
CLIENT: Heath Oil PROJECT # DATE DRILLED: 6/14/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 3" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Geoprobe WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	54	(0.0' - 1.0') Asphalt and Gravel subbase.		1	
	2		(1.0' - 2.5') Black/Gray/ Fill Clay and Gravel , damp, no odor.		2	
	3	1811	(Fill)	NA	3	45.6
	4		(2.5'-7.5') Gray/Brown Silty Clay , some shale fragments, few sandstone cobbles, damp, hydrocarbon odor and staining.		4	
	5	68.5	<i>Soil Sample SB-11 (3.0'-4.0') collected at 10:55.</i>		5	
	6			NA	6	46.8
	7	4.1	<i>Soil Sample SB-11 (7.0'-8.0') collected at 11:05.</i> (Native soil)		7	
	8		(7.5'-8.0') Yellowish Brown Silty Clay, damp, no staining. (Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 6/14/2016 &
 SITE: Seneca Mini Mart LOCATION: Seneca, PA 7/8/2016
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 8" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Geoprobe & 4 1/4" H S A WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.0'-2.0'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:		1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION Monitoring Well MW-3 installed at location of SB12	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	125	(0.0' - 1.0') Asphalt and Gravel subbase.	NA	1	48
	2		(1.0' - 4.0') Gray/Brown Fill - Clay, Gravel Sand and Slag , dry.		2	
	3	2274			3	
	4		<i>Soil Sample SB-12 (3.0'-4.0') collected at 12:05.</i> Gray staining and hydrocarbon odor at 3.8'. (Fill)		4	
	5	841	(4.0'-7.5') Gray/Brown Silty Clay , some shale fragments, damp, slight hydrocarbon odor and staining.	NA	5	48
	6				6	
	7	31	(Native soil)		7	
	8		(7.5'-8.0') Yellowish Brown mottled Silty Clay , damp, no staining or odor.		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil	PROJECT #	DATE DRILLED: 6/14/2016
SITE: Seneca Mini Mart	LOCATION: Seneca, PA	
DRILLING COMPANY: Cribbs & Associates	RIG: Geoprobe	BOREHOLE: 3" Diameter
LOGGED BY: Gary Cribbs	DRILLING METHOD: Geoprobe	WATER LEVEL:
SAMPLING PROCEDURE: 4' Macro Core	SAMPLING INTERVAL: Continuous	TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.0'-2.0'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:	Quartz Sand	1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	610	(0.0' - 1.0') Asphalt and Gravel subbase.		1	
	2		(1.0' - 4.0') Gray/Brown Fill - Clay, Gravel Sand and Slag , dry.	NA	2	48
	3	1521			3	
	4		<i>Soil Sample SB-13 (3.0'-4.0') collected at 12:30.</i> Gray staining and hydrocarbon odor at 3.5'. (Fill)		4	
	5	1325	(4.0'-7.5') Black/Gray/Brown Silty Clay , some shale fragments, damp, slight hydrocarbon odor and staining. Becomes wet at 5.0'.	NA	5	48
	6				6	
	7	215	(Native soil)		7	
	8		(7.5'-8.0') Yellowish Brown mottled Silty Clay , damp, no staining or odor.		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil
 SITE: Seneca Mini Mart
 DRILLING COMPANY: Cribbs & Associates
 LOGGED BY: Gary Cribbs
 SAMPLING PROCEDURE: 4' Macro Core

PROJECT # _____ DATE DRILLED: 6/14/2016
 LOCATION: Seneca, PA
 RIG Geoprobe BOREHOLE: 3" Diameter
 DRILLING METHOD: Geoprobe WATER LEVEL: _____
 SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

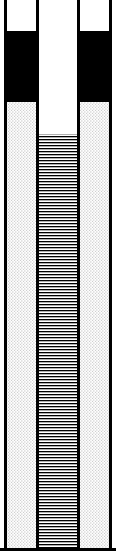
	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:	Quartz Sand		Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	110	(0.0' - 1.0') Asphalt and Gravel subbase.		1	
	2		(1.0' - 4.5') Gray/Brown Fill - Clay, Gravel, Brick Fragments and Shale , dry.	NA	2	48
	3	349	<i>Soil Sample SB-14 (3.0'-4.0') collected at 13:05.</i>		3	
	4		Gray staining and hydrocarbon odor at 3.5'. Becomes moist. (Fill)		4	
	5	316	(4.5'-6.5') Gray/Brown Silty Clay , some shale fragments, moist to wet, slight hydrocarbon odor and staining.		5	
	6		(Native soil)	NA	6	48
	7	10.2	(6.5'-8.0') Yellowish Brown mottled Silty Clay , damp, no staining or odor.		7	
	8		(Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil
 SITE: Seneca Mini Mart
 DRILLING COMPANY: Cribbs & Associates
 LOGGED BY: Gary Cribbs
 SAMPLING PROCEDURE: 4' Macro Core

PROJECT #
 LOCATION: Seneca, PA
 RIG Geoprobe/B-57
 BOREHOLE: 8" Diameter
 DATE DRILLED: 6/14/2016 & 7/8/2016
 DRILLING METHOD: Geoprobe & 4 1/4" H S A
 WATER LEVEL:
 SAMPLING INTERVAL: Continuous
 TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.0'-2.0'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:	Quartz Sand	1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details				DEPTH (FT.)	HEADSPACE	DESCRIPTION Monitoring Well MW-4 installed at location of SB-15	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	850	(0.0' - 1.0') Asphalt and Gravel subbase.	NA	1	48			
	2		(1.0' - 4.5') Gray/Brown Fill - Clay, Gravel, and Shale , dry.		2				
	3	3970	<i>Soil Sample SB-15 (3.0'-4.0') collected at 13:15.</i> strong hydrocarbon odor and staining at 3.5'. (Fill)		3				
	4				4				
	5	1872	(4.5'-7.5') Gray/Brown Silty Clay , some shale fragments, wet, free product, strong hydrocarbon odor and staining.	NA	5	48			
	6		(Native soil)		6				
	7	36.4			7				
	8		(7.5'-8.0') Yellowish Brown mottled Silty Clay , damp, no staining or odor.		8				
	9		Bottom of Boring at 8.0'		9				
	10			10					
	11			11					
	12			12					
	13			13					
	14			14					
	15			15					
	16			16					
	17			17					
	18			18					
	19			19					
	20			20					

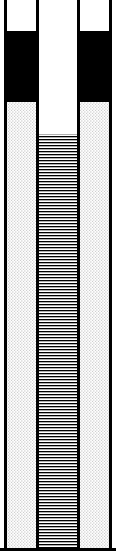
CLIENT: Heath Oil PROJECT # DATE DRILLED: 6/14/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 3" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Geoprobe WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	396	(0.0' - 1.0') Asphalt and Gravel subbase.		1	
	2		(1.0' - 3.0') Gray/Brown Fill - Clay, Gravel and Shale , dry. no hydrocarbon odor or staining.	NA	2	48
	3	3460	(Fill)		3	
	4		(3.0'-8.0') Gray/Brown Silty Clay , some shale fragments, damp, slight hydrocarbon odor and staining.		4	
	5	1265	<i>Soil Sample SB-16 (3.0'-4.0') collected at 13:30.</i>		5	
	6		Becomes wet at 5.0 ' with free product.	NA	6	48
	7	13.8	<i>Soil Sample SB-16 (7.0'-8.0') collected at 14:10.</i>		7	
	8		(Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 6/14/2016 &
 SITE: Seneca Mini Mart LOCATION: Seneca, PA 7/8/2016
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 8" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Geoprobe & 4 1/4" H S A WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.0'-2.0'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:	Quartz Sand	1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details				DEPTH (FT.)	HEADSPACE	DESCRIPTION Monitoring Well MW-4 installed at location of SB-15	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	724	(0.0' - 1.0') Asphalt and Gravel subbase.	NA	1	48			
	2		(1.0' - 3.0') Gray/Brown Fill - Clay, Gravel, and Shale , dry.		2				
	3	2875	(Fill)		3				
	4		(4.5'-6.5') Gray/Brown Silty Clay , some shale fragments, moist to wet, strong hydrocarbon odor and staining. <i>Soil Sample SB-17 (3.0'-4.0') collected at 14:30.</i>		4				
	5	1419		NA	5	48			
	6		(Native soil)		6				
	7	21.4	(6.5'-8.0') <i>Yellowish Brown mottled</i> Silty Clay , damp, no staining or odor.		7				
	8		(Native soil)		8				
Bottom of Boring at 8.0'			9		9				
			10		10				
			11		11				
			12		12				
			13		13				
			14		14				
			15		15				
			16		16				
			17		17				
			18		18				
			19		19				
			20		20				

CLIENT: Heath Oil PROJECT # DATE DRILLED: 9/14/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG: Geoprobe BOREHOLE: 3" Diameter
 LOGGED BY: Jared Thorn DRILLING METHOD: Geoprobe WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	17	(0.0' - 0.4') Asphalt		1	
	2		(0.4' - 4.0') Gray/Light Brown Fill - Sand and Silty Clay , micaceous sandstone fragments, brick fragments, dry, no hydrocarbon odor or staining.	NA	2	36
	3	6.1			3	
	4		rounded pebbles at 4.0'. (Fill)		4	
	5	61.6	(4.0'-7.0') Gray Silty Clay , some wood fragments, damp, slight hydrocarbon odor.		5	
	6			NA	6	34
	7	952	Soil Sample SB-18 (6.0'-8.0') collected at 11:15. (Fill)		7	
	8		(7.0'-8.0') Brown/Gray Silty Clay , trace sand, moist, plastic, hydrocarbon odor. some micaceous sandstone and gray shale fragments (Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 9/14/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 3" Diameter
 LOGGED BY: Jared Thorn DRILLING METHOD: Geoprobe WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	—		(0.0' - 0.4') Asphalt		—	
	1	139	(0.4' - 4.5') Gray/Light Brown Fill - Sand and Silty Clay , some micaceous sandstone fragments, brick fragments, and slag, dry, slight hydrocarbon odor.		1	
	2		<i>Soil Sample SB-19 (0.0'-2.0') collected at 10:50.</i>	NA	2	30
	3	15.5			3	
	4		wet, saturated at 3.5' to 4.2'		4	
	5		wood fragments at 4.0' (Fill)		5	
	6	26.2	(4.5'-5.5') Gray Silty Clay , trace sand, some dark gray shale fragments, moist. (Native soil)		6	
	7		(5.5'-6.5') Brown/Gray Sandy Silty Clay , some micaceous sandstone fragments, moist. (Native soil)	NA	7	48
	8	0.8	(6.5'-8.0') Gray/Brown mottled Sandy Silty Clay , some gravel, moist to wet . (Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 9/14/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 3" Diameter
 LOGGED BY: Jared Thorn DRILLING METHOD: Geoprobe WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	—		(0.0' - 0.4') Asphalt		—	
	1	1.0	(0.4' - 4.0') Gray Fill - Sandy Silt , some sand and gravel, moist.		1	
	2			NA	2	34
	3	0.9			3	
	4		brick fragments at 4.0' (Fill)		4	
	5	156	(4.0'-6.0') Gray Sandy Silt , some clay, plastic, wet, slight hydrocarbon odor. sand content increases, some gray shale fragments.		5	
	6		(Native soil)	NA	6	48
	7	13.3	(6.0'-8.0') Light Brown mottled Silty Clay , some gravel, moist to wet. some light gray/black shale fragments and light brown micaceous sandstone fragments.		7	
	8		(Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 9/14/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 3" Diameter
 LOGGED BY: Jared Thorn DRILLING METHOD: Geoprobe WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	—		(0.0' - 0.3') Asphalt		—	
	1	2.0	(0.3' - 0.9') Concrete.		1	
	—		(0.9' - 3.0') Light Brown/Gray Fill - Silty Clay , trace sand, some weathered		—	
	2		light brown micaceous sandstone fragments, moist, no odor.	NA	2	40
	—				—	
	3	1.3	(3.0'-3.1') thin stringer of black organic shale fragments (Fill)		3	
	—		(3.1'-4.5') Dark Gray Silty Clay , moist, no odor.		—	
	4				4	
	—		(Native soil)		—	
	5	65.1	(4.5'-6.5') Light Gray/Brown Silty Clay , with rounded pebbles, trace sand,		5	
	—		sand content increases, some sandstone fragments, damp.		—	
	6			NA	6	48
	—		Strong hydrocarbon odor at 6.0' (Native soil)		—	
	7	396	(6.5'-8.0') Light Brown Silty Clay , some rounded micaceous sandstone		7	
	—		pebbles, plastic, moist, hydrocarbon odor.		—	
	8		Soil Sample SB-22 (6.0'-8.0') collected at 12:45. (Native soil)		8	
	—		Bottom of Boring at 8.0'		—	
	9				9	
	—				—	
	10				10	
	—				—	
	11				11	
	—				—	
	12				12	
	—				—	
	13				13	
	—				—	
	14				14	
	—				—	
	15				15	
	—				—	
	16				16	
	—				—	
	17				17	
	—				—	
	18				18	
	—				—	
	19				19	
	—				—	
	20				20	

CLIENT: Heath Oil
 SITE: Seneca Mini Mart
 DRILLING COMPANY: Cribbs & Associates
 LOGGED BY: Jared Thorn
 SAMPLING PROCEDURE: 4' Macro Core

PROJECT # _____ DATE DRILLED: 9/14/2016
 LOCATION: Seneca, PA
 RIG Geoprobe BOREHOLE: 3" Diameter
 DRILLING METHOD: Geoprobe WATER LEVEL: _____
 SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	0.5	(0.0' - 0.3') Asphalt		1	
	2		(0.3' - 2.5') Brown/Gray Fill - Silty Clay , many limestone and sandstone fragments, some weathered gray shale fragments, dry, no odor.	NA	2	41
	3	12.2	(Fill)		3	
	4		(2.5'-5.0') Gray Silty Clay , some rounded gray sandstone pebbles, moist, no odor.		4	
	5	324	(Native soil)		5	
	6		(5.0'-8.0') Light Brown Sandy Silty Clay , some gray motteling, with rounded pebbles, plastic, moist, strong hydrocarbon odor.	NA	6	48
	7	810			7	
	8		(Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 9/14/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 3" Diameter
 LOGGED BY: Jared Thorn DRILLING METHOD: Geoprobe WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

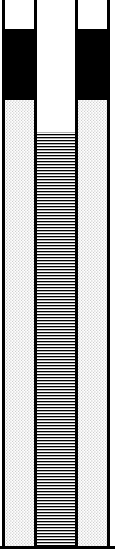
	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid		PVC sched. 40		2"
SCREEN:	Slotted - 0.01"		PVC sched. 40		2"
GROUT:					NA
SEAL:	1/8" Pellets		Bentonite		NA
FILTER PACK:			Silica		NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	0.2	(0.0' - 0.4') Asphalt		1	
	2		(0.4' - 4.0') Brown/Gray Fill - Silty Clay , many limestone and sandstone fragments, some weathered gray shale fragments, dry, no odor.	NA	2	30
	3	25.9			3	
	4		Concrete fragments at 4.0' (Fill)		4	
	5	65.2	(4.0'-5.0') Gray Silty Clay , damp, plastic. (Native soil)		5	
	6		(5.0'-6.0') Gray Silty Clay , some rounded pebbles, trace sand, moist, plastic. (Native soil)	NA	6	41
	7	824	(6.0'-8.0') Light Brown Sandy Silty Clay , some gray motteling, with rounded pebbles and sandstone fragments, plastic, dry to moist, strong hydrocarbon odor.		7	
	8		Soil Sample SB-24 (6.0'-8.0') collected at 13:45. (Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil
 SITE: Seneca Mini Mart
 DRILLING COMPANY: Cribbs & Associates
 LOGGED BY: Gary Cribbs
 SAMPLING PROCEDURE: 2" Split Spoon

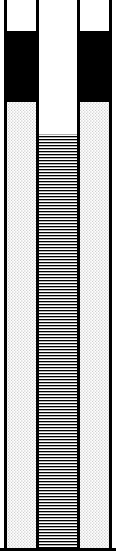
PROJECT # _____ DATE DRILLED: 4/28/2016 &
 LOCATION: Seneca, PA 7/8/2016
 RIG Mobile B-57 BOREHOLE: 8" Diameter
 DRILLING METHOD: Hollow Stem Auger WATER LEVEL: 7.0' bgs
 SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.0'-2.0'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:		1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION Description from Soil Boring SB-5 Monitoring Well MW-1 installed on July 8, 2016	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1		(0.0' - 1.5') Asphalt and gravel sub-base.	Auger	1	
	2		(1.5' - 3.0') Gray and brown Sand, Gravel and Slag , non-cohesive, dry to damp, no odor, no staining.	12	2	
	3	443	<i>Soil Sample SB-5 (2.0'-4.0') collected at 11:00. (Fill)</i>	13	3	16
	4		(3.0' - 8.0') Brown and gray, Silty Clay , with some shale fragments, moist to wet, strong odor.	10	4	
	5	68.3		8	5	12
	6			4	6	
	7	87.4	becomes mottled, wet-saturated at 7.0'.	2	7	19
	8		(Native soil)	11	8	
	9	24.2	(8.0' - 10.0') Brown Silty Clay and Sand , few black shale fragments, stiff, damp to dry, no odor.	12	9	21
	10		(Native soil)	16	10	
	11		Bottom of Boring at 10.0'	14	11	
	12			19	12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 6/14/2016 &
 SITE: Seneca Mini Mart LOCATION: Seneca, PA 7/8/2016
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe / B-57 BOREHOLE: 8" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Geoprobe & 4 1/4" H S A WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

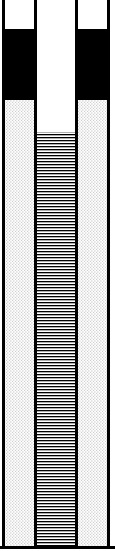
	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.0'-2.0'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:		1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details				DEPTH (FT.)	HEADSPACE	DESCRIPTION Description from Soil Boring SB-11 Monitoring Well MW-2 installed on July 8, 2016	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	54	(0.0' - 1.0') Asphalt and Gravel subbase.	NA	45.6	1			
	2		(1.0' - 2.5') Black/Gray/ Fill Clay and Gravel , damp, no odor.			2			
	3	1811	(Fill)			3			
	4		(2.5'-7.5') Gray/Brown Silty Clay , some shale fragments, few sandstone cobbles, damp, hydrocarbon odor and staining. <i>Soil Sample SB-11 (3.0'-4.0') collected at 10:55.</i>	NA	46.8	4			
	5	68.5				5			
	6					6			
	7	4.1	<i>Soil Sample SB-11 (7.0'-8.0') collected at 11:05.</i> (Native soil)	7					
	8		(7.5'-8.0') Yellowish Brown Silty Clay, damp, no staining. (Native soil)	8					
Bottom of Boring at 8.0'						9			
						10			
						11			
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

CLIENT: Heath Oil
 SITE: Seneca Mini Mart
 DRILLING COMPANY: Cribbs & Associates
 LOGGED BY: Gary Cribbs
 SAMPLING PROCEDURE: 4' Macro Core

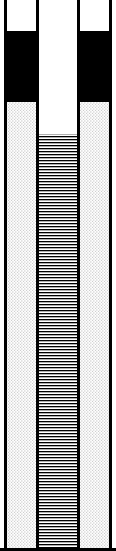
PROJECT # _____ DATE DRILLED: 6/14/2016 &
 LOCATION: Seneca, PA 7/8/2016
 RIG Geoprobe BOREHOLE: 8" Diameter
 DRILLING METHOD: Geoprobe & 4 1/4" H S A WATER LEVEL:
 SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.0'-2.0'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:		1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION Monitoring Well MW-3 installed at location of SB12	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	125	(0.0' - 1.0') Asphalt and Gravel subbase.	NA	1	48
	2		(1.0' - 4.0') Gray/Brown Fill - Clay, Gravel Sand and Slag , dry.		2	
	3	2274	<i>Soil Sample SB-12 (3.0'-4.0') collected at 12:05.</i> Gray staining and hydrocarbon odor at 3.8'. (Fill)	NA	3	48
	4				4	
	5	841	(4.0'-7.5') Gray/Brown Silty Clay , some shale fragments, damp, slight hydrocarbon odor and staining.	NA	5	48
	6				6	
	7	31	(Native soil)	NA	7	48
	8		(7.5'-8.0') Yellowish Brown mottled Silty Clay , damp, no staining or odor.		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

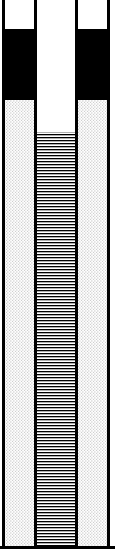
CLIENT: Heath Oil PROJECT # DATE DRILLED: 6/14/2016 &
 SITE: Seneca Mini Mart LOCATION: Seneca, PA 7/8/2016
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe/B-57 BOREHOLE: 8" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Geoprobe & 4 1/4" H S A WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.0'-2.0'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:	Quartz Sand	1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details				DEPTH (FT.)	HEADSPACE	DESCRIPTION Monitoring Well MW-4 installed at location of SB-15	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	850	(0.0' - 1.0') Asphalt and Gravel subbase.	NA	1	48			
	2	3970	(1.0' - 4.5') Gray/Brown Fill - Clay, Gravel, and Shale , dry.		2				
	3		<i>Soil Sample SB-15 (3.0'-4.0') collected at 13:15.</i> strong hydrocarbon odor and staining at 3.5'. (Fill)		3				
	4				4				
	5	1872	(4.5'-7.5') Gray/Brown Silty Clay , some shale fragments, wet, free product, strong hydrocarbon odor and staining.	NA	5	48			
	6	(Native soil)	6						
	7		36.4		7				
	8		(7.5'-8.0') Yellowish Brown mottled Silty Clay , damp, no staining or odor.		8				
Bottom of Boring at 8.0'				9	9				
				10	10				
				11	11				
				12	12				
				13	13				
				14	14				
				15	15				
				16	16				
				17	17				
				18	18				
				19	19				
				20	20				

CLIENT: Heath Oil PROJECT # DATE DRILLED: 6/14/2016 &
 SITE: Seneca Mini Mart LOCATION: Seneca, PA 7/8/2016
 DRILLING COMPANY: Cribbs & Associates RIG Geoprobe BOREHOLE: 8" Diameter
 LOGGED BY: Gary Cribbs DRILLING METHOD: Geoprobe & 4 1/4" H S A WATER LEVEL:
 SAMPLING PROCEDURE: 4' Macro Core SAMPLING INTERVAL: Continuous TOTAL DEPTH: 8.0 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.0'-2.0'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:	Quartz Sand	1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION Monitoring Well MW-4 installed at location of SB-15	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	724	(0.0' - 1.0') Asphalt and Gravel subbase.	NA	1	48
	2		(1.0' - 3.0') Gray/Brown Fill - Clay, Gravel, and Shale , dry.		2	
	3		(Fill)		3	
	4	2875	(4.5'-6.5') Gray/Brown Silty Clay , some shale fragments, moist to wet, strong hydrocarbon odor and staining.		4	
	5		<i>Soil Sample SB-17 (3.0'-4.0') collected at 14:30.</i>	NA	5	48
	6	1419	(Native soil)		6	
	7		(6.5'-8.0') Yellowish Brown mottled Silty Clay , damp, no staining or odor.		7	
	8	21.4	(Native soil)		8	
	9		Bottom of Boring at 8.0'		9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil
 SITE: Seneca Mini Mart
 DRILLING COMPANY: Cribbs & Associates
 LOGGED BY: RRB & CR
 SAMPLING PROCEDURE:

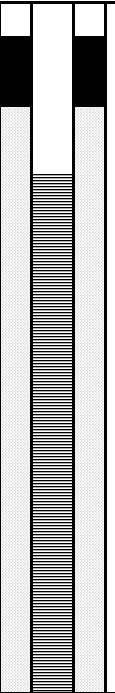
PROJECT #
 LOCATION: Seneca, PA
 RIG Mobile B-57
 BOREHOLE: 8" Diameter
 DATE DRILLED: 10/17/2016
 DRILLING METHOD: 4.25" Hollow Stem Auger
 WATER LEVEL:
 SAMPLING INTERVAL:
 TOTAL DEPTH: 9.8'

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.3'-2.3'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.3'-9.8'	PVC sched. 40	7.5'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:		1.5'-9.8'	Silica	8.3'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION Monitoring Well installed under powerlines - Split mast using hydraulics only Description from geoprobe off-set completed November 15, 2016.	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	0.0	(0.0' - 1.0') Asphalt and Gravel sub-base. (Fill)	Auger and Geo probe	1	
	2		(1.0' - 3.0') Dark gray to black, Clay , Gravel and Shale , damp, no odor.		2	
	3	0.0	(Fill)		3	
	4		(3.0' - 6.0') Gray and Brown, Silty Clay , plastic, moist, no odor.		4	
	5	1.7	Soil Sample MW-6 (4.0'-6.0') collected at 12:40.		5	
	6		(Native soil)		6	
	7	0.0	(6.0' - 9.8') Mottled Gray and Yellowish Brown, Silty Clay , plastic, moist, no odor.		7	
	8				8	
	9	0.0	Soil Sample MW-6 (8.0'-9.8') collected at 12:50.		9	
	10		(Native soil)		10	
	11		Bottom of Boring at 9.8'		11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

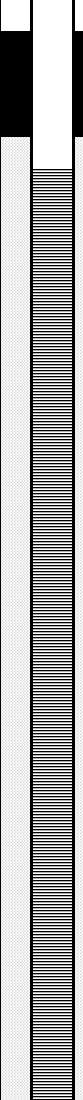

CLIENT: Heath Oil PROJECT # DATE DRILLED: 10/17/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Mobile B-57 BOREHOLE: 8" Diameter
 LOGGED BY: J Thorn DRILLING METHOD: 4.25" Hollow Stem Auger WATER LEVEL:
 SAMPLING PROCEDURE: SAMPLING INTERVAL: TOTAL DEPTH: 10.0'

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.25'-2.5'	PVC sched. 40	2.25'	2"
SCREEN:	Slotted - 0.01"	2.5'-10.0'	PVC sched. 40	7.5'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:		1.5'-10.0'	Silica	8.5'	NA

Monitoring Well Construction Details		DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
		—		(0.0' - 4.0') Light Brown Silt , little clay and light gray limestone gravel, trace fine sand, gravel content decreases with depth, some wood fragments, cohesive, damp to moist, no odor.	Auger	—	
		1			7	1	
		2	0.1		16	2	12
		3			13		
		4			17		
		5	2.4	Soil Sample MW-7 (2.5'-4.5') collected at 14:30. (Fill)	4	3	
		6		(4.0'-5.5') Gray Silty Clay , plastic, moist, no odor. color transitions to medium brown between 4.5' and 5.5'. (Native soil)	3	4	17
		7			1	5	
		8	0.3		2		22
		9		(5.5'-10.5') Medium Brown and Light Gray mottled Silty Clay , plastic, little iron staining, dry.	4	6	
		10			3		
		11			9	7	
		12	0.5		11		23
		13		becomes moist to wet at 8.3'.	9	8	
		14			8		
		15			5	9	
		16	0.4		7		20
		17		trace of fine grained red sandstone fragments. (Native soil)	5	10	
		18			5		
		19					
		20		Bottom of Boring at 10.0' Bottom of Split Spoon Sampling 10.5'		11	
		21				12	
		22				13	
		23				14	
		24				15	
		25				16	
		26				17	
		27				18	
		28				19	
		29				20	

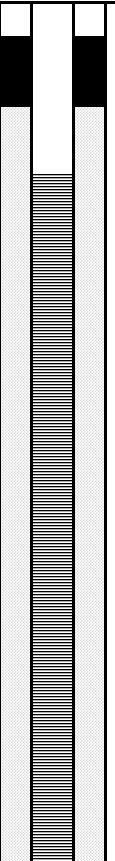
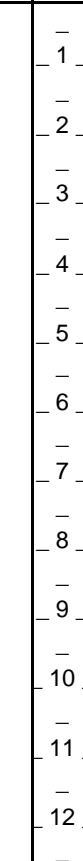
CLIENT: Heath Oil PROJECT # DATE DRILLED: 11/1/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Mobile B-57 BOREHOLE: 8" Diameter
 LOGGED BY: J Thorn DRILLING METHOD: 4.25" Hollow Stem Auger WATER LEVEL:
 SAMPLING PROCEDURE: Split Spoon SAMPLING INTERVAL: TOTAL DEPTH: 16.0'

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.25'-2.5'	PVC sched. 40	2.25'	2"
SCREEN:	Slotted - 0.01"	2.5'-16.0'	PVC sched. 40	13.5'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-2.0'	Bentonite	1.5'	NA
FILTER PACK:		2.0'-16.0'	Silica	14.0'	NA

Monitoring Well Construction Details		DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
		—		(0.0' - 4.0') Light Brown and gray Silty Clay , plastic, moist, no odor.		—	
		1				1	
		2				2	
		3				3	
		4	1.0	(Fill)		4	
		5	2.5	(4.0'-6.0') Light Brown Silt , some light gray mottling, trace clay, trace sandstone and shale fragments, trace black silt, plastic, dry, no odor.	5	5	22
		6		(Native soil)	7	6	
		7	1.5	(6.0'-10.0') Light Brown Silty Sand , with some weathered fine grained sandstone fragments, dry, no odor.	12	7	24
		8			12	8	
		9	3.0	increasing black silt content.	15	9	24
		10			23	10	
		11	3.7	becomes medium brown	10	11	20
		12		Soil Sample MW-8 (10.0'-12.0') collected at 12:30.	12	12	
		13	2.3	(Native soil)	13	13	24
		14		(13.0'-15.0') Gray and brown Silt , trace clay, trace weathered organic shale fragments, dry, no odor. Increasing sand content with rounded pebbles.	16	14	
		15	2.3	Soil Sample MW-8 (14.0'-16.0') collected at 13:30. (Native soil)	12	15	22
		16		(15.0'-16.0') Gray Silt , trace clay, dry, transitions to weathered gray shale.	19	16	
				(Native soil)	16		
				Bottom of Boring at 16.0'	25	16	
		17				17	
		18				18	
		19				19	
		20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 10/18/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Mobile B-57 BOREHOLE: 8" Diameter
 LOGGED BY: J Thorn DRILLING METHOD: 4.25" Hollow Stem Auger WATER LEVEL:
 SAMPLING PROCEDURE: SAMPLING INTERVAL: TOTAL DEPTH: 12.5'

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.5'-2.5'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.5'-12.5'	PVC sched. 40	10.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-2.0	Bentonite	1.5'	NA
FILTER PACK:		1.5'-12.5'	Silica	11.0'	NA

Monitoring Well Construction Details		DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
		1		(0.0' - 0.5') Light Brown Silt and light gray limestone gravel, little sand, trace clay Fill.	Auger	1	
		2	9.0	(0.5' - 2.0') Light Brown Silty Clay and light gray limestone gravel, slightly plastic, dry. <i>Soil Sample MW-9 (0.5'-2.5') collected at 9:45. (Fill)</i>	5 5 7	1 2	14
		3		(2.0'-2.5') Black Silt , trace silt, sand and coal fragments, dry, noncohesive. Fill	3	3	
		4	0.9	(2.5'-5.0') Medium Gray Silty Clay , trace fine grained sandstone fragments, plastic, damp to moist.	2 3 3	3 4	19
		5		transitioning to medium brown with some gray motteling with depth. (Fill)	4	5	
		6	0.6	(5.0'-12.5') Medium Brown and Gray mottled Silty Clay , trace sand, weathered red-orange shale fragments and light gray sandstone fragments, plastic, dry, no odor, trace of iron staining.	7 11 10	6	24
		7			5	7	
		8	0.0		8 11 15	8	24
		9		increasing black silt content with increasing depth.	11	9	
		10	0.2		15 18 17	10	20
		11			7	11	
		12	0.3		14 14 17	12	22
		13		(Native soil)		13	
		14		Bottom of Boring at 12.5'		14	
		15				15	
		16				16	
		17				17	
		18				18	
		19				19	
		20				20	

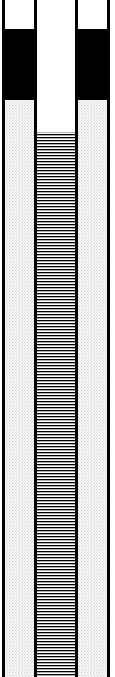
CLIENT: Heath Oil PROJECT # DATE DRILLED: 10/17/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Mobile B-57 BOREHOLE: 8" Diameter
 LOGGED BY: RRB & CR DRILLING METHOD: 4.25" Hollow Stem Auger WATER LEVEL:
 SAMPLING PROCEDURE: SAMPLING INTERVAL: TOTAL DEPTH: 9.9'

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.15'-2.15'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.15'-9.9'	PVC sched. 40	7.75'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:		1.5'-9.9'	Silica	8.4'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION Monitoring Well installed under powerlines - Split mast using hydraulics only Description from geoprobe off-set completed November 15, 2016.	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	0.0	(0.0' - 1.5') Asphalt and Gravel sub-base. (Fill)	Auger and Geo probe	1	
	2		(1.5' - 4.0') Dark gray to black, Clay , Gravel and Slag , dry, no odor. (Fill)		2	
	3	0.0			3	
	4				4	
	5	0.0	(4.0' - 6.0') Gray and Brown, Silty Clay , plastic, damp, no odor. (Native soil)		5	
	6				6	
	7	2.7	(6.0' - 9.9') Mottled Gray and Yellowish Brown, Silty Clay , plastic, moist, no odor. <i>Soil Sample MW-10 (6.0'-8.0') collected at 11:50.</i>		7	
	8				8	
	9	0.0	<i>Soil Sample MW-10 (8.0'-10.0') collected at 12:00.</i> (Native soil)		9	
	10				10	
	11		Bottom of Boring at 9.9'		11	
	12		hydrocarbon odor noted during monitoring well installation at 6.0'-8.0'		12	
	13		not evident during geoprobe soil sampling		13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 10/17/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Mobile B-57 BOREHOLE: 8" Diameter
 LOGGED BY: RRB DRILLING METHOD: 4.25" Hollow Stem Auger WATER LEVEL:
 SAMPLING PROCEDURE: SAMPLING INTERVAL: TOTAL DEPTH: 9.9'

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.4'-2.4'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.4'-9.9'	PVC sched. 40	7.5'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:		1.5'-9.9'	Silica	8.4'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION Monitoring Well installed under powerlines - Split mast using hydraulics only Description from geoprobe off-set completed November 15, 2016.	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	0.0		(0.0' - 1.0') Asphalt and gray Gravel sub-base, rounded with some sand, dry, no odor. (Fill)	Auger and Geo probe	1	
	1		(1.0' - 5.0') Dark gray to black, Clay, Gravel and Slag , with some dark brown cinders, dry, no odor.		2	
	2				3	
	3		becomes moist and plastic		4	
	4				5	
	5		<i>Soil Sample MW-11 (4.0'-6.0') collected at 10:20.</i> (Fill)		6	
	6		(5.0' - 6.0') Gray and Brown, Silty Clay , plastic, damp, no odor. (Native soil)		7	
	7		(6.0' - 9.9') Mottled Gray and Yellowish Brown, Silty Clay , plastic, moist, no odor. <i>Soil Sample MW-11 (6.0'-8.0') collected at 10:30.</i>		8	
	8				9	
	9				10	
	10		(Native soil)		11	
	11		Bottom of Boring at 9.9'		12	
	12				13	
	13				14	
	14				15	
	15				16	
	16				17	
	17				18	
	18				19	
	19				20	

CLIENT: Heath Oil
 SITE: Seneca Mini Mart
 DRILLING COMPANY: Cribbs & Associates
 LOGGED BY: J Thorn
 SAMPLING PROCEDURE: 2" Split Spoon

PROJECT # _____ DATE DRILLED: 1/24/2017
 LOCATION: Seneca, PA
 RIG: Mobile B-53 BOREHOLE: 8" Diameter
 DRILLING METHOD: 4.25" Hollow Stem Auger WATER LEVEL: _____
 SAMPLING INTERVAL: _____ TOTAL DEPTH: 8.0'

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.5'-2.0'	PVC sched. 40	1.5'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:		1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	150	(0.0' - 5.0') Gray and Brown Silty Clay , little weathered brown micaceous sandstone fragments, some fine sand, some gray silt and clay, moderate plasticity, glass and red brick fragments, damp.	2	—	12
	2			2	— 1 —	
	3			9	—	
	4			8	— 2 —	
	5	0.2	<i>Soil Sample MW-12 (4.0'-6.0') collected at 11:00.</i> (Fill)	4	—	4
	6			6	— 3 —	
	7			7	—	
	8			8	— 4 —	
	9	8.7	(5.0'-7.5') Gray Silty Clay , moderate plasticity, moderate stiff, trace highly weathered shale and gray micaceous sandstone fragments, damp.	11	—	12
	10			11	— 5 —	
	11			3	—	
	12			3	— 6 —	
	13	0.3	(7.5'-8.0') Light Brown Sandy Silty Clay , low-moderate plasticity, fine to medium sand, medium stiff, damp to wet. (Native soil)	1	—	3
	14			3	— 7 —	
	15			3	—	
	16			5	— 8 —	
	17		Bottom of Boring at 8.0'		—	
	18				— 9 —	
	19				— 10 —	
	20				— 11 —	
					— 12 —	
					— 13 —	
					— 14 —	
					— 15 —	
					— 16 —	
					— 17 —	
					— 18 —	
					— 19 —	
					— 20 —	

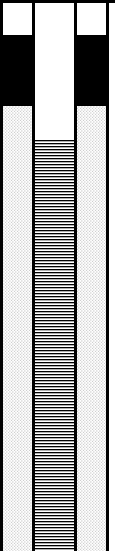
CLIENT: Heath Oil PROJECT # DATE DRILLED: 1/24/2017
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Mobile B-53 BOREHOLE: 8" Diameter
 LOGGED BY: J Thorn DRILLING METHOD: 4.25" Hollow Stem Auger WATER LEVEL:
 SAMPLING PROCEDURE: 2" Split Spoon SAMPLING INTERVAL: TOTAL DEPTH: 8.0'

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.5'-2.0'	PVC sched. 40	1.5'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5	Bentonite	1.0'	NA
FILTER PACK:		1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	1	(0.0' - 0.4') Dark Brown Silty , little clay and sand, mod. plasticity, moist to wet.	5	1	12
	2	0.1	(0.4' - 4.0') Light Brown Silt , some clay, little highly weathered gray shale fragments, trace fine sand, and micaceous gray sandstone fragments, stiff, moist to wet. <i>Soil Sample MW-13 (1.0'-2.0') collected at 15:00.</i>	13	2	1
	3			8	3	
	4			8	4	
	5		(4.0'-6.0') No Recovery.	6	5	0
	6			13	6	
	7	0.1	(6.0'-7.0') Gray Silty Clay , highly plasticity, trace highly weathered gray shale and gray micaceous sandstone fragments, roots, wet. (Native soil)	11	7	22
	8		(7.0'-8.0') Light Gray to Light Brown Silty Clay , low-plasticity, trace fine sand and white hard medium grained sandstone fragments, damp to dry.	10	8	
	9		Bottom of Boring at 8.0' (Native soil)	33	9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 1/25/2017
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Mobile B-53 BOREHOLE: 8" Diameter
 LOGGED BY: G. Cribbs DRILLING METHOD: 4.25" Hollow Stem Auger WATER LEVEL:
 SAMPLING PROCEDURE: 2" Split Spoon SAMPLING INTERVAL: TOTAL DEPTH: 8.0'

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.5'-2.0'	PVC sched. 40	1.5'	2"
SCREEN:	Slotted - 0.01"	2.0'-8.0'	PVC sched. 40	6.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-1.5'	Bentonite	1.0'	NA
FILTER PACK:		1.5'-8.0'	Silica	6.5'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	—		(0.0' - 7.5') Dark Brown to Black, Silty Clay , weathered shale, trace fine sand, trace gravel and brick fragments, moist to wet. <i>Soil Sample MW-14 (1.0'-2.0') collected at 10:40.</i>	2	—	21.6
	1	<1.0		8	1	
	2			9	—	
	3	<1.0	Saturated at 3'	7	2	18
	4			6	—	
	5			7	3	
	6			6	—	9.6
	7	<1.0	Gravel content increases.	9	4	
	8			4	—	
	9			3	5	19.2
	10			2	—	
	11			3	6	
	12			2	—	
	13			9	7	
	14			22	—	
	15		(Fill)	24	8	
	16		(7.5'-8.0') Light Brown Silty Clay , low-moderate plasticity, trace fine grained sand, and sandstone fragments, damp. (Native soil)		9	
	17		Bottom of Boring at 8.0'		10	
	18				11	
	19				12	
	20				13	
					14	
					15	
					16	
					17	
					18	
					19	
					20	

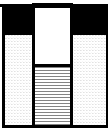
CLIENT: Heath Oil PROJECT # DATE DRILLED: 5/24/2017
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates RIG Mobile B-53 BOREHOLE: 8" Diameter
 LOGGED BY: G. Cribbs DRILLING METHOD: 4.25" Hollow Stem Auger WATER LEVEL: Dry
 SAMPLING PROCEDURE: 2" Split Spoon SAMPLING INTERVAL: TOTAL DEPTH: 12.5

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.5'-2.5'	PVC sched. 40	2.0'	2"
SCREEN:	Slotted - 0.01"	2.5'-12.5'	PVC sched. 40	10.0'	2"
GROUT:					NA
SEAL:	1/8" Pellets	0.5'-2.0	Bentonite	1.5'	NA
FILTER PACK:		2.0'-12.5'	Silica	10.5'	NA

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1		(0.0' - 2.5') Dark Brown, Silty Clay , trace fine grained sand, low - medium plasticity, moist, no odor.	Soft Dig	1	
	2				2	
	3		(2.5 - 9.5') Orange/Brown, Clay , trace silt and fine grained sand, mottled, medium to high plasticity, damp, no odor.	3	3	
	4			7	4	24
	5			12		
	6			17	5	
	7			Auger	6	
	8				7	
	9			10		
	10			12	8	24
	11			13		
	12			19	9	
	13		(9.5' - 12.5') Orange/Brown, Clay , trace silt and fine grained sand, mottled, interbedded with layers of weathered Sandstone , damp, no odor, hard to auger.	Auger	10	
	14			19		
	15			23	11	21.6
	16			27		
	17			26	12	
	18			Auger		
	19					
	20					
	13		Bottom of Boring at 12.5'		13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

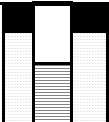
CLIENT: Heath Oil PROJECT # DATE DRILLED: 8/30/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates, Inc. RIG BOREHOLE: 3"
 LOGGED BY: Tyler Vatter DRILLING METHOD: Saw Cut & Hand Auger WATER LEVEL:
 SAMPLING PROCEDURE: N/A SAMPLING INTERVAL: N/A TOTAL DEPTH: 2

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.0'-1.0'	PVC	1.0'	3/8" Tubing
SCREEN:	.010"	1.0'-2.0'	PVC	1.0'	1"
GROUT:	3/8" chips	N/A	Bentonite	N/A	N/A
SEAL:	1/8" Pellets	0.0'-0.5'	Bentonite	0.5'	3"
FILTER PACK:	Medium Quartz Sand	0.5'-2.0'	Silica	1.5'	3"

Completed with flush mount manhole	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	—		(0.0' - 1.0') Asphalt surface (3" thick) with gravel subbase.	AU	—	AU
	1		(1.0'-2.0') Brown, Silty Clay & Gravel , damp, non-cohesive, no odor, no staining.		1	
	2				2	
	3		<i>Bottom of Boring @ 2.0'</i>		3	
	4				4	
	5				5	
	6				6	
	7				7	
	8				8	
	9				9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil PROJECT # DATE DRILLED: 8/30/2016
 SITE: Seneca Mini Mart LOCATION: Seneca, PA
 DRILLING COMPANY: Cribbs & Associates, Inc. RIG BOREHOLE: 3"
 LOGGED BY: Tyler Vatter DRILLING METHOD: Saw Cut & Hand Auger WATER LEVEL:
 SAMPLING PROCEDURE: N/A SAMPLING INTERVAL: N/A TOTAL DEPTH: 2

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.0'-1.0'	PVC	1.0'	3/8" Tubing
SCREEN:	.010"	1.0'-2.0'	PVC	1.0'	1"
GROUT:	3/8" chips	N/A	Bentonite	N/A	N/A
SEAL:	1/8" Pellets	0.0'-0.5'	Bentonite	0.5'	3"
FILTER PACK:	Medium Quartz Sand	0.5'-2.0'	Silica	1.5'	3"

Completed with flush mount manhole	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	—		(0.0' - 1.0') Concrete surface (4" thick) with gravel subbase.	AU	—	AU
	— 1 —		(1.0'-2.0') Brown, Silty Clay & Gravel , damp, non-cohesive, no odor, no staining.		— 1 —	
	— 2 —		Bottom of Boring @ 2.0'		— 2 —	
	— 3 —				— 3 —	
	— 4 —				— 4 —	
	— 5 —				— 5 —	
	— 6 —				— 6 —	
	— 7 —				— 7 —	
	— 8 —				— 8 —	
	— 9 —				— 9 —	
	— 10 —				— 10 —	
	— 11 —				— 11 —	
	— 12 —				— 12 —	
	— 13 —				— 13 —	
	— 14 —				— 14 —	
	— 15 —				— 15 —	
	— 16 —				— 16 —	
	— 17 —				— 17 —	
	— 18 —				— 18 —	
	— 19 —				— 19 —	
	— 20 —				— 20 —	

Site Characterization Report

Seneca Mini Mart

Seneca, Pennsylvania

APPENDIX C

Waste Disposal Documentation



NON-HAZARDOUS MANIFEST

NON-HAZARDOUS MANIFEST		1. Generator's US EPA ID No. <i>Generator's ID</i>		Manifest Doc No. Number		2. Page 1 of Page		01		
3. Generator's Name & Mailing Address: HARPER OIL COMPANY 3390 STATE ROUTE 257 SENECA, PA 16346			4. Generator's Site Address (if different than mailing):			A. Manifest Number WMNA		«number»		
4. Generator's Phone: 814-671-7029						B. State Generator's ID <i>State Generator's ID</i>				
5. Transporter 1 Company Name MCCLYMONDS TRANSIT & SUPPLY			6. US EPA ID Number US EPA ID Number			C. State Transporter's ID State Transporter ID				
7. Transporter 2 Company Name Transporter 2 Company Name			8. US EPA ID Number US EPA ID Number			D. Transporter's Phone 724-368-8040 X219				
9. Designated Facility Name and Site Address NORTHWEST SANITARY LANDFILL 1436 W.SUNBURY RD. WEST SUNBURY, PA 16061			10. US EPA ID Number US EPA ID Number			E. State Transporter's ID State Transporter ID				
						F. Transporter's Phone Transporter 2 Phone				
						G. State Facility ID 100585				
						H. State Facility Phone 724-637-3552				
GENERATOR	11. Description of Waste Materials			12. Containers		13. Total Quantity	14. Unit Wt./Vol.	I. Misc. Comments		
	a. RWC 508- GASOLINE IMPACTED SOIL			No.	Type					
	WM Profile # 108623PAW			1	DT	20	Wt./Vol.	Comments		
	b. Waste Name			No.	Type	Total Qty.	Wt./ Vol.	Comments		
	WM Profile # WM Profile Number									
TRANSPORTER	c. Waste Name			No.	Type	Total Qty.	Wt./ Vol.	Comments		
	WM Profile # WM Profile Number									
	d. Waste Name			No.	Type	Total Qty.	Wt./ Vol.	Comments		
	WM Profile # WM Profile Number									
FACILITY	J. Additional Descriptions for Materials Listed Above Additional Description			K. Disposal Location						
				Cell				Level		
				Grid						
15. Special Handling Instructions and Additional Information Special Handling Instructions										
Purchase Order # Purchase Order Number EMERGENCY CONTACT / PHONE NO.: ANDY RESTAURI 814-671-7029										
16. GENERATOR'S CERTIFICATE: I hereby certify that the above-described materials are not hazardous wastes as defined by CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.										
Printed Name C. Ramsden			Signature <i>C. Ramsden</i>			"On behalf of" A. Restauri/Heath Oil		Month 8	Day 24	Year 16
TRANSPORTER	17. Transporter 1 Acknowledgement of Receipt of Materials									
	Printed Name <i>Greg Weaver</i>			Signature <i>Greg Weaver</i>			Month 8	Day 24	Year 16	
	18. Transporter 2 Acknowledgement of Receipt of Materials									
FACILITY	Printed Name			Signature			Month	Day	Year	
	19. Certificate of Final Treatment/Disposal I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the dates listed above.									
	20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest.									
Printed Name <i>Devin Brown</i>			Signature <i>Devin Brown</i>			Month 8	Day 24	Year 16		
White- TREATMENT, STORAGE, DISPOSAL FACILITY COPY Pink- FACILITY USE ONLY										
Blue- GENERATOR #2 COPY Gold- TRANSPORTER #1 COPY										

24.54



175342

NORTHWEST SANITARY LANDFILL
1436 WEST SUNBURY ROAD
WEST SUNBURY, PA, 16061

Original
Ticket# 497029

Ph: (724) 637-3552

Customer: CRIBBS AND ASSOICATES CRIBBS AND ASSO Carrier: MCCLYMONDS MCCLYMONDS TRUCKING
PO BOX 44
DELMONT, PA, 15626 MCCLYMONDS

Tkt Date 08/24/2016
Pay Type Credit Account Chk#
Billing# 0001154
Acc Tons 24.54
Haul Tk#
PO#

Vehicle# 935 Volume
Trailer#
License# AG11532
Driver GREG
Haul Tk#
Dest

Generator 192-HARPEROILCOMP HARPER OIL COMPANY Profile# 108623PAW (GASOLINE IMPACTED SOIL)
EPA ID NA Waste # 508
Manifest 01 Origin # County 61.1/VENANGO, PA
Route Origin Name FRANKLIN

Time Scale
In 08/24/2016 08:00 Scale1
Out 08/24/2016 08:18 Scale2

Operator
DANN 082387

WASTE MANAGEMENT

Operation Type-Inbound
Inbound Gross 75940 lb
Tare 26860 lb
Net 49080 lb
Tons 24.54

Comments License: AG11532, PA, Owner: MCCLYMONDS, Address: CURRIE ROAD PORTERSVILLE, PA, 160

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
Cont Soil Pet-Tons 100		24.54	Tons				6111
RCR-P-Regulatory C 100			%				6111
EVF-P-Standard Env 100			%				6111
T3E-TRANSPORTATION 100		24.54	Tons				6111

Total Tax
Total Ticket

weighmaster:

Driver:

404-WMPA

VOID - CUSTOMER DO NOT ACCEPT





NON-HAZARDOUS MANIFEST

NON-HAZARDOUS MANIFEST		1. Generator's US EPA ID No. Generator's ID		Manifest Doc No. Number		2. Page 1 of Page		02							
3. Generator's Name & Mailing Address: HARPER OIL COMPANY 3390 STATE ROUTE 257 SENECA, PA 16346				Generator's Site Address (if different than mailing):				A. Manifest Number WMNA «number»							
4. Generator's Phone: 814-671-7029								B. State Generator's ID State Generator's ID							
5. Transporter 1 Company Name MCCLYMONDS TRANSIT & SUPPLY 1187				6. US EPA ID Number US EPA ID Number				C. State Transporter's ID State Transporter ID							
7. Transporter 2 Company Name Transporter 2 Company Name				8. US EPA ID Number US EPA ID Number				D. Transporter's Phone 724-368-8040 X219							
9. Designated Facility Name and Site Address NORTHWEST SANITARY LANDFILL 1436 W.SUNBURY RD. WEST SUNBURY, PA 16061				10. US EPA ID Number US EPA ID Number				E. State Transporter's ID State Transporter ID							
								F. Transporter's Phone Transporter 2 Phone							
								G. State Facility ID 100585							
								H. State Facility Phone 724-637-3552							
GENERATOR	11. Description of Waste Materials			12. Containers		13. Total	14. Unit	I. Misc. Comments							
	a. RWC 508- GASOLINE IMPACTED SOIL WM Profile # 108623PAW			No.	Type	Quantity	Wt./ Vol.	Comments							
				1	DT	20	Yds								
	b. Waste Name WM Profile # WM Profile Number			No.	Type	Total Qty.	Wt./ Vol.	Comments							
	c. Waste Name WM Profile # WM Profile Number			No.	Type	Total Qty.	Wt./ Vol.	Comments							
d. Waste Name WM Profile # WM Profile Number			No.	Type	Total Qty.	Wt./ Vol.	Comments								
J. Additional Descriptions for Materials Listed Above Additional Description			K. Disposal Location												
			Cell Level												
			Grid												
15. Special Handling Instructions and Additional Information Special Handling Instructions															
Purchase Order # Purchase Order Number EMERGENCY CONTACT / PHONE NO.: ANDY RESTAURI 814-671-7029															
16. GENERATOR'S CERTIFICATE: I hereby certify that the above-described materials are not hazardous wastes as defined by CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.															
Printed Name C. Ramsden			Signature <i>C. Ramsden</i>			"On behalf of" A. Restauri/Heath Oil		Month 8	Day 24	Year 16					
TRANSPORTER	17. Transporter 1 Acknowledgement of Receipt of Materials			Printed Name RICH STURSON			Signature <i>Rich Sturson</i>			Month 8	Day 24	Year 16			
	18. Transporter 2 Acknowledgement of Receipt of Materials			Printed Name			Signature			Month	Day	Year			
FACILITY	19. Certificate of Final Treatment/Disposal I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the dates listed above.														
	20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest. Printed Name Dawn Brown										Signature <i>Dawn Brown</i>			Month 8	Day 24	Year 16

White- TREATMENT, STORAGE, DISPOSAL FACILITY COPY

Blue- GENERATOR #2 COPY

Yellow- GENERATOR #1 COPY

Pink- FACILITY USE ONLY

Gold- TRANSPORTER #1 COPY

23.99



175344

NORTHWEST SANITARY LANDFILL
1436 WEST SUNBURY ROAD
WEST SUNBURY, PA, 16061

Original
Ticket# 497030

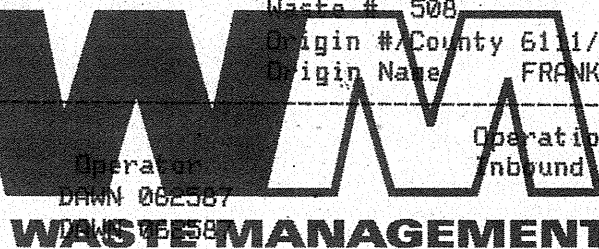
Ph: (724) 637-3552

Customer: CRIBBS AND ASSOICATES CRIBBS AND ASSO Carrier: MCCLYMONDS MCCLYMONDS TRUCKING
PO BOX 44
MELMONT, PA, 15626 MCCLYMONDS

Tkt Date 08/24/2016 Vehicle# 1187 Volume
Pay Type Credit Account Chk# Trailer#
Billing# 0001154 License# AG38298
McC Tons 48.53 Driver SHAGGY
Haul Tk#
ID# Dest

Generator 192-HARPEROILCOMP HARPER OIL COMPANY Profile# 108623PAW (GASOLINE IMPACTED SOIL)
EPA ID NA Waste # 508
Manifest 2 Origin #/County 6111/VENANGO, PA
Route Origin Name FRANKLIN

Time Scale
In 08/24/2016 08:23 Scale1
Out 08/24/2016 08:33 Scale2



Operation Type-Inbound
Inbound @ Gross 75180 lb
Tare 27200 lb*
Net 47980 lb
Tons 23.99

Comments License: AG38298, PA, Owner: MCCLYMONDS, Address: CURRIE ROAD PORTERSVILLE, PA, 160

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
Cont Soil Pet-Tons 100		23.99	Tons				6111
RCR-P-Regulatory C 100			%				6111
EVP-P-Standard Env 100			%				6111
T3E-TRANSPORTATION 100		23.99	Tons				6111

Total Tax
Total Ticket

Leighmaster: Dawn

Driver: SHAGGY

404-WMPA

VOID - CUSTOMER DO NOT ACCEPT





NON-HAZARDOUS MANIFEST

NON-HAZARDOUS MANIFEST		1. Generator's US EPA ID No.		Manifest Doc No.		2. Page 1 of		23	
3. Generator's Name & Mailing Address: HARPER OIL COMPANY 3390 STATE ROUTE 257 SENECA, PA 16346		Generator's Site Address (if different than mailing):		Number		A. Manifest Number WMNA		«number»	
4. Generator's Phone: 814-671-7029		5. Transporter 1 Company Name MCCLYMONDS TRANSIT & SUPPLY		6. US EPA ID Number		B. State Generator's ID			
7. Transporter 2 Company Name Transporter 2 Company Name		8. US EPA ID Number		US EPA ID Number		C. State Transporter's ID		State Transporter ID	
9. Designated Facility Name and Site Address NORTHWEST SANITARY LANDFILL 1436 W. SUNBURY RD. WEST SUNBURY, PA 16061		10. US EPA ID Number		US EPA ID Number		D. Transporter's Phone		724-368-8040 X219	
						E. State Transporter's ID		State Transporter ID	
						F. Transporter's Phone		Transporter 2 Phone	
						G. State Facility ID		100585	
						H. State Facility Phone		724-637-3552	
11. Description of Waste Materials		12. Containers		13. Total Quantity		14. Unit Wt./Vol.		1. Misc. Comments	
a. RWC 508- GASOLINE IMPACTED SOIL		No. Type		20		Yd		Comments	
WM Profile # 108623PAW		1 DT							
b. Waste Name		No. Type		Total Qty.		Wt./ Vol.		Comments	
WM Profile # WM Profile Number									
c. Waste Name		No. Type		Total Qty.		Wt./ Vol.		Comments	
WM Profile # WM Profile Number									
d. Waste Name		No. Type		Total Qty.		Wt./ Vol.		Comments	
WM Profile # WM Profile Number									
J. Additional Descriptions for Materials Listed Above		K. Disposal Location							
Additional Description		Cell				Level			
		Grid							
15. Special Handling Instructions and Additional Information									
Special Handling Instructions									
Purchase Order #		Purchase Order Number		EMERGENCY CONTACT / PHONE NO.:		ANDY RESTAURI 814-671-7029			
16. GENERATOR'S CERTIFICATE:									
I hereby certify that the above-described materials are not hazardous wastes as defined by CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.									
Printed Name		Signature		"On behalf of"		Month		Day	
C. Ramsden		[Signature]		A. Restauri/Heath Oil		8		24	
17. Transporter 1 Acknowledgement of Receipt of Materials									
Printed Name		Signature				Month		Day	
Greg Wilsner		[Signature]				8		24	
18. Transporter 2 Acknowledgement of Receipt of Materials									
Printed Name		Signature				Month		Day	
19. Certificate of Final Treatment/Disposal									
I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the dates listed above.									
20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest.									
Printed Name		Signature				Month		Day	
Dawn Braun		[Signature]				8		24	

White- TREATMENT, STORAGE, DISPOSAL FACILITY COPY

Blue- GENERATOR #2 COPY

Yellow- GENERATOR #1 COPY

Pink- FACILITY USE ONLY

Gold- TRANSPORTER #1 COPY

23.10.09



175366

NORTHWEST SANITARY LANDFILL
1436 WEST SUNBURY ROAD
WEST SUNBURY, PA, 16061

Original
Ticket# 497050

Ph: (724) 637-3552

Customer: CRIBBS AND ASSOCIATES CRIBBS AND ASSO Carrier: MCCLYMONDS MCCLYMONDS TRUCKING
PO BOX 44
MELMONT, PA, 15626 MCCLYMONDS

Tkt Date 08/24/2016 Vehicle# 935 Volume
Pay Type Credit Account Chk# Trailer#
Billing# 0001154 License# AG11532
Wcc Tons 72.22 Driver GREG
Haul Tk#
ID# Dest

Generator 192-HARPEROILCOMP HARPER OIL COMPANY Profile# 108623PAW (GASOLINE IMPACTED SOIL)
EPA ID NA Waste # 508
Manifest 3 Origin #/County 6111/VENANGO, PA
Route Origin Name FRANKLIN

Time Scale Operator Operation Type-Inbound
In 08/24/2016 10:53 Scale1 DAWN 062587 Inbound @ Gross 74120 lb*
Out 08/24/2016 11:20 Scale2 Tare 26740 lb*
Net 47380 lb
Tons 23.69

Comments License: AG11532, PA, Owner: MCCLYMONDS, Address: CURRIE ROAD PORTERSVILLE, PA, 160

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
Cont Soil Pet-Tons 100		23.69	Tons				6111
RCR-P-Regulatory C 100			%				6111
EVF-P-Standard Env 100			%				6111
T3E-TRANSPORTATION 100		23.69	Tons				6111

Total Tax
Total Ticket

Weighmaster:

Driver:

Greg W

404-WMPA

VOID - CUSTOMER DO NOT ACCEPT





NON-HAZARDOUS MANIFEST

NON-HAZARDOUS MANIFEST		1. Generator's US EPA ID No.		Manifest Doc No.		2. Page 1 of		Page	
3. Generator's Name & Mailing Address: HARPER OIL COMPANY 3390 STATE ROUTE 257 SENECA, PA 16346		Generator's Site Address (if different than mailing):		A. Manifest Number WMNA		B. State Generator's ID		04 082916 «number»	
4. Generator's Phone: 814-671-7029		5. Transporter 1 Company Name MCCLYMONDS TRANSIT & SUPPLY 1147		6. US EPA ID Number US EPA ID Number		C. State Transporter's ID		State Transporter ID	
7. Transporter 2 Company Name Transporter 2 Company Name		8. US EPA ID Number US EPA ID Number		D. Transporter's Phone		724-368-8040 X219		E. State Transporter's ID	
9. Designated Facility Name and Site Address NORTHWEST SANITARY LANDFILL 1436 W.SUNBURY RD. WEST SUNBURY, PA 16061		10. US EPA ID Number US EPA ID Number		F. Transporter's Phone		Transporter 2 Phone		G. State Facility ID	
								100585	
								H. State Facility Phone	
								724-637-3552	
GENERATOR	11. Description of Waste Materials			12. Containers		13. Total	14. Unit	I. Misc. Comments	
	a. RWC 508- GASOLINE IMPACTED SOIL			No.	Type	Quantity	Wt./Vol.		
	WM Profile # 108623PAW			1	Drum	20	Yds	Comments	
	b. Waste Name			No.	Type	Total Qty.	Wt./ Vol.	Comments	
	WM Profile # WM Profile Number								
TRANSPORTER	c. Waste Name			No.	Type	Total Qty.	Wt./ Vol.	Comments	
	WM Profile # WM Profile Number								
	d. Waste Name			No.	Type	Total Qty.	Wt./ Vol.	Comments	
	WM Profile # WM Profile Number								
FACILITY	J. Additional Descriptions for Materials Listed Above			K. Disposal Location					
	Additional Description			Cell			Level		
				Grid					
15. Special Handling Instructions and Additional Information									
Special Handling Instructions									
Purchase Order # Purchase Order Number EMERGENCY CONTACT / PHONE NO.: ANDY RESTAURI 814-671-7029									
16. GENERATOR'S CERTIFICATE:									
I hereby certify that the above-described materials are not hazardous wastes as defined by CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.									
Printed Name			Signature			"On behalf of"		Month	Day
C. Ramsden						A. Restauri/Heath Oil		8	24
17. Transporter 1 Acknowledgement of Receipt of Materials									
Printed Name			Signature					Month	Day
RICH STIVASON								8	24
18. Transporter 2 Acknowledgement of Receipt of Materials									
Printed Name			Signature					Month	Day
19. Certificate of Final Treatment/Disposal									
I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the dates listed above.									
20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest.									
Printed Name			Signature					Month	Day

White- TREATMENT, STORAGE, DISPOSAL FACILITY COPY

Blue- GENERATOR #2 COPY

Yellow- GENERATOR #1 COPY

Pink- FACILITY USE ONLY

Gold- TRANSPORTER #1 COPY

23.94



175368

NORTHWEST SANITARY LANDFILL
1436 WEST SUNBURY ROAD
WEST SUNBURY, PA, 16061

Original
Ticket# 497054

Ph: (724) 637-3552

Customer: CRIBBS AND ASSOCIATES CRIBBS AND ASSO Carrier: MCCLYMONDS MCCLYMONDS TRUCKING
PO BOX 44
MELMONT, PA, 15626 MCCLYMONDS

Rkt Date 08/24/2016
Pay Type Credit Account Chk#
Billing# 0001154
Acc Tons 96.16
Man Tk#
PO#

Vehicle# 1187 Volume
Trailer#
License# AG38298
Driver SHAGGY
Haul Tk#
Dest

Generator 192-HARPEROILCOMP HARPER OIL COMPANY Profile# 108623PAW (GASOLINE IMPACTED SOIL)
EPA ID NA Waste # 508
Manifest 082416D Origin #, County 6109/VENANGO, PA
Route Origin Name CRANBERRY

Time Scale
In 08/24/2016 11:19 Scale1
Out 08/24/2016 11:29 Scale2

Operator
DEONG 73121

WASTE MANAGEMENT

Operation Type-Inbound
Inbound @ Gross 75280 lb*
Tare 27400 lb*
Net 47880 lb
Tons 23.94

Comments License: AG38298, PA, Owner: MCCLYMONDS, Address: CURRIE RD. PORTERSVILLE, PA, 1605

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1 Cont Soil Pet-Tons 100		23.94	Tons				6109
2 RCR-P-Regulatory C 100			%				6109
3 EVF-P-Standard Env 100			%				6109
4 T3E-TRANSPORTATION 100		23.94	Tons				6109

Total Tax
Total Ticket

weighmaster:

Driver:

404-WMPA

VOID - CUSTOMER DO NOT ACCEPT





NON-HAZARDOUS MANIFEST

NON-HAZARDOUS MANIFEST		1. Generator's US EPA ID No. Manifest Doc No. Number		2. Page 1 of Page 03 05		
3. Generator's Name & Mailing Address: HARPER OIL COMPANY 3390 STATE ROUTE 257 SENECA, PA 16346 4. Generator's Phone: 814-671-7029		Generator's Site Address (if different than mailing):		A. Manifest Number WMNA «number» B. State Generator's ID		
5. Transporter 1 Company Name MCCLYMONDS TRANSIT & SUPPLY		6. US EPA ID Number US EPA ID Number		C. State Transporter's ID State Transporter ID D. Transporter's Phone 724-368-8040 X219		
7. Transporter 2 Company Name Transporter 2 Company Name		8. US EPA ID Number US EPA ID Number		E. State Transporter's ID State Transporter ID F. Transporter's Phone Transporter 2 Phone		
9. Designated Facility Name and Site Address NORTHWEST SANITARY LANDFILL 1436 W.SUNBURY RD. WEST SUNBURY, PA 16061		10. US EPA ID Number US EPA ID Number		G. State Facility ID 100585 H. State Facility Phone 724-637-3552		
GENERATOR	11. Description of Waste Materials		12. Containers		13. Total Quantity	
	a. RWC 508- GASOLINE IMPACTED SOIL WM Profile # 108623PAW		No. Type		14. Unit Wt./Vgl.	
			1 <i>TYPE</i>		Wt./Vol.	
	b. Waste Name WM Profile # WM Profile Number		No. Type		Total Qty. Wt./ Vol. Comments	
	c. Waste Name WM Profile # WM Profile Number		No. Type		Total Qty. Wt./ Vol. Comments	
d. Waste Name WM Profile # WM Profile Number		No. Type		Total Qty. Wt./ Vol. Comments		
J. Additional Descriptions for Materials Listed Above Additional Description		K. Disposal Location				
		Cell Level				
		Grid				
15. Special Handling Instructions and Additional Information Special Handling Instructions						
Purchase Order # Purchase Order Number EMERGENCY CONTACT / PHONE NO.: ANDY RESTAURI 814-671-7029						
16. GENERATOR'S CERTIFICATE: I hereby certify that the above-described materials are not hazardous wastes as defined by CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.						
Printed Name C. Ramsden		Signature <i>C. Ramsden</i>		"On behalf of" A. Restauri/Heath Oil		
				Month Day Year 8 24 16		
TRANSPORTER	17. Transporter 1 Acknowledgement of Receipt of Materials					
	Printed Name <i>Greg Weaver</i>		Signature <i>Greg Weaver</i>		Month Day Year 8 24 16	
FACILITY	18. Transporter 2 Acknowledgement of Receipt of Materials					
	Printed Name		Signature		Month Day Year	
19. Certificate of Final Treatment/Disposal I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the dates listed above.						
20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest.						
Printed Name <i>Dawn Brown</i>		Signature <i>Dawn Brown</i>		Month Day Year 8 24 16		

White- TREATMENT, STORAGE, DISPOSAL FACILITY COPY
Pink- FACILITY USE ONLY

Blue- GENERATOR #2 COPY
Gold- TRANSPORTER #1 COPY

Yellow- GENERATOR #1 COPY

13.00



175398

NORTHWEST SANITARY LANDFILL
1436 WEST SUNBURY ROAD
WEST SUNBURY, PA, 16061

Original
Ticket# 497080

Ph: (724) 637-3552

Customer: CRIBBS AND ASSOICATES CRIBBS AND ASSO Carrier: MCCLYMONDS MCCLYMONDS TRUCKING
PO BOX 44
DELMONT, PA, 15626

Tkt Date 08/24/2016 Vehicle# 935 Volume
Pay Type Credit Account Chk# Trailer#
Billing# 0001154 License# AG11532
Acc Tons 109.16 Driver GREG
Man Tk# Haul Tk#
PO# Dest

Generator 192-HARPEROILCOMP HARPER OIL COMPANY Profile# 108623PAW (GASOLINE IMPACTED SOIL)
EPA ID NA Waste # 508
Manifest 03 Origin #/County 61.1/VENANGO, PA
Route Origin Name FRANKLIN

Time Scale Operator Operation Type-Inbound
In 08/24/2016 14:24 Scale1 DLONG 73121 Inbound Gross 52640 lb*
Out 08/24/2016 14:48 Scale2 Net 26640 lb*
Tons 26000 lb
13.00

Comments

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1 Cont Soil Pet-Tons 100		13.00	Tons				6111
2 RCR-P-Regulatory C 100			%				6111
3 EVF-P-Standard Env 100			%				6111
4 T3E-TRANSPORTATION 100		13.00	Tons				6111

Total Tax
Total Ticket

weighmaster:

Driver:

404-WMPA

VOID - CUSTOMER DO NOT ACCEPT



Site Characterization Report

Seneca Mini Mart

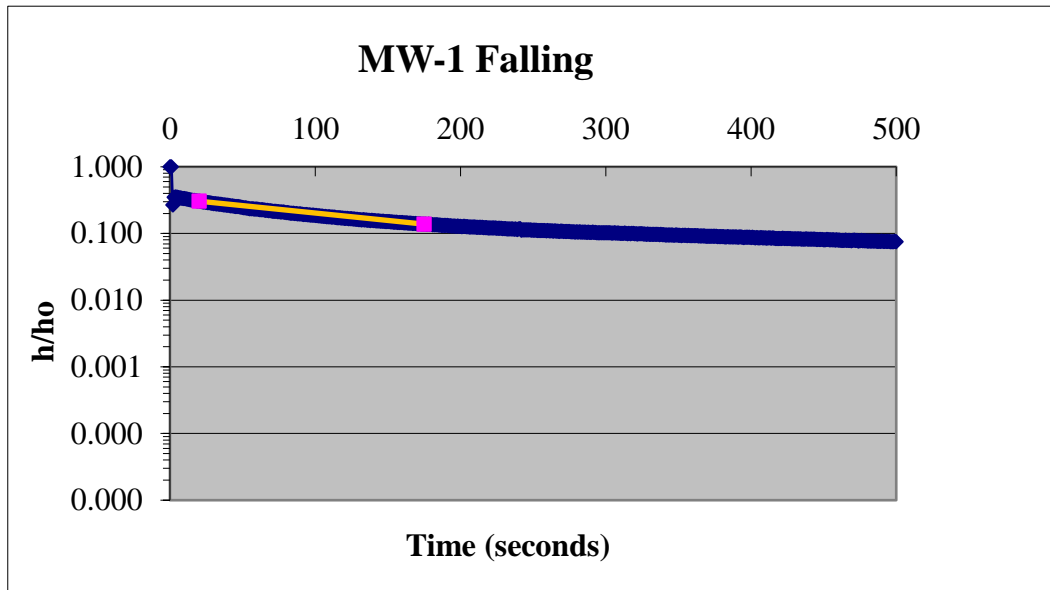
Seneca, Pennsylvania

APPENDIX D

Slug Test Results

APPENDIX D

Slug Test Analysis
 Seneca Mini-Mart
 3390 State Route 257
 Seneca, PA
 PADEP Facility ID 61-18854

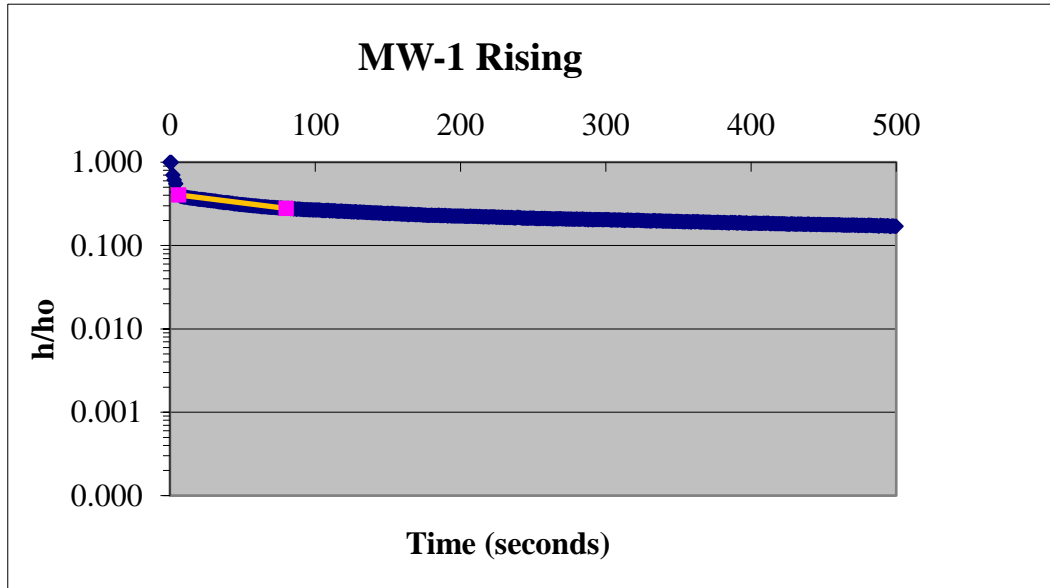


	T	h/h_0
Initial	20	0.305
Final	175	0.138
Hvorslev Time	195.45	seconds

$r =$	0.083 feet	$r^2 * \ln$	0.0186003
$R =$	0.666 feet	$2LT$	2439.16558
$L =$	6.24 feet		
$T_0 =$	195.45 sec	$K =$	$\frac{r^2 * \ln(L/R)}{2LT_0}$
$r^2 =$	0.006889	K =	7.62568E-06 feet/sec
$L/R =$	9.369369369	K =	0.658858887 feet/day
$\ln(L/R) =$	2.7	K =	0.000232402 cm/sec

APPENDIX D

Slug Test Analysis
 Seneca Mini-Mart
 3390 State Route 257
 Seneca, PA
 PADEP Facility ID 61-18854

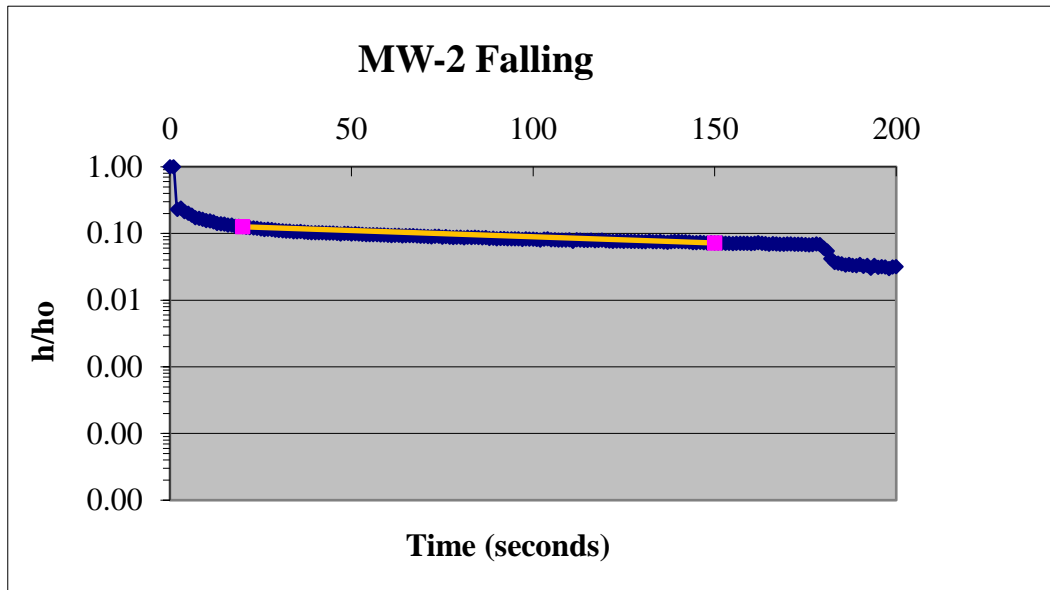


	T	h/h_0
Initial	6	0.405
Final	80	0.279
Hvorslev Time	198.56	seconds

$r =$	0.083 feet	$r^2 * \ln$	0.0186003
$R =$	0.666 feet	$2LT$	889.567978
$L =$	2.24 feet		
$T_0 =$	198.56 sec	$K =$	$\frac{r^2 * \ln(L/R)}{2LT_0}$
$r^2 =$	0.006889	K =	2.09094E-05 feet/sec
$L/R =$	3.363363363	K =	1.806568986 feet/day
$\ln(L/R) =$	2.7	K =	0.000637238 cm/sec

APPENDIX D

Slug Test Analysis
 Seneca Mini-Mart
 3390 State Route 257
 Seneca, PA
 PADEP Facility ID 61-18854

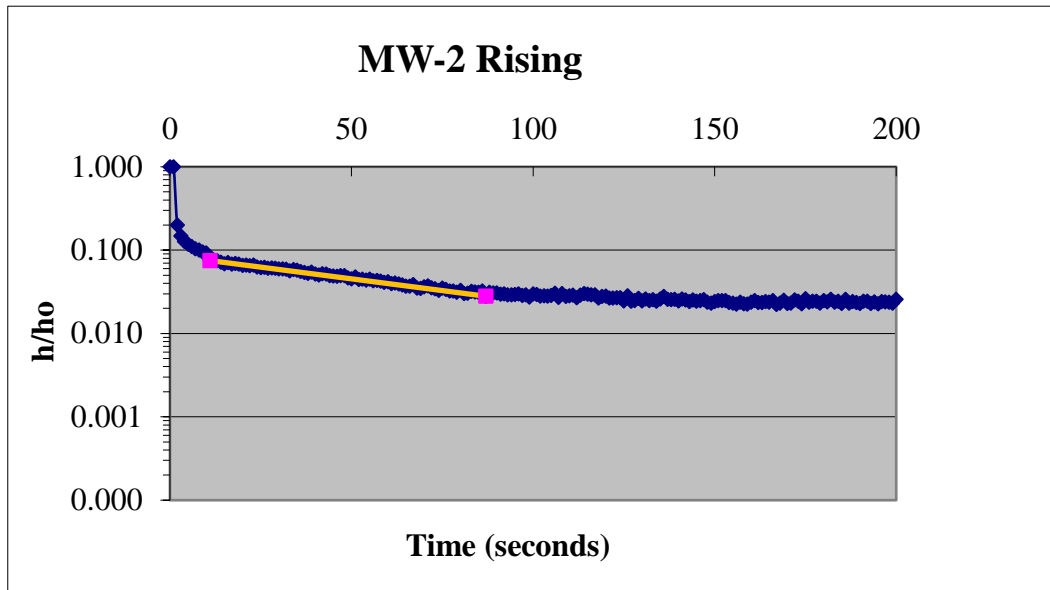


	T	h/h_0
Initial	20	0.126
Final	150	0.072
Hvorslev Time	232.30	seconds

$r =$	0.083 feet	$r^2 * \ln$	0.0186003
$R =$	0.666 feet	$2LT$	2625.01529
$L =$	5.65 feet		
$T_0 =$	232.30 sec	$K =$	$\frac{r^2 * \ln(L/R)}{2LT_0}$
$r^2 =$	0.006889	K =	7.08579E-06 feet/sec
$L/R =$	8.483483483	K =	0.612212023 feet/day
$\ln(L/R) =$	2.7	K =	0.000215948 cm/sec

APPENDIX D

Slug Test Analysis
 Seneca Mini-Mart
 3390 State Route 257
 Seneca, PA
 PADEP Facility ID 61-18854

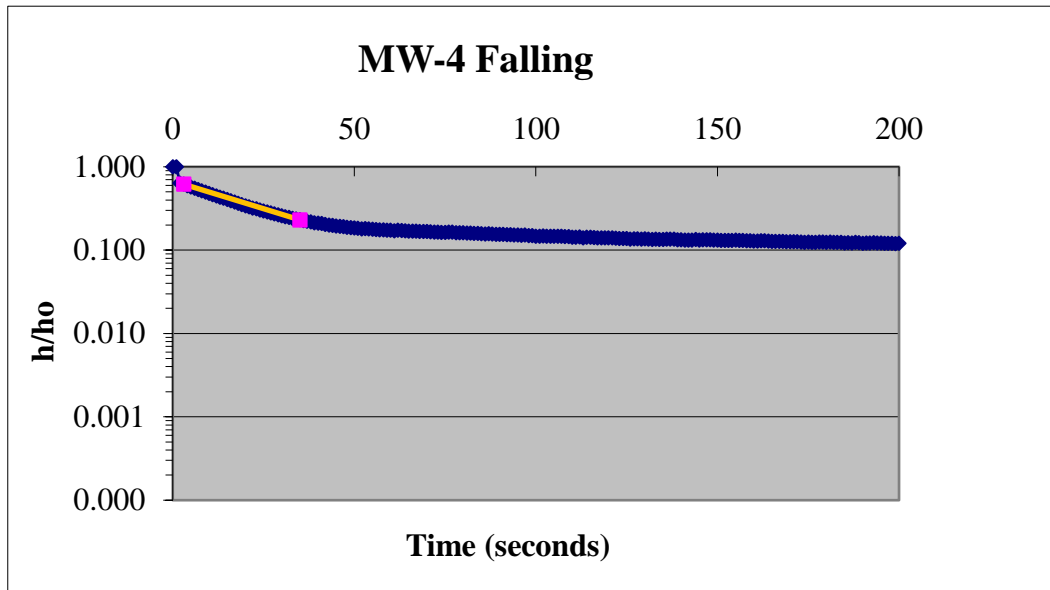


	T	h/h_0
Initial	11	0.075
Final	87	0.028
Hvorslev Time	77.14	seconds

$r =$	0.083 feet	$r^2 * \ln$	0.0186003
$R =$	0.666 feet	$2LT$	871.6272118
$L =$	5.65 feet		
$T_0 =$	77.14 sec	$K =$	$\frac{r^2 * \ln(L/R)}{2LT_0}$
$r^2 =$	0.006889	K =	2.13397E-05 feet/sec
$L/R =$	8.483483483	K =	1.843753727 feet/day
$\ln(L/R) =$	2.7	K =	0.000650354 cm/sec

APPENDIX D

Slug Test Analysis
 Seneca Mini-Mart
 3390 State Route 257
 Seneca, PA
 PADEP Facility ID 61-18854

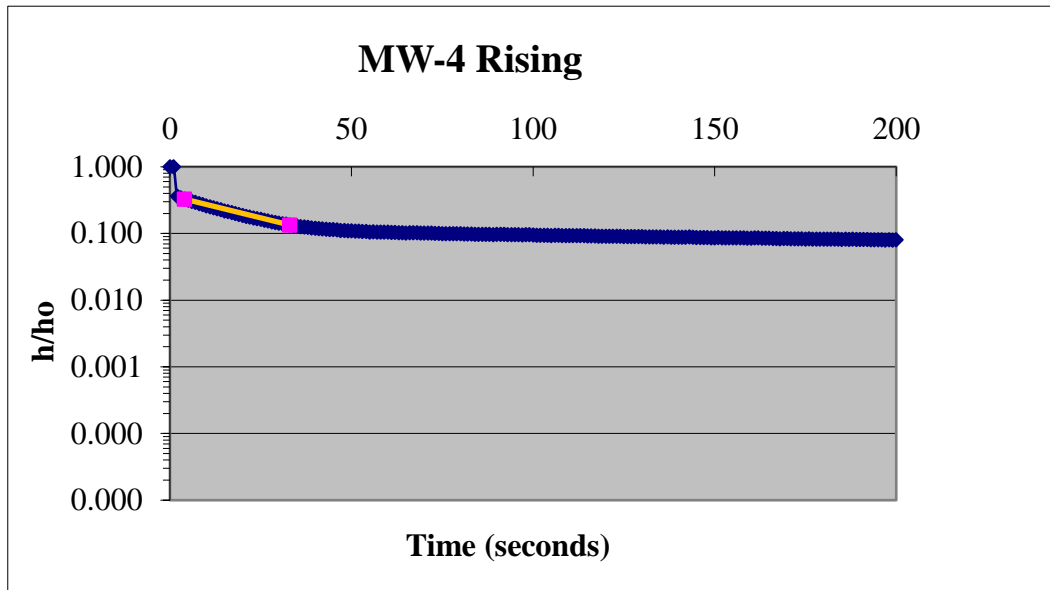


	T	h/h_0
Initial	3	0.618
Final	35	0.231
Hvorslev Time	32.52	seconds

$r =$	0.083 feet	$r^2 * \ln$	0.0186003
$R =$	0.666 feet	$2LT$	438.3424681
$L =$	6.74 feet		
$T_0 =$	32.52 sec	$K =$	$\frac{r^2 * \ln (L/R)}{2LT_0}$
$r^2 =$	0.006889	$K =$	4.24333E-05 feet/sec
$L/R =$	10.12012012	$K =$	3.66623368 feet/day
$\ln (L/R) =$	2.7	$K =$	0.001293204 cm/sec

APPENDIX D

Slug Test Analysis
 Seneca Mini-Mart
 3390 State Route 257
 Seneca, PA
 PADEP Facility ID 61-18854

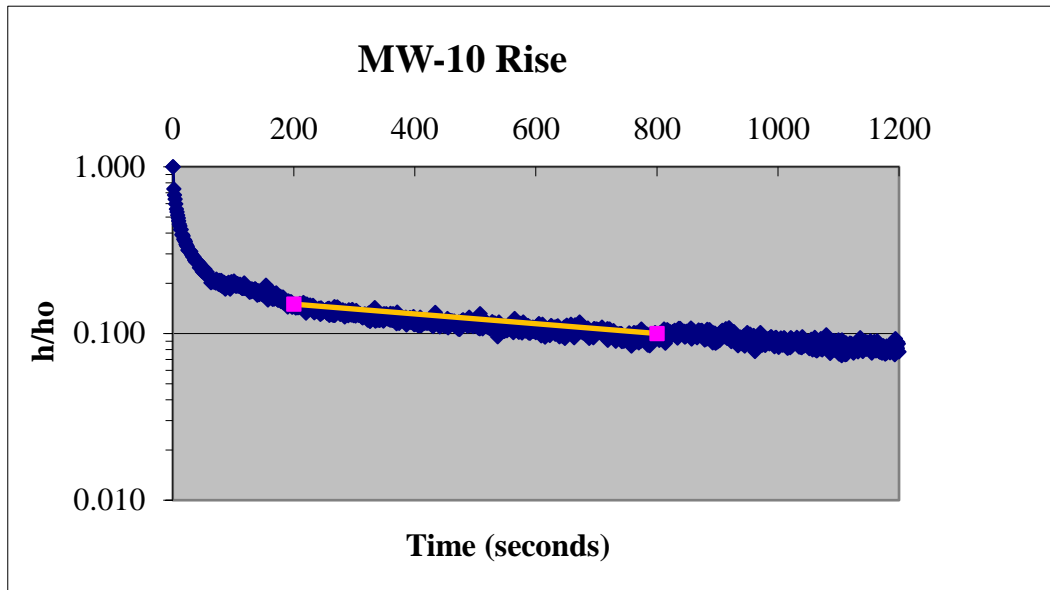


	T	h/h_0
Initial	4	0.328
Final	33	0.134
Hvorslev Time	32.40	seconds

$r =$	0.083 feet	$r^2 * \ln$	0.0186003
$R =$	0.666 feet	$2LT$	436.6973166
$L =$	6.74 feet	$K =$	$\frac{r^2 * \ln(L/R)}{2LT_0}$
$T_0 =$	32.40 sec	$K =$	4.25931E-05 feet/sec
$r^2 =$	0.006889	$K =$	3.680045329 feet/day
$L/R =$	10.12012012	$K =$	0.001298076 cm/sec
$\ln(L/R) =$	2.7		

APPENDIX D

Slug Test Analysis
 Seneca Mini-Mart
 3390 State Route 257
 Seneca, PA
 PADEP Facility ID 61-18854

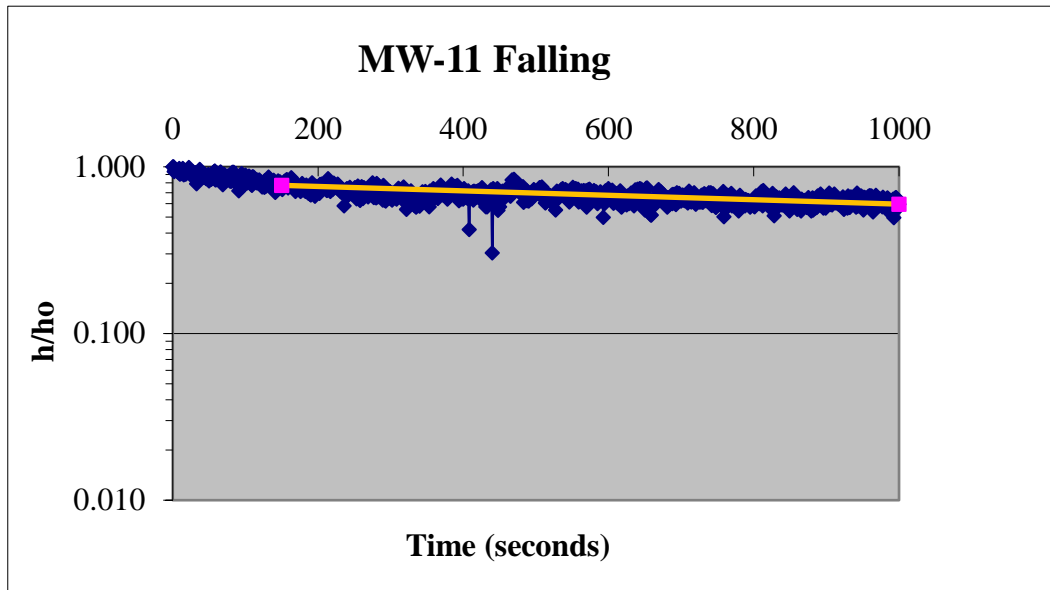


	T	h/h_0
Initial	200	0.15
Final	800	0.1
Hvorslev Time	1479.78	seconds

$r =$	0.083 feet	$r^2 * \ln$	0.0186003
$R =$	0.666 feet	$2LT$	9677.774786
$L =$	3.27 feet		
$T_0 =$	1479.78 sec	$K =$	$\frac{r^2 * \ln (L/R)}{2LT_0}$
$r^2 =$	0.006889	K =	1.92196E-06 feet/sec
$L/R =$	4.90990991	K =	0.166057379 feet/day
$\ln (L/R) =$	2.7	K =	5.8574E-05 cm/sec

APPENDIX D

Slug Test Analysis
 Seneca Mini-Mart
 3390 State Route 257
 Seneca, PA
 PADEP Facility ID 61-18854

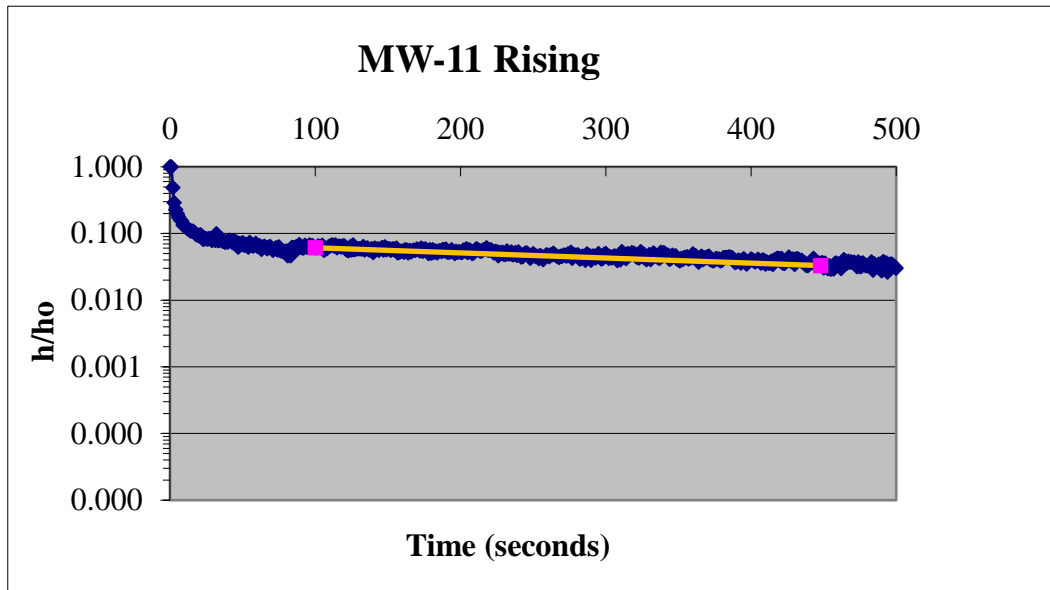


	T	h/h_0
Initial	150	0.774
Final	1000	0.597
Hvorslev Time	3273.58	seconds

$r =$	0.083 feet	$r^2 * \ln$	0.0186003
$R =$	0.666 feet	$2LT$	34438.03608
$L =$	5.26 feet		
$T_0 =$	3273.58 sec	$K =$	$\frac{r^2 * \ln (L/R)}{2LT_0}$
$r^2 =$	0.006889	$K =$	5.40109E-07 feet/sec
$L/R =$	7.897897898	$K =$	0.046665435 feet/day
$\ln (L/R) =$	2.7	$K =$	1.64605E-05 cm/sec

APPENDIX D

Slug Test Analysis
 Seneca Mini-Mart
 3390 State Route 257
 Seneca, PA
 PADEP Facility ID 61-18854



	T	h/h_0
Initial	100	0.061
Final	448	0.033
Hvorslev Time	566.44	seconds

$r =$	0.083 feet	$r^2 * \ln$	0.0186003
$R =$	0.666 feet	$2LT$	5958.920572
$L =$	5.26 feet		
$T_0 =$	566.44 sec	$K =$	$\frac{r^2 * \ln(L/R)}{2LT_0}$
$r^2 =$	0.006889	K =	3.12142E-06 feet/sec
$L/R =$	7.897897898	K =	0.269690777 feet/day
$\ln(L/R) =$	2.7	K =	9.5129E-05 cm/sec

Site Characterization Report

Seneca Mini Mart

Seneca, Pennsylvania

APPENDIX E

Laboratory Analytical Results – Soil

May 13, 2016

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626


RE: Project: Heath Oil-Seneca
Pace Project No.: 30181701

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on May 02, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Heath Oil-Seneca

Pace Project No.: 30181701

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Heath Oil-Seneca

Pace Project No.: 30181701

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30181701001	SB-1 (8-10)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30181701002	SB-2 (2-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30181701003	SB-3 (2-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30181701004	SB-3 (6-8)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30181701005	SB-4 (4-6)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30181701006	SB-4 (6-8)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30181701007	SB-5 (2-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30181701008	SB-6 (2-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Heath Oil-Seneca

Pace Project No.: 30181701

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: May 13, 2016

General Information:

8 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 5035A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MSV/28345

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: MSV/28346

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

Analyte Comments:

QC Batch: MSV/28345

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-1 (8-10) (Lab ID: 30181701001)
- 1,2,4-Trimethylbenzene

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Heath Oil-Seneca

Pace Project No.: 30181701

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: May 13, 2016

Analyte Comments:

QC Batch: MSV/28345

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-1 (8-10) (Lab ID: 30181701001)
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- SB-3 (6-8) (Lab ID: 30181701004)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- SB-4 (6-8) (Lab ID: 30181701006)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- SB-6 (2-4) (Lab ID: 30181701008)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene

QC Batch: MSV/28346

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-2 (2-4) (Lab ID: 30181701002)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Heath Oil-Seneca

Pace Project No.: 30181701

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: May 13, 2016

Analyte Comments:

QC Batch: MSV/28346

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-2 (2-4) (Lab ID: 30181701002)
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- SB-3 (2-4) (Lab ID: 30181701003)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- SB-4 (4-6) (Lab ID: 30181701005)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- SB-5 (2-4) (Lab ID: 30181701007)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Toluene

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Heath Oil-Seneca

Pace Project No.: 30181701

Sample: SB-1 (8-10) **Lab ID: 30181701001** Collected: 04/27/16 12:15 Received: 05/02/16 09:09 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	5.9	1	05/04/16 11:38	05/04/16 16:26	71-43-2	1c
Ethylbenzene	ND	ug/kg	5.9	1	05/04/16 11:38	05/04/16 16:26	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	5.9	1	05/04/16 11:38	05/04/16 16:26	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	5.9	1	05/04/16 11:38	05/04/16 16:26	1634-04-4	1c
Naphthalene	ND	ug/kg	5.9	1	05/04/16 11:38	05/04/16 16:26	91-20-3	1c
Toluene	ND	ug/kg	5.9	1	05/04/16 11:38	05/04/16 16:26	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	5.9	1	05/04/16 11:38	05/04/16 16:26	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	5.9	1	05/04/16 11:38	05/04/16 16:26	108-67-8	1c
Xylene (Total)	ND	ug/kg	17.8	1	05/04/16 11:38	05/04/16 16:26	1330-20-7	
Surrogates								
Toluene-d8 (S)	97	%	68-135	1	05/04/16 11:38	05/04/16 16:26	2037-26-5	
4-Bromofluorobenzene (S)	108	%	65-146	1	05/04/16 11:38	05/04/16 16:26	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	69-137	1	05/04/16 11:38	05/04/16 16:26	17060-07-0	
Dibromofluoromethane (S)	104	%	70-130	1	05/04/16 11:38	05/04/16 16:26	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	12.8	%	0.10	1	05/12/16 16:23
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Sample: SB-2 (2-4) **Lab ID: 30181701002** Collected: 04/27/16 13:30 Received: 05/02/16 09:09 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	241	50	05/04/16 11:41	05/04/16 19:03	71-43-2	1c
Ethylbenzene	ND	ug/kg	241	50	05/04/16 11:41	05/04/16 19:03	100-41-4	1c
Isopropylbenzene (Cumene)	333	ug/kg	241	50	05/04/16 11:41	05/04/16 19:03	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	241	50	05/04/16 11:41	05/04/16 19:03	1634-04-4	1c
Naphthalene	ND	ug/kg	241	50	05/04/16 11:41	05/04/16 19:03	91-20-3	1c
Toluene	ND	ug/kg	241	50	05/04/16 11:41	05/04/16 19:03	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	241	50	05/04/16 11:41	05/04/16 19:03	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	241	50	05/04/16 11:41	05/04/16 19:03	108-67-8	1c
Xylene (Total)	ND	ug/kg	724	50	05/04/16 11:41	05/04/16 19:03	1330-20-7	
Surrogates								
Toluene-d8 (S)	98	%	68-135	50	05/04/16 11:41	05/04/16 19:03	2037-26-5	
4-Bromofluorobenzene (S)	109	%	65-146	50	05/04/16 11:41	05/04/16 19:03	460-00-4	
1,2-Dichloroethane-d4 (S)	91	%	69-137	50	05/04/16 11:41	05/04/16 19:03	17060-07-0	
Dibromofluoromethane (S)	104	%	70-130	50	05/04/16 11:41	05/04/16 19:03	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	16.4	%	0.10	1	05/12/16 16:23
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ANALYTICAL RESULTS

Project: Heath Oil-Seneca

Pace Project No.: 30181701

Sample: SB-3 (2-4) **Lab ID: 30181701003** Collected: 04/27/16 14:45 Received: 05/02/16 09:09 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	2430	500	05/04/16 11:41	05/04/16 19:30	71-43-2	1c
Ethylbenzene	316000	ug/kg	24300	5000	05/04/16 11:41	05/04/16 19:56	100-41-4	1c
Isopropylbenzene (Cumene)	27700	ug/kg	2430	500	05/04/16 11:41	05/04/16 19:30	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	2430	500	05/04/16 11:41	05/04/16 19:30	1634-04-4	1c
Naphthalene	64900	ug/kg	2430	500	05/04/16 11:41	05/04/16 19:30	91-20-3	1c
Toluene	ND	ug/kg	2430	500	05/04/16 11:41	05/04/16 19:30	108-88-3	1c
1,2,4-Trimethylbenzene	567000	ug/kg	24300	5000	05/04/16 11:41	05/04/16 19:56	95-63-6	1c
1,3,5-Trimethylbenzene	194000	ug/kg	24300	5000	05/04/16 11:41	05/04/16 19:56	108-67-8	1c
Xylene (Total)	1110000	ug/kg	72900	5000	05/04/16 11:41	05/04/16 19:56	1330-20-7	
Surrogates								
Toluene-d8 (S)	95	%	68-135	500	05/04/16 11:41	05/04/16 19:30	2037-26-5	
4-Bromofluorobenzene (S)	106	%	65-146	500	05/04/16 11:41	05/04/16 19:30	460-00-4	
1,2-Dichloroethane-d4 (S)	111	%	69-137	500	05/04/16 11:41	05/04/16 19:30	17060-07-0	
Dibromofluoromethane (S)	98	%	70-130	500	05/04/16 11:41	05/04/16 19:30	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	12.8	%	0.10	1	05/12/16 16:23
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Sample: SB-3 (6-8) **Lab ID: 30181701004** Collected: 04/27/16 15:20 Received: 05/02/16 09:09 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 16:52	71-43-2	1c
Ethylbenzene	11.6	ug/kg	4.1	1	05/04/16 11:38	05/04/16 16:52	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 16:52	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 16:52	1634-04-4	1c
Naphthalene	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 16:52	91-20-3	1c
Toluene	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 16:52	108-88-3	1c
1,2,4-Trimethylbenzene	7.6	ug/kg	4.1	1	05/04/16 11:38	05/04/16 16:52	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 16:52	108-67-8	1c
Xylene (Total)	27.2	ug/kg	12.2	1	05/04/16 11:38	05/04/16 16:52	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	68-135	1	05/04/16 11:38	05/04/16 16:52	2037-26-5	
4-Bromofluorobenzene (S)	109	%	65-146	1	05/04/16 11:38	05/04/16 16:52	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	69-137	1	05/04/16 11:38	05/04/16 16:52	17060-07-0	
Dibromofluoromethane (S)	107	%	70-130	1	05/04/16 11:38	05/04/16 16:52	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	12.9	%	0.10	1	05/12/16 16:22
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ANALYTICAL RESULTS

Project: Heath Oil-Seneca

Pace Project No.: 30181701

Sample: SB-4 (4-6) **Lab ID: 30181701005** Collected: 04/27/16 16:15 Received: 05/02/16 09:09 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	255	50	05/04/16 11:41	05/04/16 20:22	71-43-2	1c
Ethylbenzene	ND	ug/kg	255	50	05/04/16 11:41	05/04/16 20:22	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	255	50	05/04/16 11:41	05/04/16 20:22	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	255	50	05/04/16 11:41	05/04/16 20:22	1634-04-4	1c
Naphthalene	ND	ug/kg	255	50	05/04/16 11:41	05/04/16 20:22	91-20-3	1c
Toluene	ND	ug/kg	255	50	05/04/16 11:41	05/04/16 20:22	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	255	50	05/04/16 11:41	05/04/16 20:22	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	255	50	05/04/16 11:41	05/04/16 20:22	108-67-8	1c
Xylene (Total)	ND	ug/kg	766	50	05/04/16 11:41	05/04/16 20:22	1330-20-7	
Surrogates								
Toluene-d8 (S)	98	%	68-135	50	05/04/16 11:41	05/04/16 20:22	2037-26-5	
4-Bromofluorobenzene (S)	106	%	65-146	50	05/04/16 11:41	05/04/16 20:22	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	69-137	50	05/04/16 11:41	05/04/16 20:22	17060-07-0	
Dibromofluoromethane (S)	107	%	70-130	50	05/04/16 11:41	05/04/16 20:22	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	23.5	%	0.10	1	05/12/16 16:22
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Sample: SB-4 (6-8) **Lab ID: 30181701006** Collected: 04/27/16 16:30 Received: 05/02/16 09:09 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	4.3	1	05/04/16 11:38	05/04/16 17:18	71-43-2	1c
Ethylbenzene	ND	ug/kg	4.3	1	05/04/16 11:38	05/04/16 17:18	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	4.3	1	05/04/16 11:38	05/04/16 17:18	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	4.3	1	05/04/16 11:38	05/04/16 17:18	1634-04-4	1c
Naphthalene	ND	ug/kg	4.3	1	05/04/16 11:38	05/04/16 17:18	91-20-3	1c
Toluene	ND	ug/kg	4.3	1	05/04/16 11:38	05/04/16 17:18	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	4.3	1	05/04/16 11:38	05/04/16 17:18	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	4.3	1	05/04/16 11:38	05/04/16 17:18	108-67-8	1c
Xylene (Total)	ND	ug/kg	12.8	1	05/04/16 11:38	05/04/16 17:18	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%	68-135	1	05/04/16 11:38	05/04/16 17:18	2037-26-5	
4-Bromofluorobenzene (S)	107	%	65-146	1	05/04/16 11:38	05/04/16 17:18	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	69-137	1	05/04/16 11:38	05/04/16 17:18	17060-07-0	
Dibromofluoromethane (S)	109	%	70-130	1	05/04/16 11:38	05/04/16 17:18	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	11.6	%	0.10	1	05/12/16 16:22
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ANALYTICAL RESULTS

Project: Heath Oil-Seneca

Pace Project No.: 30181701

Sample: SB-5 (2-4) **Lab ID: 30181701007** Collected: 04/29/16 11:00 Received: 05/02/16 09:09 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	553	ug/kg	291	50	05/04/16 11:41	05/04/16 20:48	71-43-2	1c
Ethylbenzene	135000	ug/kg	2910	500	05/04/16 11:41	05/05/16 18:17	100-41-4	
Isopropylbenzene (Cumene)	15800	ug/kg	291	50	05/04/16 11:41	05/04/16 20:48	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	291	50	05/04/16 11:41	05/04/16 20:48	1634-04-4	1c
Naphthalene	33100	ug/kg	2910	500	05/04/16 11:41	05/05/16 18:17	91-20-3	
Toluene	ND	ug/kg	291	50	05/04/16 11:41	05/04/16 20:48	108-88-3	1c
1,2,4-Trimethylbenzene	3000	ug/kg	291	50	05/04/16 11:41	05/04/16 20:48	95-63-6	1c
1,3,5-Trimethylbenzene	1610	ug/kg	291	50	05/04/16 11:41	05/04/16 20:48	108-67-8	1c
Xylene (Total)	ND	ug/kg	873	50	05/04/16 11:41	05/04/16 20:48	1330-20-7	
Surrogates								
Toluene-d8 (S)	88	%	68-135	50	05/04/16 11:41	05/04/16 20:48	2037-26-5	
4-Bromofluorobenzene (S)	109	%	65-146	50	05/04/16 11:41	05/04/16 20:48	460-00-4	
1,2-Dichloroethane-d4 (S)	78	%	69-137	50	05/04/16 11:41	05/04/16 20:48	17060-07-0	
Dibromofluoromethane (S)	74	%	70-130	50	05/04/16 11:41	05/04/16 20:48	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	28.4	%	0.10	1	05/12/16 16:22
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Sample: SB-6 (2-4) **Lab ID: 30181701008** Collected: 04/29/16 13:30 Received: 05/02/16 09:09 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 17:44	71-43-2	1c
Ethylbenzene	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 17:44	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 17:44	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 17:44	1634-04-4	1c
Naphthalene	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 17:44	91-20-3	1c
Toluene	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 17:44	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 17:44	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	4.1	1	05/04/16 11:38	05/04/16 17:44	108-67-8	1c
Xylene (Total)	ND	ug/kg	12.2	1	05/04/16 11:38	05/04/16 17:44	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%	68-135	1	05/04/16 11:38	05/04/16 17:44	2037-26-5	
4-Bromofluorobenzene (S)	113	%	65-146	1	05/04/16 11:38	05/04/16 17:44	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	69-137	1	05/04/16 11:38	05/04/16 17:44	17060-07-0	
Dibromofluoromethane (S)	107	%	70-130	1	05/04/16 11:38	05/04/16 17:44	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	13.2	%	0.10	1	05/12/16 16:22
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QUALITY CONTROL DATA

Project: Heath Oil-Seneca

Pace Project No.: 30181701

QC Batch: MSV/28345 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035A Analysis Description: 8260B MSV UST-SOIL
Associated Lab Samples: 30181701001, 30181701004, 30181701006, 30181701008

METHOD BLANK: 1069249 Matrix: Solid
Associated Lab Samples: 30181701001, 30181701004, 30181701006, 30181701008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	05/04/16 12:17	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	05/04/16 12:17	
Benzene	ug/kg	ND	5.0	05/04/16 12:17	
Ethylbenzene	ug/kg	ND	5.0	05/04/16 12:17	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	05/04/16 12:17	
Methyl-tert-butyl ether	ug/kg	ND	5.0	05/04/16 12:17	
Naphthalene	ug/kg	ND	5.0	05/04/16 12:17	
Toluene	ug/kg	ND	5.0	05/04/16 12:17	
Xylene (Total)	ug/kg	ND	15.0	05/04/16 12:17	
1,2-Dichloroethane-d4 (S)	%	92	69-137	05/04/16 12:17	
4-Bromofluorobenzene (S)	%	111	65-146	05/04/16 12:17	
Dibromofluoromethane (S)	%	105	70-130	05/04/16 12:17	
Toluene-d8 (S)	%	102	68-135	05/04/16 12:17	

LABORATORY CONTROL SAMPLE: 1069250

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	17.7	88	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	17.0	85	74-129	
Benzene	ug/kg	20	19.5	97	71-137	
Ethylbenzene	ug/kg	20	17.8	89	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	17.4	87	78-133	
Methyl-tert-butyl ether	ug/kg	20	18.7	94	77-141	
Naphthalene	ug/kg	20	17.0	85	81-126	
Toluene	ug/kg	20	18.1	90	72-127	
Xylene (Total)	ug/kg	60	55.6	93	80-124	
1,2-Dichloroethane-d4 (S)	%			92	69-137	
4-Bromofluorobenzene (S)	%			107	65-146	
Dibromofluoromethane (S)	%			104	70-130	
Toluene-d8 (S)	%			98	68-135	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: Heath Oil-Seneca

Pace Project No.: 30181701

QC Batch: MSV/28346 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035A Analysis Description: 8260B MSV UST-SOIL
Associated Lab Samples: 30181701002, 30181701003, 30181701005, 30181701007

METHOD BLANK: 1069251 Matrix: Solid
Associated Lab Samples: 30181701002, 30181701003, 30181701005, 30181701007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	250	05/04/16 11:50	
1,3,5-Trimethylbenzene	ug/kg	ND	250	05/04/16 11:50	
Benzene	ug/kg	ND	250	05/04/16 11:50	
Ethylbenzene	ug/kg	ND	250	05/04/16 11:50	
Isopropylbenzene (Cumene)	ug/kg	ND	250	05/04/16 11:50	
Methyl-tert-butyl ether	ug/kg	ND	250	05/04/16 11:50	
Naphthalene	ug/kg	ND	250	05/04/16 11:50	
Toluene	ug/kg	ND	250	05/04/16 11:50	
Xylene (Total)	ug/kg	ND	750	05/04/16 11:50	
1,2-Dichloroethane-d4 (S)	%	96	69-137	05/04/16 11:50	
4-Bromofluorobenzene (S)	%	100	65-146	05/04/16 11:50	
Dibromofluoromethane (S)	%	100	70-130	05/04/16 11:50	
Toluene-d8 (S)	%	101	68-135	05/04/16 11:50	

LABORATORY CONTROL SAMPLE: 1069252

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	17.7	88	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	17.0	85	74-129	
Benzene	ug/kg	20	19.5	97	71-137	
Ethylbenzene	ug/kg	20	17.8	89	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	17.4	87	78-133	
Methyl-tert-butyl ether	ug/kg	20	18.7	94	77-141	
Naphthalene	ug/kg	20	17.0	85	81-126	
Toluene	ug/kg	20	18.1	90	72-127	
Xylene (Total)	ug/kg	60	55.6	93	80-124	
1,2-Dichloroethane-d4 (S)	%			92	69-137	
4-Bromofluorobenzene (S)	%			107	65-146	
Dibromofluoromethane (S)	%			104	70-130	
Toluene-d8 (S)	%			98	68-135	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Heath Oil-Seneca

Pace Project No.: 30181701

QC Batch: PMST/6136 Analysis Method: ASTM D2974-87
 QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
 Associated Lab Samples: 30181701001, 30181701002, 30181701003, 30181701004, 30181701005, 30181701006, 30181701007,
 30181701008

SAMPLE DUPLICATE: 1074225

Parameter	Units	30181701001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	12.8	12.6	2	

SAMPLE DUPLICATE: 1074226

Parameter	Units	30181701002 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	16.4	15.4	6	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: Heath Oil-Seneca

Pace Project No.: 30181701

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

BATCH QUALIFIERS

Batch: MSV/28345

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: MSV/28346

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1c A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

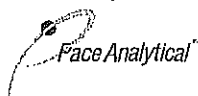
Project: Heath Oil-Seneca

Pace Project No.: 30181701

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30181701001	SB-1 (8-10)	EPA 5035A	MSV/28345	EPA 8260B	MSV/28353
30181701002	SB-2 (2-4)	EPA 5035A	MSV/28346	EPA 8260B	MSV/28352
30181701003	SB-3 (2-4)	EPA 5035A	MSV/28346	EPA 8260B	MSV/28352
30181701004	SB-3 (6-8)	EPA 5035A	MSV/28345	EPA 8260B	MSV/28353
30181701005	SB-4 (4-6)	EPA 5035A	MSV/28346	EPA 8260B	MSV/28352
30181701006	SB-4 (6-8)	EPA 5035A	MSV/28345	EPA 8260B	MSV/28353
30181701007	SB-5 (2-4)	EPA 5035A	MSV/28346	EPA 8260B	MSV/28352
30181701008	SB-6 (2-4)	EPA 5035A	MSV/28345	EPA 8260B	MSV/28353
30181701001	SB-1 (8-10)	ASTM D2974-87	PMST/6136		
30181701002	SB-2 (2-4)	ASTM D2974-87	PMST/6136		
30181701003	SB-3 (2-4)	ASTM D2974-87	PMST/6136		
30181701004	SB-3 (6-8)	ASTM D2974-87	PMST/6136		
30181701005	SB-4 (4-6)	ASTM D2974-87	PMST/6136		
30181701006	SB-4 (6-8)	ASTM D2974-87	PMST/6136		
30181701007	SB-5 (2-4)	ASTM D2974-87	PMST/6136		
30181701008	SB-6 (2-4)	ASTM D2974-87	PMST/6136		

REPORT OF LABORATORY ANALYSIS

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Client Name: Cribbs

Project # _____

 Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

 Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

 Thermometer Used 8 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

 Date and Initials of person examining contents: MSV
5-2-16

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:	X			4.
Sample Labels match COC:	X			5.
-Includes date/time/ID/Analysis Matrix: <u>SL</u>				
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked.			X	13.
All containers needing preservation are found to be in compliance with EPA recommendation.			X	
exceptions: VOA, coliform, TOC, O&G, Phenolics				
				Initial when completed <u>MSV</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	14.
Trip Blank Present:			X	15.
Trip Blank Custody Seals Present			X	

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

August 08, 2016

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

RE: Project: Heath-Seneca
Pace Project No.: 30186436

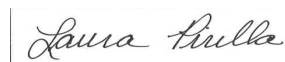
Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on June 15, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This report was reissued on 08/08/16 to include additional compounds by 8260.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Heath-Seneca

Pace Project No.: 30186436

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Heath-Seneca

Pace Project No.: 30186436

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30186436001	SB-7 (3-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436002	SB-7 (7-8)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436003	SB-8 (4-5)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436004	SB-9 (3-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436005	SB-10 (4-5)	EPA 8260B	JEW	13	PASI-PA
30186436006	SB-11 (3-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436007	SB-11 (7-8)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436008	SB-12 (3-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436009	SB-13 (3-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436010	SB-14 (3-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436011	SB-15 (3-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436012	SB-16 (3-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436013	SB-16 (7-8)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30186436014	SB-17 (3-4)	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Heath-Seneca
Pace Project No.: 30186436

Method: EPA 8260B
Description: 8260B MSV
Client: Cribbs and Associates
Date: August 08, 2016

General Information:

14 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 5035A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 223850

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: 223851

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: 223990

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Heath-Seneca

Pace Project No.: 30186436

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: August 08, 2016

Analyte Comments:

QC Batch: 223850

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-10 (4-5) (Lab ID: 30186436005)
 - 1,3,5-Trimethylbenzene
 - Methyl-tert-butyl ether
 - Toluene
- SB-11 (7-8) (Lab ID: 30186436007)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)
- SB-16 (3-4) (Lab ID: 30186436012)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)
- SB-7 (7-8) (Lab ID: 30186436002)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)

QC Batch: 223851

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-11 (3-4) (Lab ID: 30186436006)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Heath-Seneca

Pace Project No.: 30186436

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: August 08, 2016

Analyte Comments:

QC Batch: 223851

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-11 (3-4) (Lab ID: 30186436006)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)
- SB-12 (3-4) (Lab ID: 30186436008)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)
- SB-13 (3-4) (Lab ID: 30186436009)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)
- SB-14 (3-4) (Lab ID: 30186436010)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)
- SB-15 (3-4) (Lab ID: 30186436011)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene

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PROJECT NARRATIVE

Project: Heath-Seneca

Pace Project No.: 30186436

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: August 08, 2016

Analyte Comments:

QC Batch: 223851

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-15 (3-4) (Lab ID: 30186436011)
 - Toluene
 - Xylene (Total)
- SB-16 (7-8) (Lab ID: 30186436013)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)
- SB-17 (3-4) (Lab ID: 30186436014)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)
- SB-7 (3-4) (Lab ID: 30186436001)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)
- SB-8 (4-5) (Lab ID: 30186436003)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Heath-Seneca

Pace Project No.: 30186436

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: August 08, 2016

Analyte Comments:

QC Batch: 223851

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-9 (3-4) (Lab ID: 30186436004)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
 - Xylene (Total)

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- SB-16 (7-8) (Lab ID: 30186436013)
 - 1,2,4-Trimethylbenzene
- SB-17 (3-4) (Lab ID: 30186436014)
 - 1,2,4-Trimethylbenzene

QC Batch: 223990

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-10 (4-5) (Lab ID: 30186436005)
 - 1,2,4-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Naphthalene
 - Xylene (Total)

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Heath-Seneca
Pace Project No.: 30186436

Sample: SB-7 (3-4) **Lab ID: 30186436001** Collected: 06/14/16 08:00 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	206	50	06/21/16 12:54	06/21/16 15:51	71-43-2	1c
Ethylbenzene	4060	ug/kg	206	50	06/21/16 12:54	06/21/16 15:51	100-41-4	1c
Isopropylbenzene (Cumene)	487	ug/kg	206	50	06/21/16 12:54	06/21/16 15:51	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	206	50	06/21/16 12:54	06/21/16 15:51	1634-04-4	1c
Naphthalene	1100	ug/kg	206	50	06/21/16 12:54	06/21/16 15:51	91-20-3	1c
Toluene	ND	ug/kg	206	50	06/21/16 12:54	06/21/16 15:51	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	206	50	06/21/16 12:54	06/21/16 15:51	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	206	50	06/21/16 12:54	06/21/16 15:51	108-67-8	1c
Xylene (Total)	ND	ug/kg	617	50	06/21/16 12:54	06/21/16 15:51	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	101	%	68-135	50	06/21/16 12:54	06/21/16 15:51	2037-26-5	
4-Bromofluorobenzene (S)	103	%	65-146	50	06/21/16 12:54	06/21/16 15:51	460-00-4	
1,2-Dichloroethane-d4 (S)	112	%	69-137	50	06/21/16 12:54	06/21/16 15:51	17060-07-0	
Dibromofluoromethane (S)	96	%	70-130	50	06/21/16 12:54	06/21/16 15:51	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	11.7	%	0.10	1	06/27/16 15:44
------------------	-------------	---	------	---	----------------

Sample: SB-7 (7-8) **Lab ID: 30186436002** Collected: 06/14/16 08:15 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	4.8	1	06/21/16 12:51	06/21/16 14:05	71-43-2	1c
Ethylbenzene	ND	ug/kg	4.8	1	06/21/16 12:51	06/21/16 14:05	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	4.8	1	06/21/16 12:51	06/21/16 14:05	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	4.8	1	06/21/16 12:51	06/21/16 14:05	1634-04-4	1c
Naphthalene	ND	ug/kg	4.8	1	06/21/16 12:51	06/21/16 14:05	91-20-3	1c
Toluene	ND	ug/kg	4.8	1	06/21/16 12:51	06/21/16 14:05	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	4.8	1	06/21/16 12:51	06/21/16 14:05	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	4.8	1	06/21/16 12:51	06/21/16 14:05	108-67-8	1c
Xylene (Total)	ND	ug/kg	14.4	1	06/21/16 12:51	06/21/16 14:05	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	99	%	68-135	1	06/21/16 12:51	06/21/16 14:05	2037-26-5	
4-Bromofluorobenzene (S)	100	%	65-146	1	06/21/16 12:51	06/21/16 14:05	460-00-4	
1,2-Dichloroethane-d4 (S)	116	%	69-137	1	06/21/16 12:51	06/21/16 14:05	17060-07-0	
Dibromofluoromethane (S)	98	%	70-130	1	06/21/16 12:51	06/21/16 14:05	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	10.1	%	0.10	1	06/27/16 15:44
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ANALYTICAL RESULTS

Project: Heath-Seneca
Pace Project No.: 30186436

Sample: SB-8 (4-5) **Lab ID: 30186436003** Collected: 06/14/16 09:05 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	1940	ug/kg	317	50	06/21/16 12:54	06/21/16 16:17	71-43-2	1c
Ethylbenzene	91200	ug/kg	3170	500	06/21/16 12:54	06/22/16 15:50	100-41-4	1c
Isopropylbenzene (Cumene)	8880	ug/kg	317	50	06/21/16 12:54	06/21/16 16:17	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	317	50	06/21/16 12:54	06/21/16 16:17	1634-04-4	1c
Naphthalene	23200	ug/kg	3170	500	06/21/16 12:54	06/22/16 15:50	91-20-3	1c
Toluene	ND	ug/kg	317	50	06/21/16 12:54	06/21/16 16:17	108-88-3	1c
1,2,4-Trimethylbenzene	207000	ug/kg	3170	500	06/21/16 12:54	06/22/16 15:50	95-63-6	1c
1,3,5-Trimethylbenzene	63800	ug/kg	3170	500	06/21/16 12:54	06/22/16 15:50	108-67-8	1c
Xylene (Total)	88100	ug/kg	9500	500	06/21/16 12:54	06/22/16 15:50	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	114	%	68-135	50	06/21/16 12:54	06/21/16 16:17	2037-26-5	
4-Bromofluorobenzene (S)	109	%	65-146	50	06/21/16 12:54	06/21/16 16:17	460-00-4	
1,2-Dichloroethane-d4 (S)	118	%	69-137	50	06/21/16 12:54	06/21/16 16:17	17060-07-0	
Dibromofluoromethane (S)	90	%	70-130	50	06/21/16 12:54	06/21/16 16:17	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	29.6	%	0.10	1		06/27/16 15:43		
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Sample: SB-9 (3-4) **Lab ID: 30186436004** Collected: 06/14/16 09:40 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	2370	ug/kg	239	50	06/21/16 12:54	06/21/16 16:44	71-43-2	1c
Ethylbenzene	60300	ug/kg	2390	500	06/21/16 12:54	06/22/16 16:16	100-41-4	1c
Isopropylbenzene (Cumene)	10600	ug/kg	239	50	06/21/16 12:54	06/21/16 16:44	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	239	50	06/21/16 12:54	06/21/16 16:44	1634-04-4	1c
Naphthalene	19300	ug/kg	2390	500	06/21/16 12:54	06/22/16 16:16	91-20-3	1c
Toluene	ND	ug/kg	239	50	06/21/16 12:54	06/21/16 16:44	108-88-3	1c
1,2,4-Trimethylbenzene	49800	ug/kg	2390	500	06/21/16 12:54	06/22/16 16:16	95-63-6	1c
1,3,5-Trimethylbenzene	640	ug/kg	239	50	06/21/16 12:54	06/21/16 16:44	108-67-8	1c
Xylene (Total)	2460	ug/kg	718	50	06/21/16 12:54	06/21/16 16:44	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	114	%	68-135	50	06/21/16 12:54	06/21/16 16:44	2037-26-5	
4-Bromofluorobenzene (S)	105	%	65-146	50	06/21/16 12:54	06/21/16 16:44	460-00-4	
1,2-Dichloroethane-d4 (S)	122	%	69-137	50	06/21/16 12:54	06/21/16 16:44	17060-07-0	
Dibromofluoromethane (S)	88	%	70-130	50	06/21/16 12:54	06/21/16 16:44	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	11.4	%	0.10	1		06/27/16 15:43		
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ANALYTICAL RESULTS

Project: Heath-Seneca
Pace Project No.: 30186436

Sample: SB-10 (4-5) **Lab ID: 30186436005** Collected: 06/14/16 10:30 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "wet-weight" basis

Comments: • Dry Weight Jar was received empty so no dry weight could be determined.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	2390	ug/kg	194	50	06/22/16 12:00	06/22/16 20:33	71-43-2	1c
Ethylbenzene	5750	ug/kg	194	50	06/22/16 12:00	06/22/16 20:33	100-41-4	1c
Isopropylbenzene (Cumene)	634	ug/kg	194	50	06/22/16 12:00	06/22/16 20:33	98-82-8	1c
Methyl-tert-butyl ether	10	ug/kg	4.3	1	06/21/16 12:51	06/21/16 14:31	1634-04-4	1c
Naphthalene	1360	ug/kg	194	50	06/22/16 12:00	06/22/16 20:33	91-20-3	1c
Toluene	9.8	ug/kg	4.3	1	06/21/16 12:51	06/21/16 14:31	108-88-3	1c
1,2,4-Trimethylbenzene	11500	ug/kg	194	50	06/22/16 12:00	06/22/16 20:33	95-63-6	1c
1,3,5-Trimethylbenzene	134	ug/kg	4.3	1	06/21/16 12:51	06/21/16 14:31	108-67-8	1c
Xylene (Total)	2690	ug/kg	583	50	06/22/16 12:00	06/22/16 20:33	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	105	%	68-135	1	06/21/16 12:51	06/21/16 14:31	2037-26-5	
4-Bromofluorobenzene (S)	108	%	65-146	1	06/21/16 12:51	06/21/16 14:31	460-00-4	
1,2-Dichloroethane-d4 (S)	115	%	69-137	1	06/21/16 12:51	06/21/16 14:31	17060-07-0	
Dibromofluoromethane (S)	89	%	70-130	1	06/21/16 12:51	06/21/16 14:31	1868-53-7	

Sample: SB-11 (3-4) **Lab ID: 30186436006** Collected: 06/14/16 10:55 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	35300	ug/kg	2070	500	06/21/16 12:54	06/21/16 17:11	71-43-2	1c
Ethylbenzene	108000	ug/kg	2070	500	06/21/16 12:54	06/21/16 17:11	100-41-4	1c
Isopropylbenzene (Cumene)	9410	ug/kg	2070	500	06/21/16 12:54	06/21/16 17:11	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	2070	500	06/21/16 12:54	06/21/16 17:11	1634-04-4	1c
Naphthalene	24400	ug/kg	2070	500	06/21/16 12:54	06/21/16 17:11	91-20-3	1c
Toluene	115000	ug/kg	20700	5000	06/21/16 12:54	06/22/16 16:42	108-88-3	1c
1,2,4-Trimethylbenzene	190000	ug/kg	20700	5000	06/21/16 12:54	06/22/16 16:42	95-63-6	1c
1,3,5-Trimethylbenzene	89800	ug/kg	2070	500	06/21/16 12:54	06/21/16 17:11	108-67-8	1c
Xylene (Total)	434000	ug/kg	62100	5000	06/21/16 12:54	06/22/16 16:42	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	105	%	68-135	500	06/21/16 12:54	06/21/16 17:11	2037-26-5	
4-Bromofluorobenzene (S)	106	%	65-146	500	06/21/16 12:54	06/21/16 17:11	460-00-4	
1,2-Dichloroethane-d4 (S)	114	%	69-137	500	06/21/16 12:54	06/21/16 17:11	17060-07-0	
Dibromofluoromethane (S)	96	%	70-130	500	06/21/16 12:54	06/21/16 17:11	1868-53-7	

Percent Moisture Analytical Method: ASTM D2974-87

Percent Moisture	11.9	%	0.10	1		06/27/16 15:43		
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ANALYTICAL RESULTS

Project: Heath-Seneca
Pace Project No.: 30186436

Sample: SB-11 (7-8) **Lab ID: 30186436007** Collected: 06/14/16 11:05 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	6.1	1	06/21/16 12:51	06/21/16 14:58	71-43-2	1c
Ethylbenzene	ND	ug/kg	6.1	1	06/21/16 12:51	06/21/16 14:58	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	6.1	1	06/21/16 12:51	06/21/16 14:58	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	6.1	1	06/21/16 12:51	06/21/16 14:58	1634-04-4	1c
Naphthalene	ND	ug/kg	6.1	1	06/21/16 12:51	06/21/16 14:58	91-20-3	1c
Toluene	ND	ug/kg	6.1	1	06/21/16 12:51	06/21/16 14:58	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	6.1	1	06/21/16 12:51	06/21/16 14:58	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	6.1	1	06/21/16 12:51	06/21/16 14:58	108-67-8	1c
Xylene (Total)	ND	ug/kg	18.3	1	06/21/16 12:51	06/21/16 14:58	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	99	%	68-135	1	06/21/16 12:51	06/21/16 14:58	2037-26-5	
4-Bromofluorobenzene (S)	102	%	65-146	1	06/21/16 12:51	06/21/16 14:58	460-00-4	
1,2-Dichloroethane-d4 (S)	119	%	69-137	1	06/21/16 12:51	06/21/16 14:58	17060-07-0	
Dibromofluoromethane (S)	100	%	70-130	1	06/21/16 12:51	06/21/16 14:58	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	20.0	%	0.10	1		06/27/16 15:43		
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Sample: SB-12 (3-4) **Lab ID: 30186436008** Collected: 06/14/16 12:05 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	76700	ug/kg	2770	500	06/21/16 12:54	06/22/16 17:07	71-43-2	1c
Ethylbenzene	14700	ug/kg	277	50	06/21/16 12:54	06/21/16 17:37	100-41-4	1c
Isopropylbenzene (Cumene)	844	ug/kg	277	50	06/21/16 12:54	06/21/16 17:37	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	277	50	06/21/16 12:54	06/21/16 17:37	1634-04-4	1c
Naphthalene	1870	ug/kg	277	50	06/21/16 12:54	06/21/16 17:37	91-20-3	1c
Toluene	1900	ug/kg	277	50	06/21/16 12:54	06/21/16 17:37	108-88-3	1c
1,2,4-Trimethylbenzene	8790	ug/kg	277	50	06/21/16 12:54	06/21/16 17:37	95-63-6	1c
1,3,5-Trimethylbenzene	1970	ug/kg	277	50	06/21/16 12:54	06/21/16 17:37	108-67-8	1c
Xylene (Total)	16600	ug/kg	831	50	06/21/16 12:54	06/21/16 17:37	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	103	%	68-135	50	06/21/16 12:54	06/21/16 17:37	2037-26-5	
4-Bromofluorobenzene (S)	102	%	65-146	50	06/21/16 12:54	06/21/16 17:37	460-00-4	
1,2-Dichloroethane-d4 (S)	112	%	69-137	50	06/21/16 12:54	06/21/16 17:37	17060-07-0	
Dibromofluoromethane (S)	98	%	70-130	50	06/21/16 12:54	06/21/16 17:37	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	10.1	%	0.10	1		06/27/16 15:43		
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ANALYTICAL RESULTS

Project: Heath-Seneca
Pace Project No.: 30186436

Sample: SB-13 (3-4) **Lab ID: 30186436009** Collected: 06/14/16 12:30 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	36300	ug/kg	2280	500	06/21/16 12:54	06/21/16 18:04	71-43-2	1c
Ethylbenzene	178000	ug/kg	2280	500	06/21/16 12:54	06/21/16 18:04	100-41-4	1c
Isopropylbenzene (Cumene)	14700	ug/kg	2280	500	06/21/16 12:54	06/21/16 18:04	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	2280	500	06/21/16 12:54	06/21/16 18:04	1634-04-4	1c
Naphthalene	41900	ug/kg	2280	500	06/21/16 12:54	06/21/16 18:04	91-20-3	1c
Toluene	6110	ug/kg	2280	500	06/21/16 12:54	06/21/16 18:04	108-88-3	1c
1,2,4-Trimethylbenzene	266000	ug/kg	22800	5000	06/21/16 12:54	06/22/16 17:33	95-63-6	1c
1,3,5-Trimethylbenzene	128000	ug/kg	2280	500	06/21/16 12:54	06/21/16 18:04	108-67-8	1c
Xylene (Total)	523000	ug/kg	68300	5000	06/21/16 12:54	06/22/16 17:33	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	105	%	68-135	500	06/21/16 12:54	06/21/16 18:04	2037-26-5	
4-Bromofluorobenzene (S)	109	%	65-146	500	06/21/16 12:54	06/21/16 18:04	460-00-4	
1,2-Dichloroethane-d4 (S)	113	%	69-137	500	06/21/16 12:54	06/21/16 18:04	17060-07-0	
Dibromofluoromethane (S)	96	%	70-130	500	06/21/16 12:54	06/21/16 18:04	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	21.6	%	0.10	1	06/27/16 15:43
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Sample: SB-14 (3-4) **Lab ID: 30186436010** Collected: 06/14/16 13:05 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	52500	ug/kg	2500	500	06/21/16 12:54	06/22/16 17:59	71-43-2	1c
Ethylbenzene	57000	ug/kg	2500	500	06/21/16 12:54	06/22/16 17:59	100-41-4	1c
Isopropylbenzene (Cumene)	4600	ug/kg	250	50	06/21/16 12:54	06/21/16 18:30	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	250	50	06/21/16 12:54	06/21/16 18:30	1634-04-4	1c
Naphthalene	16800	ug/kg	250	50	06/21/16 12:54	06/21/16 18:30	91-20-3	1c
Toluene	1490	ug/kg	250	50	06/21/16 12:54	06/21/16 18:30	108-88-3	1c
1,2,4-Trimethylbenzene	98300	ug/kg	2500	500	06/21/16 12:54	06/22/16 17:59	95-63-6	1c
1,3,5-Trimethylbenzene	31200	ug/kg	2500	500	06/21/16 12:54	06/22/16 17:59	108-67-8	1c
Xylene (Total)	87100	ug/kg	7510	500	06/21/16 12:54	06/22/16 17:59	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	112	%	68-135	50	06/21/16 12:54	06/21/16 18:30	2037-26-5	
4-Bromofluorobenzene (S)	109	%	65-146	50	06/21/16 12:54	06/21/16 18:30	460-00-4	
1,2-Dichloroethane-d4 (S)	117	%	69-137	50	06/21/16 12:54	06/21/16 18:30	17060-07-0	
Dibromofluoromethane (S)	95	%	70-130	50	06/21/16 12:54	06/21/16 18:30	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	19.5	%	0.10	1	06/27/16 15:43
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ANALYTICAL RESULTS

Project: Heath-Seneca
Pace Project No.: 30186436

Sample: SB-15 (3-4) **Lab ID: 30186436011** Collected: 06/14/16 13:15 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	101000	ug/kg	25100	5000	06/21/16 12:54	06/21/16 18:57	71-43-2	1c
Ethylbenzene	397000	ug/kg	25100	5000	06/21/16 12:54	06/21/16 18:57	100-41-4	1c
Isopropylbenzene (Cumene)	32700	ug/kg	25100	5000	06/21/16 12:54	06/21/16 18:57	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	25100	5000	06/21/16 12:54	06/21/16 18:57	1634-04-4	1c
Naphthalene	119000	ug/kg	25100	5000	06/21/16 12:54	06/21/16 18:57	91-20-3	1c
Toluene	327000	ug/kg	25100	5000	06/21/16 12:54	06/21/16 18:57	108-88-3	1c
1,2,4-Trimethylbenzene	895000	ug/kg	25100	5000	06/21/16 12:54	06/21/16 18:57	95-63-6	1c
1,3,5-Trimethylbenzene	291000	ug/kg	25100	5000	06/21/16 12:54	06/21/16 18:57	108-67-8	1c
Xylene (Total)	2030000	ug/kg	75200	5000	06/21/16 12:54	06/21/16 18:57	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	101	%	68-135	5000	06/21/16 12:54	06/21/16 18:57	2037-26-5	
4-Bromofluorobenzene (S)	105	%	65-146	5000	06/21/16 12:54	06/21/16 18:57	460-00-4	
1,2-Dichloroethane-d4 (S)	114	%	69-137	5000	06/21/16 12:54	06/21/16 18:57	17060-07-0	
Dibromofluoromethane (S)	96	%	70-130	5000	06/21/16 12:54	06/21/16 18:57	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	20.2	%	0.10	1	06/27/16 15:43
------------------	------	---	------	---	----------------

Sample: SB-16 (3-4) **Lab ID: 30186436012** Collected: 06/14/16 13:30 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	12.7	ug/kg	4.9	1	06/21/16 12:51	06/21/16 15:24	71-43-2	1c
Ethylbenzene	28.1	ug/kg	4.9	1	06/21/16 12:51	06/21/16 15:24	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	4.9	1	06/21/16 12:51	06/21/16 15:24	98-82-8	1c
Methyl-tert-butyl ether	11.7	ug/kg	4.9	1	06/21/16 12:51	06/21/16 15:24	1634-04-4	1c
Naphthalene	ND	ug/kg	4.9	1	06/21/16 12:51	06/21/16 15:24	91-20-3	1c
Toluene	ND	ug/kg	4.9	1	06/21/16 12:51	06/21/16 15:24	108-88-3	1c
1,2,4-Trimethylbenzene	47.1	ug/kg	4.9	1	06/21/16 12:51	06/21/16 15:24	95-63-6	1c
1,3,5-Trimethylbenzene	17.6	ug/kg	4.9	1	06/21/16 12:51	06/21/16 15:24	108-67-8	1c
Xylene (Total)	112	ug/kg	14.7	1	06/21/16 12:51	06/21/16 15:24	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	98	%	68-135	1	06/21/16 12:51	06/21/16 15:24	2037-26-5	
4-Bromofluorobenzene (S)	102	%	65-146	1	06/21/16 12:51	06/21/16 15:24	460-00-4	
1,2-Dichloroethane-d4 (S)	123	%	69-137	1	06/21/16 12:51	06/21/16 15:24	17060-07-0	
Dibromofluoromethane (S)	100	%	70-130	1	06/21/16 12:51	06/21/16 15:24	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	16.1	%	0.10	1	06/27/16 15:43
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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Heath-Seneca
Pace Project No.: 30186436

Sample: SB-16 (7-8) **Lab ID: 30186436013** Collected: 06/14/16 14:10 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	29300	ug/kg	1810	500	06/21/16 12:54	06/22/16 18:50	71-43-2	1c
Ethylbenzene	87100	ug/kg	1810	500	06/21/16 12:54	06/22/16 18:50	100-41-4	1c
Isopropylbenzene (Cumene)	7150	ug/kg	181	50	06/21/16 12:54	06/21/16 19:23	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	181	50	06/21/16 12:54	06/21/16 19:23	1634-04-4	1c
Naphthalene	22600	ug/kg	1810	500	06/21/16 12:54	06/22/16 18:50	91-20-3	1c
Toluene	4460	ug/kg	181	50	06/21/16 12:54	06/21/16 19:23	108-88-3	1c
1,2,4-Trimethylbenzene	176000	ug/kg	1810	500	06/21/16 12:54	06/22/16 18:50	95-63-6	1c,E
1,3,5-Trimethylbenzene	62400	ug/kg	1810	500	06/21/16 12:54	06/22/16 18:50	108-67-8	1c
Xylene (Total)	319000	ug/kg	5440	500	06/21/16 12:54	06/22/16 18:50	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	122	%	68-135	50	06/21/16 12:54	06/21/16 19:23	2037-26-5	
4-Bromofluorobenzene (S)	104	%	65-146	50	06/21/16 12:54	06/21/16 19:23	460-00-4	
1,2-Dichloroethane-d4 (S)	131	%	69-137	50	06/21/16 12:54	06/21/16 19:23	17060-07-0	
Dibromofluoromethane (S)	88	%	70-130	50	06/21/16 12:54	06/21/16 19:23	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	11.8	%	0.10	1	06/27/16 15:42
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Sample: SB-17 (3-4) **Lab ID: 30186436014** Collected: 06/14/16 14:30 Received: 06/15/16 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	50600	ug/kg	2270	500	06/21/16 12:54	06/22/16 19:42	71-43-2	1c
Ethylbenzene	113000	ug/kg	2270	500	06/21/16 12:54	06/22/16 19:42	100-41-4	1c
Isopropylbenzene (Cumene)	12600	ug/kg	227	50	06/21/16 12:54	06/21/16 19:50	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	227	50	06/21/16 12:54	06/21/16 19:50	1634-04-4	1c
Naphthalene	30200	ug/kg	2270	500	06/21/16 12:54	06/22/16 19:42	91-20-3	1c
Toluene	2640	ug/kg	227	50	06/21/16 12:54	06/21/16 19:50	108-88-3	1c
1,2,4-Trimethylbenzene	191000	ug/kg	2270	500	06/21/16 12:54	06/22/16 19:42	95-63-6	1c,E
1,3,5-Trimethylbenzene	77900	ug/kg	2270	500	06/21/16 12:54	06/22/16 19:42	108-67-8	1c
Xylene (Total)	297000	ug/kg	6810	500	06/21/16 12:54	06/22/16 19:42	1330-20-7	1c
Surrogates								
Toluene-d8 (S)	120	%	68-135	50	06/21/16 12:54	06/21/16 19:50	2037-26-5	
4-Bromofluorobenzene (S)	104	%	65-146	50	06/21/16 12:54	06/21/16 19:50	460-00-4	
1,2-Dichloroethane-d4 (S)	111	%	69-137	50	06/21/16 12:54	06/21/16 19:50	17060-07-0	
Dibromofluoromethane (S)	83	%	70-130	50	06/21/16 12:54	06/21/16 19:50	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	17.9	%	0.10	1	06/27/16 15:42
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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Heath-Seneca

Pace Project No.: 30186436

QC Batch: 223850 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035A Analysis Description: 8260B MSV UST-SOIL
Associated Lab Samples: 30186436002, 30186436005, 30186436007, 30186436012

METHOD BLANK: 1095732 Matrix: Solid
Associated Lab Samples: 30186436002, 30186436005, 30186436007, 30186436012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	06/21/16 11:37	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	06/21/16 11:37	
Benzene	ug/kg	ND	5.0	06/21/16 11:37	
Ethylbenzene	ug/kg	ND	5.0	06/21/16 11:37	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	06/21/16 11:37	
Methyl-tert-butyl ether	ug/kg	ND	5.0	06/21/16 11:37	
Naphthalene	ug/kg	ND	5.0	06/21/16 11:37	
Toluene	ug/kg	ND	5.0	06/21/16 11:37	
Xylene (Total)	ug/kg	ND	15.0	06/21/16 11:37	
1,2-Dichloroethane-d4 (S)	%	112	69-137	06/21/16 11:37	
4-Bromofluorobenzene (S)	%	101	65-146	06/21/16 11:37	
Dibromofluoromethane (S)	%	99	70-130	06/21/16 11:37	
Toluene-d8 (S)	%	97	68-135	06/21/16 11:37	

LABORATORY CONTROL SAMPLE: 1095733

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	19.4	97	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	19.2	96	74-129	
Benzene	ug/kg	20	18.5	92	71-137	
Ethylbenzene	ug/kg	20	19.7	99	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	18.9	94	78-133	
Methyl-tert-butyl ether	ug/kg	20	18.3	91	77-141	
Naphthalene	ug/kg	20	19.6	98	81-126	
Toluene	ug/kg	20	18.6	93	72-127	
Xylene (Total)	ug/kg	60	59.9	100	80-124	
1,2-Dichloroethane-d4 (S)	%			112	69-137	
4-Bromofluorobenzene (S)	%			104	65-146	
Dibromofluoromethane (S)	%			98	70-130	
Toluene-d8 (S)	%			102	68-135	

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QUALITY CONTROL DATA

Project: Heath-Seneca

Pace Project No.: 30186436

QC Batch:	223851	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 5035A	Analysis Description:	8260B MSV UST-SOIL
Associated Lab Samples:	30186436001, 30186436003, 30186436004, 30186436006, 30186436008, 30186436009, 30186436010, 30186436011, 30186436013, 30186436014		

METHOD BLANK:	1095734	Matrix:	Solid
Associated Lab Samples:	30186436001, 30186436003, 30186436004, 30186436006, 30186436008, 30186436009, 30186436010, 30186436011, 30186436013, 30186436014		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	250	06/21/16 11:11	
1,3,5-Trimethylbenzene	ug/kg	ND	250	06/21/16 11:11	
Benzene	ug/kg	ND	250	06/21/16 11:11	
Ethylbenzene	ug/kg	ND	250	06/21/16 11:11	
Isopropylbenzene (Cumene)	ug/kg	ND	250	06/21/16 11:11	
Methyl-tert-butyl ether	ug/kg	ND	250	06/21/16 11:11	
Naphthalene	ug/kg	ND	250	06/21/16 11:11	
Toluene	ug/kg	ND	250	06/21/16 11:11	
Xylene (Total)	ug/kg	ND	750	06/21/16 11:11	
1,2-Dichloroethane-d4 (S)	%	113	69-137	06/21/16 11:11	
4-Bromofluorobenzene (S)	%	100	65-146	06/21/16 11:11	
Dibromofluoromethane (S)	%	97	70-130	06/21/16 11:11	
Toluene-d8 (S)	%	99	68-135	06/21/16 11:11	

LABORATORY CONTROL SAMPLE: 1095735

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	19.4	97	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	19.2	96	74-129	
Benzene	ug/kg	20	18.5	92	71-137	
Ethylbenzene	ug/kg	20	19.7	99	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	18.9	94	78-133	
Methyl-tert-butyl ether	ug/kg	20	18.3	91	77-141	
Naphthalene	ug/kg	20	19.6	98	81-126	
Toluene	ug/kg	20	18.6	93	72-127	
Xylene (Total)	ug/kg	60	59.9	100	80-124	
1,2-Dichloroethane-d4 (S)	%			112	69-137	
4-Bromofluorobenzene (S)	%			104	65-146	
Dibromofluoromethane (S)	%			98	70-130	
Toluene-d8 (S)	%			102	68-135	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Heath-Seneca

Pace Project No.: 30186436

QC Batch: 223990

Analysis Method: EPA 8260B

QC Batch Method: EPA 5035A

Analysis Description: 8260B MSV UST-SOIL

Associated Lab Samples: 30186436005

METHOD BLANK: 1096338

Matrix: Solid

Associated Lab Samples: 30186436005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	250	06/22/16 12:16	
Benzene	ug/kg	ND	250	06/22/16 12:16	
Ethylbenzene	ug/kg	ND	250	06/22/16 12:16	
Isopropylbenzene (Cumene)	ug/kg	ND	250	06/22/16 12:16	
Naphthalene	ug/kg	ND	250	06/22/16 12:16	
Xylene (Total)	ug/kg	ND	750	06/22/16 12:16	
1,2-Dichloroethane-d4 (S)	%	100	69-137	06/22/16 12:16	
4-Bromofluorobenzene (S)	%	101	65-146	06/22/16 12:16	
Dibromofluoromethane (S)	%	88	70-130	06/22/16 12:16	
Toluene-d8 (S)	%	99	68-135	06/22/16 12:16	

LABORATORY CONTROL SAMPLE: 1096339

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	20.4	102	79-125	
Benzene	ug/kg	20	18.5	93	71-137	
Ethylbenzene	ug/kg	20	19.0	95	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	19.4	97	78-133	
Naphthalene	ug/kg	20	16.9	85	81-126	
Xylene (Total)	ug/kg	60	57.7	96	80-124	
1,2-Dichloroethane-d4 (S)	%			98	69-137	
4-Bromofluorobenzene (S)	%			104	65-146	
Dibromofluoromethane (S)	%			95	70-130	
Toluene-d8 (S)	%			100	68-135	

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QUALITY CONTROL DATA

Project: Heath-Seneca

Pace Project No.: 30186436

QC Batch:	224551	Analysis Method:	ASTM D2974-87
QC Batch Method:	ASTM D2974-87	Analysis Description:	Dry Weight/Percent Moisture
Associated Lab Samples:	30186436001, 30186436002, 30186436003, 30186436004, 30186436006, 30186436007, 30186436008, 30186436009, 30186436010, 30186436011, 30186436012, 30186436013, 30186436014		

SAMPLE DUPLICATE: 1099192

Parameter	Units	30186436001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	11.7	12.1	3	

SAMPLE DUPLICATE: 1099193

Parameter	Units	30186436002 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	10.1	9.9	1	

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QUALIFIERS

Project: Heath-Seneca
Pace Project No.: 30186436

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

BATCH QUALIFIERS

Batch: 223850
[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.
Batch: 223851
[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.
Batch: 223990
[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1c A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.
E Analyte concentration exceeded the calibration range. The reported result is estimated.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Heath-Seneca

Pace Project No.: 30186436

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30186436001	SB-7 (3-4)	EPA 5035A	223851	EPA 8260B	223884
30186436002	SB-7 (7-8)	EPA 5035A	223850	EPA 8260B	223883
30186436003	SB-8 (4-5)	EPA 5035A	223851	EPA 8260B	223884
30186436004	SB-9 (3-4)	EPA 5035A	223851	EPA 8260B	223884
30186436005	SB-10 (4-5)	EPA 5035A	223850	EPA 8260B	223883
30186436005	SB-10 (4-5)	EPA 5035A	223990	EPA 8260B	224064
30186436006	SB-11 (3-4)	EPA 5035A	223851	EPA 8260B	223884
30186436007	SB-11 (7-8)	EPA 5035A	223850	EPA 8260B	223883
30186436008	SB-12 (3-4)	EPA 5035A	223851	EPA 8260B	223884
30186436009	SB-13 (3-4)	EPA 5035A	223851	EPA 8260B	223884
30186436010	SB-14 (3-4)	EPA 5035A	223851	EPA 8260B	223884
30186436011	SB-15 (3-4)	EPA 5035A	223851	EPA 8260B	223884
30186436012	SB-16 (3-4)	EPA 5035A	223850	EPA 8260B	223883
30186436013	SB-16 (7-8)	EPA 5035A	223851	EPA 8260B	223884
30186436014	SB-17 (3-4)	EPA 5035A	223851	EPA 8260B	223884
30186436001	SB-7 (3-4)	ASTM D2974-87	224551		
30186436002	SB-7 (7-8)	ASTM D2974-87	224551		
30186436003	SB-8 (4-5)	ASTM D2974-87	224551		
30186436004	SB-9 (3-4)	ASTM D2974-87	224551		
30186436006	SB-11 (3-4)	ASTM D2974-87	224551		
30186436007	SB-11 (7-8)	ASTM D2974-87	224551		
30186436008	SB-12 (3-4)	ASTM D2974-87	224551		
30186436009	SB-13 (3-4)	ASTM D2974-87	224551		
30186436010	SB-14 (3-4)	ASTM D2974-87	224551		
30186436011	SB-15 (3-4)	ASTM D2974-87	224551		
30186436012	SB-16 (3-4)	ASTM D2974-87	224551		
30186436013	SB-16 (7-8)	ASTM D2974-87	224551		
30186436014	SB-17 (3-4)	ASTM D2974-87	224551		

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CHAIN-OF-CUSTODY / Analytical Request Doc

WO#: 30186436



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20186436

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Cubbs & Assoc	Report To:	Gary Cubbs	Attention:	Sue
Address:	P.O. Box 44 Delmont, PA	Copy To:		Company Name:	
Email To:		Purchase Order No.:		Address:	
Phone:		Project Name:	Hesth-Seneq	Pace Quote Reference:	
Requested Due Date/TAT:	Standard	Project Number:		Pace Project Manager:	Laura Rilla
				Pace Profile #:	

REGULATORY AGENCY	
NPDES	GROUND WATER
UST	RCRA
Site Location	STATE:
	PA

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Requested Analysis Filtered (Y/N)										Residual Chlorine (Y/N)	Pace Project No. / Lab I.D.
				COMPOSITE START	COMPOSITE END/GRAB			DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME		
1	SB-7 (3-4)	DW	G	6/14	0800	4	1	6/14	0800										001
2	SB-7 (7-8)	WT	G	6/14	0815	4	1	6/14	0815										002
3	SB-8 (4-5)	WW	G	6/14	0905	4	1	6/14	0905										003
4	SB-9 (3-4)	P	G	6/14	0940	4	1	6/14	0940										004
5	SB-10 (4-5)	OL	G	6/14	1030	4	1	6/14	1030										005
6	SB-11 (3-4)	SL	G	6/14	1055	4	1	6/14	1055										006
7	SB-11 (7-8)	WP	G	6/14	1105	4	1	6/14	1105										007
8	SB-12 (3-4)	AR	G	6/14	1205	4	1	6/14	1205										008
9	SB-13 (3-4)	TS	G	6/14	1230	4	1	6/14	1230										009
10	SB-14 (3-4)	OT	G	6/14	1305	4	1	6/14	1305										010
11	SB-15 (3-4)		G	6/14	1315	4	1	6/14	1315										011
12	SB-16 (3-4)		G	6/14	1330	4	1	6/14	1330										012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Analyze all samples for New Pedal Shift for Unleaded Gasoline	Gary Cubbs	6/15/16	0900	Gary Cubbs	6/15/16	0900	Y N Y

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on	Custody	Sealed Cooler	Samples Intact
PRINT Name of SAMPLER: Gary Cubbs		5.9	Y	Y	Y	Y
SIGNATURE of SAMPLER: [Signature]						

Sample Condition Upon Receipt Pittsburgh

30186436

Client Name: Cripps

Project # _____

 Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☒ Pace Other RTB 6/15/16

Tracking #: _____

 Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

 Thermometer Used 8 Type of Ice: Wet Blue None

 Cooler Temperature Observed Temp 5.8 °C Correction Factor: +0.1 °C Final Temp: 5.9 °C

Temp should be above freezing to 6°C

 Date and Initials of person examining contents: RTB 6/15/16

Comments:

	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:	X			4.
Sample Labels match COC:	X			5.
-Includes date/time/ID/Analysis Matrix: <u>RTB 6/15/16 SL</u>				
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked.			X	13.
All containers needing preservation are found to be in compliance with EPA recommendation.			X	
exceptions: VOA, coliform, TOC, O&G, Phenolics				
				Initial when completed <u>6/15/16 RTB</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	14.
Trip Blank Present:			X	15.
Trip Blank Custody Seals Present			X	

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

September 29, 2016

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

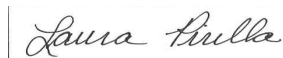
RE: Project: Heath :Seneca
Pace Project No.: 30196103

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on September 16, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Heath :Seneca

Pace Project No.: 30196103

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Heath :Seneca

Pace Project No.: 30196103

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30196103001	SB-18/SS-4/6-8'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30196103002	SB-19/SS-1/0-2'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30196103003	SB-21/SS-2/2-4'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30196103004	SB-22/SS-4/6-8'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30196103005	SB-24/SS-4/6-8'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30196103006	SB-25/SS-2/2-4'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30196103007	SB-26/SS-2/2-4'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Heath :Seneca
Pace Project No.: 30196103

Method: EPA 8260B
Description: 8260B MSV
Client: Cribbs and Associates
Date: September 29, 2016

General Information:

7 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 5035A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 233799

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: 233800

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: 234137

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Heath :Seneca

Pace Project No.: 30196103

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: September 29, 2016

Analyte Comments:

QC Batch: 233799

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-19/SS-1/0-2' (Lab ID: 30196103002)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- SB-25/SS-2/2-4' (Lab ID: 30196103006)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- SB-26/SS-2/2-4' (Lab ID: 30196103007)
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene

QC Batch: 233800

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-18/SS-4/6-8' (Lab ID: 30196103001)
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- SB-21/SS-2/2-4' (Lab ID: 30196103003)
 - Benzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- SB-22/SS-4/6-8' (Lab ID: 30196103004)
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Isopropylbenzene (Cumene)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Heath :Seneca

Pace Project No.: 30196103

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: September 29, 2016

Analyte Comments:

QC Batch: 233800

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-22/SS-4/6-8' (Lab ID: 30196103004)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- SB-24/SS-4/6-8' (Lab ID: 30196103005)
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene

QC Batch: 234137

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- SB-26/SS-2/2-4' (Lab ID: 30196103007)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Heath :Seneca

Pace Project No.: 30196103

Sample: SB-18/SS-4/6-8' **Lab ID:** 30196103001 **Collected:** 09/14/16 11:15 **Received:** 09/16/16 08:18 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	1170	ug/kg	223	50	09/20/16 13:10	09/20/16 19:12	71-43-2	1c
Ethylbenzene	22300	ug/kg	2230	500	09/20/16 13:10	09/22/16 21:30	100-41-4	
Isopropylbenzene (Cumene)	2840	ug/kg	223	50	09/20/16 13:10	09/20/16 19:12	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	223	50	09/20/16 13:10	09/20/16 19:12	1634-04-4	1c
Naphthalene	5850	ug/kg	223	50	09/20/16 13:10	09/20/16 19:12	91-20-3	1c
Toluene	ND	ug/kg	223	50	09/20/16 13:10	09/20/16 19:12	108-88-3	1c
1,2,4-Trimethylbenzene	42900	ug/kg	2230	500	09/20/16 13:10	09/22/16 21:30	95-63-6	
1,3,5-Trimethylbenzene	7810	ug/kg	223	50	09/20/16 13:10	09/20/16 19:12	108-67-8	1c
Xylene (Total)	5080	ug/kg	669	50	09/20/16 13:10	09/20/16 19:12	1330-20-7	
Surrogates								
Toluene-d8 (S)	98	%	68-135	50	09/20/16 13:10	09/20/16 19:12	2037-26-5	
4-Bromofluorobenzene (S)	97	%	65-146	50	09/20/16 13:10	09/20/16 19:12	460-00-4	
1,2-Dichloroethane-d4 (S)	119	%	69-137	50	09/20/16 13:10	09/20/16 19:12	17060-07-0	
Dibromofluoromethane (S)	94	%	70-130	50	09/20/16 13:10	09/20/16 19:12	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	16.1	%	0.10	1	09/27/16 15:43
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Sample: SB-19/SS-1/0-2' **Lab ID:** 30196103002 **Collected:** 09/14/16 10:50 **Received:** 09/16/16 08:18 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	27.9	ug/kg	4.3	1	09/20/16 13:06	09/20/16 17:29	71-43-2	1c
Ethylbenzene	ND	ug/kg	4.3	1	09/20/16 13:06	09/20/16 17:29	100-41-4	1c
Isopropylbenzene (Cumene)	49.7	ug/kg	4.3	1	09/20/16 13:06	09/20/16 17:29	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	4.3	1	09/20/16 13:06	09/20/16 17:29	1634-04-4	1c
Naphthalene	10.5	ug/kg	4.3	1	09/20/16 13:06	09/20/16 17:29	91-20-3	1c
Toluene	ND	ug/kg	4.3	1	09/20/16 13:06	09/20/16 17:29	108-88-3	1c
1,2,4-Trimethylbenzene	9.3	ug/kg	4.3	1	09/20/16 13:06	09/20/16 17:29	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	4.3	1	09/20/16 13:06	09/20/16 17:29	108-67-8	1c
Xylene (Total)	18.1	ug/kg	12.8	1	09/20/16 13:06	09/20/16 17:29	1330-20-7	
Surrogates								
Toluene-d8 (S)	107	%	68-135	1	09/20/16 13:06	09/20/16 17:29	2037-26-5	
4-Bromofluorobenzene (S)	111	%	65-146	1	09/20/16 13:06	09/20/16 17:29	460-00-4	
1,2-Dichloroethane-d4 (S)	113	%	69-137	1	09/20/16 13:06	09/20/16 17:29	17060-07-0	
Dibromofluoromethane (S)	98	%	70-130	1	09/20/16 13:06	09/20/16 17:29	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	12.6	%	0.10	1	09/27/16 15:43
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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Heath :Seneca
Pace Project No.: 30196103

Sample: SB-21/SS-2/2-4' **Lab ID:** 30196103003 **Collected:** 09/14/16 12:25 **Received:** 09/16/16 08:18 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	56800	ug/kg	2250	500	09/20/16 13:10	09/20/16 19:37	71-43-2	1c
Ethylbenzene	752000	ug/kg	22500	5000	09/20/16 13:10	09/22/16 21:56	100-41-4	
Isopropylbenzene (Cumene)	39500	ug/kg	2250	500	09/20/16 13:10	09/20/16 19:37	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	2250	500	09/20/16 13:10	09/20/16 19:37	1634-04-4	1c
Naphthalene	106000	ug/kg	2250	500	09/20/16 13:10	09/20/16 19:37	91-20-3	1c
Toluene	28000	ug/kg	2250	500	09/20/16 13:10	09/20/16 19:37	108-88-3	1c
1,2,4-Trimethylbenzene	1750000	ug/kg	22500	5000	09/20/16 13:10	09/22/16 21:56	95-63-6	
1,3,5-Trimethylbenzene	597000	ug/kg	22500	5000	09/20/16 13:10	09/22/16 21:56	108-67-8	
Xylene (Total)	3020000	ug/kg	67600	5000	09/20/16 13:10	09/22/16 21:56	1330-20-7	
Surrogates								
Toluene-d8 (S)	98	%	68-135	500	09/20/16 13:10	09/20/16 19:37	2037-26-5	
4-Bromofluorobenzene (S)	99	%	65-146	500	09/20/16 13:10	09/20/16 19:37	460-00-4	
1,2-Dichloroethane-d4 (S)	121	%	69-137	500	09/20/16 13:10	09/20/16 19:37	17060-07-0	
Dibromofluoromethane (S)	93	%	70-130	500	09/20/16 13:10	09/20/16 19:37	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	15.1	%	0.10	1	09/27/16 15:43
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Sample: SB-22/SS-4/6-8' **Lab ID:** 30196103004 **Collected:** 09/14/16 12:45 **Received:** 09/16/16 08:18 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	963	ug/kg	198	50	09/20/16 13:10	09/20/16 20:03	71-43-2	1c
Ethylbenzene	18500	ug/kg	1980	500	09/20/16 13:10	09/22/16 22:22	100-41-4	
Isopropylbenzene (Cumene)	1470	ug/kg	198	50	09/20/16 13:10	09/20/16 20:03	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	198	50	09/20/16 13:10	09/20/16 20:03	1634-04-4	1c
Naphthalene	2920	ug/kg	198	50	09/20/16 13:10	09/20/16 20:03	91-20-3	1c
Toluene	ND	ug/kg	198	50	09/20/16 13:10	09/20/16 20:03	108-88-3	1c
1,2,4-Trimethylbenzene	40000	ug/kg	1980	500	09/20/16 13:10	09/22/16 22:22	95-63-6	
1,3,5-Trimethylbenzene	14600	ug/kg	198	50	09/20/16 13:10	09/20/16 20:03	108-67-8	1c
Xylene (Total)	37000	ug/kg	5950	500	09/20/16 13:10	09/22/16 22:22	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	68-135	50	09/20/16 13:10	09/20/16 20:03	2037-26-5	
4-Bromofluorobenzene (S)	99	%	65-146	50	09/20/16 13:10	09/20/16 20:03	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	69-137	50	09/20/16 13:10	09/20/16 20:03	17060-07-0	
Dibromofluoromethane (S)	89	%	70-130	50	09/20/16 13:10	09/20/16 20:03	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	12.1	%	0.10	1	09/27/16 15:43
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ANALYTICAL RESULTS

Project: Heath :Seneca

Pace Project No.: 30196103

Sample: SB-24/SS-4/6-8' **Lab ID: 30196103005** Collected: 09/14/16 13:45 Received: 09/16/16 08:18 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	214	ug/kg	195	50	09/20/16 13:10	09/20/16 20:29	71-43-2	1c
Ethylbenzene	8110	ug/kg	195	50	09/20/16 13:10	09/20/16 20:29	100-41-4	1c
Isopropylbenzene (Cumene)	817	ug/kg	195	50	09/20/16 13:10	09/20/16 20:29	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	195	50	09/20/16 13:10	09/20/16 20:29	1634-04-4	1c
Naphthalene	1970	ug/kg	195	50	09/20/16 13:10	09/20/16 20:29	91-20-3	1c
Toluene	ND	ug/kg	195	50	09/20/16 13:10	09/20/16 20:29	108-88-3	1c
1,2,4-Trimethylbenzene	17500	ug/kg	1950	500	09/20/16 13:10	09/22/16 22:47	95-63-6	
1,3,5-Trimethylbenzene	5490	ug/kg	195	50	09/20/16 13:10	09/20/16 20:29	108-67-8	1c
Xylene (Total)	9470	ug/kg	586	50	09/20/16 13:10	09/20/16 20:29	1330-20-7	
Surrogates								
Toluene-d8 (S)	98	%	68-135	50	09/20/16 13:10	09/20/16 20:29	2037-26-5	
4-Bromofluorobenzene (S)	96	%	65-146	50	09/20/16 13:10	09/20/16 20:29	460-00-4	
1,2-Dichloroethane-d4 (S)	111	%	69-137	50	09/20/16 13:10	09/20/16 20:29	17060-07-0	
Dibromofluoromethane (S)	98	%	70-130	50	09/20/16 13:10	09/20/16 20:29	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	14.1	%	0.10	1	09/27/16 15:43
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Sample: SB-25/SS-2/2-4' **Lab ID: 30196103006** Collected: 09/14/16 13:55 Received: 09/16/16 08:18 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	3.6	1	09/20/16 13:06	09/20/16 17:55	71-43-2	1c
Ethylbenzene	ND	ug/kg	3.6	1	09/20/16 13:06	09/20/16 17:55	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	3.6	1	09/20/16 13:06	09/20/16 17:55	98-82-8	1c
Methyl-tert-butyl ether	5.0	ug/kg	3.6	1	09/20/16 13:06	09/20/16 17:55	1634-04-4	1c
Naphthalene	ND	ug/kg	3.6	1	09/20/16 13:06	09/20/16 17:55	91-20-3	1c
Toluene	ND	ug/kg	3.6	1	09/20/16 13:06	09/20/16 17:55	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	3.6	1	09/20/16 13:06	09/20/16 17:55	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	3.6	1	09/20/16 13:06	09/20/16 17:55	108-67-8	1c
Xylene (Total)	ND	ug/kg	10.7	1	09/20/16 13:06	09/20/16 17:55	1330-20-7	
Surrogates								
Toluene-d8 (S)	98	%	68-135	1	09/20/16 13:06	09/20/16 17:55	2037-26-5	
4-Bromofluorobenzene (S)	99	%	65-146	1	09/20/16 13:06	09/20/16 17:55	460-00-4	
1,2-Dichloroethane-d4 (S)	119	%	69-137	1	09/20/16 13:06	09/20/16 17:55	17060-07-0	
Dibromofluoromethane (S)	104	%	70-130	1	09/20/16 13:06	09/20/16 17:55	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	8.5	%	0.10	1	09/27/16 15:43
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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Heath :Seneca

Pace Project No.: 30196103

Sample: SB-26/SS-2/2-4' **Lab ID:** 30196103007 **Collected:** 09/14/16 14:10 **Received:** 09/16/16 08:18 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	3450	ug/kg	234	50	09/22/16 13:31	09/22/16 21:05	71-43-2	1c
Ethylbenzene	2420	ug/kg	234	50	09/22/16 13:31	09/22/16 21:05	100-41-4	1c
Isopropylbenzene (Cumene)	236	ug/kg	4.6	1	09/20/16 13:06	09/20/16 18:20	98-82-8	1c
Methyl-tert-butyl ether	41.7	ug/kg	4.6	1	09/20/16 13:06	09/20/16 18:20	1634-04-4	1c
Naphthalene	257	ug/kg	4.6	1	09/20/16 13:06	09/20/16 18:20	91-20-3	1c
Toluene	51.0	ug/kg	4.6	1	09/20/16 13:06	09/20/16 18:20	108-88-3	1c
1,2,4-Trimethylbenzene	6340	ug/kg	234	50	09/22/16 13:31	09/22/16 21:05	95-63-6	1c
1,3,5-Trimethylbenzene	2090	ug/kg	234	50	09/22/16 13:31	09/22/16 21:05	108-67-8	1c
Xylene (Total)	9080	ug/kg	703	50	09/22/16 13:31	09/22/16 21:05	1330-20-7	
Surrogates								
Toluene-d8 (S)	106	%	68-135	1	09/20/16 13:06	09/20/16 18:20	2037-26-5	
4-Bromofluorobenzene (S)	105	%	65-146	1	09/20/16 13:06	09/20/16 18:20	460-00-4	
1,2-Dichloroethane-d4 (S)	130	%	69-137	1	09/20/16 13:06	09/20/16 18:20	17060-07-0	
Dibromofluoromethane (S)	90	%	70-130	1	09/20/16 13:06	09/20/16 18:20	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	19.7	%	0.10	1		09/27/16 15:43		
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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Heath :Seneca

Pace Project No.: 30196103

QC Batch: 233799 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035A Analysis Description: 8260B MSV UST-SOIL
Associated Lab Samples: 30196103002, 30196103006, 30196103007

METHOD BLANK: 1146427 Matrix: Solid

Associated Lab Samples: 30196103002, 30196103006, 30196103007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	09/20/16 12:58	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	09/20/16 12:58	
Benzene	ug/kg	ND	5.0	09/20/16 12:58	
Ethylbenzene	ug/kg	ND	5.0	09/20/16 12:58	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	09/20/16 12:58	
Methyl-tert-butyl ether	ug/kg	ND	5.0	09/20/16 12:58	
Naphthalene	ug/kg	ND	5.0	09/20/16 12:58	
Toluene	ug/kg	ND	5.0	09/20/16 12:58	
Xylene (Total)	ug/kg	ND	15.0	09/20/16 12:58	
1,2-Dichloroethane-d4 (S)	%	104	69-137	09/20/16 12:58	
4-Bromofluorobenzene (S)	%	94	65-146	09/20/16 12:58	
Dibromofluoromethane (S)	%	106	70-130	09/20/16 12:58	
Toluene-d8 (S)	%	95	68-135	09/20/16 12:58	

LABORATORY CONTROL SAMPLE: 1146428

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	21.2	106	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	21.5	107	74-129	
Benzene	ug/kg	20	19.2	96	71-137	
Ethylbenzene	ug/kg	20	20.0	100	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	21.2	106	78-133	
Methyl-tert-butyl ether	ug/kg	20	19.0	95	77-141	
Naphthalene	ug/kg	20	19.9	99	81-126	
Toluene	ug/kg	20	19.9	99	72-127	
Xylene (Total)	ug/kg	60	62.5	104	80-124	
1,2-Dichloroethane-d4 (S)	%			107	69-137	
4-Bromofluorobenzene (S)	%			100	65-146	
Dibromofluoromethane (S)	%			106	70-130	
Toluene-d8 (S)	%			99	68-135	

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QUALITY CONTROL DATA

Project: Heath :Seneca

Pace Project No.: 30196103

QC Batch: 233800 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035A Analysis Description: 8260B MSV UST-SOIL
Associated Lab Samples: 30196103001, 30196103003, 30196103004, 30196103005

METHOD BLANK: 1146429 Matrix: Solid
Associated Lab Samples: 30196103001, 30196103003, 30196103004, 30196103005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	250	09/20/16 12:32	
1,3,5-Trimethylbenzene	ug/kg	ND	250	09/20/16 12:32	
Benzene	ug/kg	ND	250	09/20/16 12:32	
Ethylbenzene	ug/kg	ND	250	09/20/16 12:32	
Isopropylbenzene (Cumene)	ug/kg	ND	250	09/20/16 12:32	
Methyl-tert-butyl ether	ug/kg	ND	250	09/20/16 12:32	
Naphthalene	ug/kg	ND	250	09/20/16 12:32	
Toluene	ug/kg	ND	250	09/20/16 12:32	
Xylene (Total)	ug/kg	ND	750	09/20/16 12:32	
1,2-Dichloroethane-d4 (S)	%	108	69-137	09/20/16 12:32	
4-Bromofluorobenzene (S)	%	95	65-146	09/20/16 12:32	
Dibromofluoromethane (S)	%	105	70-130	09/20/16 12:32	
Toluene-d8 (S)	%	100	68-135	09/20/16 12:32	

LABORATORY CONTROL SAMPLE: 1146430

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	21.2	106	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	21.5	107	74-129	
Benzene	ug/kg	20	19.2	96	71-137	
Ethylbenzene	ug/kg	20	20.0	100	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	21.2	106	78-133	
Methyl-tert-butyl ether	ug/kg	20	19.0	95	77-141	
Naphthalene	ug/kg	20	19.9	99	81-126	
Toluene	ug/kg	20	19.9	99	72-127	
Xylene (Total)	ug/kg	60	62.5	104	80-124	
1,2-Dichloroethane-d4 (S)	%			107	69-137	
4-Bromofluorobenzene (S)	%			100	65-146	
Dibromofluoromethane (S)	%			106	70-130	
Toluene-d8 (S)	%			99	68-135	

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QUALITY CONTROL DATA

Project: Heath :Seneca

Pace Project No.: 30196103

QC Batch:	234137	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 5035A	Analysis Description:	8260B MSV UST-SOIL
Associated Lab Samples:	30196103007		

METHOD BLANK: 1148345 Matrix: Solid

Associated Lab Samples: 30196103007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	250	09/22/16 13:12	
1,3,5-Trimethylbenzene	ug/kg	ND	250	09/22/16 13:12	
Benzene	ug/kg	ND	250	09/22/16 13:12	
Ethylbenzene	ug/kg	ND	250	09/22/16 13:12	
Xylene (Total)	ug/kg	ND	750	09/22/16 13:12	
1,2-Dichloroethane-d4 (S)	%	113	69-137	09/22/16 13:12	
4-Bromofluorobenzene (S)	%	93	65-146	09/22/16 13:12	
Dibromofluoromethane (S)	%	104	70-130	09/22/16 13:12	
Toluene-d8 (S)	%	100	68-135	09/22/16 13:12	

LABORATORY CONTROL SAMPLE: 1148346

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	21.9	110	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	22.2	111	74-129	
Benzene	ug/kg	20	20.1	101	71-137	
Ethylbenzene	ug/kg	20	19.7	98	78-126	
Xylene (Total)	ug/kg	60	61.4	102	80-124	
1,2-Dichloroethane-d4 (S)	%			114	69-137	
4-Bromofluorobenzene (S)	%			98	65-146	
Dibromofluoromethane (S)	%			105	70-130	
Toluene-d8 (S)	%			98	68-135	

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QUALITY CONTROL DATA

Project: Heath :Seneca

Pace Project No.: 30196103

QC Batch:	234583	Analysis Method:	ASTM D2974-87
QC Batch Method:	ASTM D2974-87	Analysis Description:	Dry Weight/Percent Moisture
Associated Lab Samples:	30196103001, 30196103002, 30196103003, 30196103004, 30196103005, 30196103006, 30196103007		

SAMPLE DUPLICATE: 1151430

Parameter	Units	30196102001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	13.9	11.5	18	

SAMPLE DUPLICATE: 1151431

Parameter	Units	30196102002 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	16.2	18.3	12	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Heath :Seneca
Pace Project No.: 30196103

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

BATCH QUALIFIERS

Batch: 233799
[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.
Batch: 233800
[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.
Batch: 234137
[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1c A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Heath :Seneca

Pace Project No.: 30196103

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30196103001	SB-18/SS-4/6-8'	EPA 5035A	233800	EPA 8260B	233903
30196103002	SB-19/SS-1/0-2'	EPA 5035A	233799	EPA 8260B	233902
30196103003	SB-21/SS-2/2-4'	EPA 5035A	233800	EPA 8260B	233903
30196103004	SB-22/SS-4/6-8'	EPA 5035A	233800	EPA 8260B	233903
30196103005	SB-24/SS-4/6-8'	EPA 5035A	233800	EPA 8260B	233903
30196103006	SB-25/SS-2/2-4'	EPA 5035A	233799	EPA 8260B	233902
30196103007	SB-26/SS-2/2-4'	EPA 5035A	233799	EPA 8260B	233902
30196103007	SB-26/SS-2/2-4'	EPA 5035A	234137	EPA 8260B	234227
30196103001	SB-18/SS-4/6-8'	ASTM D2974-87	234583		
30196103002	SB-19/SS-1/0-2'	ASTM D2974-87	234583		
30196103003	SB-21/SS-2/2-4'	ASTM D2974-87	234583		
30196103004	SB-22/SS-4/6-8'	ASTM D2974-87	234583		
30196103005	SB-24/SS-4/6-8'	ASTM D2974-87	234583		
30196103006	SB-25/SS-2/2-4'	ASTM D2974-87	234583		
30196103007	SB-26/SS-2/2-4'	ASTM D2974-87	234583		

REPORT OF LABORATORY ANALYSIS

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Section A
Required Client Information:

Company: *Cribbs & Associates*
Address: *PO Box 47*
Delmont PA 15626
Email To:
Phone: *724-454-2310* Fax:
Requested Due Date/TAT: *Standard*

Section B
Required Project Information:

Report To: *Gary Cribbs*
Copy To:
Purchase Order No.:
Project Name: *Heath, Geneva*
Project Number:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ JUST ☐ RCRA ☐ OTHER

Site Location
STATE: *PA*

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Analysis Test ↑ Y/N	Requested Analysis Filtered (Y/N)												Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					COMPOSITE START	COMPOSITE END/GRAB	DATE	TIME			DATE	TIME	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION		DATE		TIME		SAMPLE CONDITIONS	
Analyze All Samples FOR NEW PADDP SHORTLIST FOR UNLEADED GASOLINE	<i>Jared Thorne</i>		<i>9/14/16</i>		<i>0818</i>		<i>Jared Thorne</i>		<i>9-10-16</i>		<i>0818</i>		<i>Y</i>	<i>N</i>

ORIGINAL	SAMPLER NAME AND SIGNATURE		Temp In °C		Received on	Custody	Samples Intact
	PRINT Name of SAMPLER:				Sealed Cooler	(Y/N)	(Y/N)
	SIGNATURE of SAMPLER:				Ice (Y/N)		
	Jared Thorne		Jared Thorne		9/14/16		
	Jared Thorne		Jared Thorne				
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Sample Condition Upon Receipt Pittsburgh



Client Name: Cribbs & Associates

Project # 30196103

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used 8 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 3.8 °C Correction Factor: +0.1 °C Final Temp: 3.9 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: KA 9-16-16

Comments:	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
-Includes date/time/ID/Analysis Matrix: <u>SL</u>				
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. <u>Ziploc sent with SB-19/SS-1/0-2'. Cooler water in the bag.</u>
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
-Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Filtered volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.
All containers needing preservation have been checked.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
exceptions: <u>(VOA)</u> coliform, TOC, O&G, Phenolics				Initial when completed: <u>KA</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.
Trip Blank Present:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Rad Aqueous Samples Screened > 0.5 mrem/hr	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Initial when completed: <u>KA</u> Date: <u>9-16-16</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)
 *PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

November 02, 2016

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

RE: Project: HO: Seneca
Pace Project No.: 30199799

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on October 20, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: HO: Seneca

Pace Project No.: 30199799

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: HO: Seneca

Pace Project No.: 30199799

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30199799001	MW-7 2.5-4.5	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA
30199799002	MW-9 / SS-1/0.5-2.5'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	SRA	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: HO: Seneca
Pace Project No.: 30199799

Method: EPA 8260B
Description: 8260B MSV
Client: Cribbs and Associates
Date: November 02, 2016

General Information:

2 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 5035A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 237977

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

Analyte Comments:

QC Batch: 237977

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- MW-7 2.5-4.5 (Lab ID: 30199799001)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: HO: Seneca

Pace Project No.: 30199799

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: November 02, 2016

Analyte Comments:

QC Batch: 237977

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- MW-7 2.5-4.5 (Lab ID: 30199799001)
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- MW-9 / SS-1/0.5-2.5' (Lab ID: 30199799002)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HO: Seneca
Pace Project No.: 30199799

Sample: MW-7 2.5-4.5 **Lab ID: 30199799001** Collected: 10/17/16 14:30 Received: 10/20/16 15:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	5.2	ug/kg	5.1	1	10/26/16 09:28	10/26/16 13:17	71-43-2	1c
Ethylbenzene	ND	ug/kg	5.1	1	10/26/16 09:28	10/26/16 13:17	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	5.1	1	10/26/16 09:28	10/26/16 13:17	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	5.1	1	10/26/16 09:28	10/26/16 13:17	1634-04-4	1c
Naphthalene	ND	ug/kg	5.1	1	10/26/16 09:28	10/26/16 13:17	91-20-3	1c
Toluene	ND	ug/kg	5.1	1	10/26/16 09:28	10/26/16 13:17	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	5.1	1	10/26/16 09:28	10/26/16 13:17	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	5.1	1	10/26/16 09:28	10/26/16 13:17	108-67-8	1c
Xylene (Total)	ND	ug/kg	15.3	1	10/26/16 09:28	10/26/16 13:17	1330-20-7	
Surrogates								
Toluene-d8 (S)	105	%	68-135	1	10/26/16 09:28	10/26/16 13:17	2037-26-5	
4-Bromofluorobenzene (S)	109	%	65-146	1	10/26/16 09:28	10/26/16 13:17	460-00-4	
1,2-Dichloroethane-d4 (S)	119	%	69-137	1	10/26/16 09:28	10/26/16 13:17	17060-07-0	
Dibromofluoromethane (S)	101	%	70-130	1	10/26/16 09:28	10/26/16 13:17	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	23.9	%	0.10	1		11/01/16 16:59		
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Sample: MW-9 / SS-1/0.5-2.5' **Lab ID: 30199799002** Collected: 10/18/16 09:45 Received: 10/20/16 15:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	5.0	1	10/26/16 09:28	10/26/16 13:42	71-43-2	1c
Ethylbenzene	ND	ug/kg	5.0	1	10/26/16 09:28	10/26/16 13:42	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	5.0	1	10/26/16 09:28	10/26/16 13:42	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	5.0	1	10/26/16 09:28	10/26/16 13:42	1634-04-4	1c
Naphthalene	ND	ug/kg	5.0	1	10/26/16 09:28	10/26/16 13:42	91-20-3	1c
Toluene	ND	ug/kg	5.0	1	10/26/16 09:28	10/26/16 13:42	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	5.0	1	10/26/16 09:28	10/26/16 13:42	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	5.0	1	10/26/16 09:28	10/26/16 13:42	108-67-8	1c
Xylene (Total)	ND	ug/kg	14.9	1	10/26/16 09:28	10/26/16 13:42	1330-20-7	
Surrogates								
Toluene-d8 (S)	104	%	68-135	1	10/26/16 09:28	10/26/16 13:42	2037-26-5	
4-Bromofluorobenzene (S)	104	%	65-146	1	10/26/16 09:28	10/26/16 13:42	460-00-4	
1,2-Dichloroethane-d4 (S)	118	%	69-137	1	10/26/16 09:28	10/26/16 13:42	17060-07-0	
Dibromofluoromethane (S)	103	%	70-130	1	10/26/16 09:28	10/26/16 13:42	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	14.2	%	0.10	1		11/01/16 16:59		
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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO: Seneca
Pace Project No.: 30199799

QC Batch: 237977 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035A Analysis Description: 8260B MSV UST-SOIL
Associated Lab Samples: 30199799001, 30199799002

METHOD BLANK: 1169606 Matrix: Solid
Associated Lab Samples: 30199799001, 30199799002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	10/26/16 12:51	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	10/26/16 12:51	
Benzene	ug/kg	ND	5.0	10/26/16 12:51	
Ethylbenzene	ug/kg	ND	5.0	10/26/16 12:51	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	10/26/16 12:51	
Methyl-tert-butyl ether	ug/kg	ND	5.0	10/26/16 12:51	
Naphthalene	ug/kg	ND	5.0	10/26/16 12:51	
Toluene	ug/kg	ND	5.0	10/26/16 12:51	
Xylene (Total)	ug/kg	ND	15.0	10/26/16 12:51	
1,2-Dichloroethane-d4 (S)	%	112	69-137	10/26/16 12:51	
4-Bromofluorobenzene (S)	%	99	65-146	10/26/16 12:51	
Dibromofluoromethane (S)	%	101	70-130	10/26/16 12:51	
Toluene-d8 (S)	%	105	68-135	10/26/16 12:51	

LABORATORY CONTROL SAMPLE: 1169607

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	17.4	87	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	20.2	101	74-129	
Benzene	ug/kg	20	16.3	81	71-137	
Ethylbenzene	ug/kg	20	16.1	81	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	20.0	100	78-133	
Methyl-tert-butyl ether	ug/kg	20	18.7	93	77-141	
Naphthalene	ug/kg	20	20.0	100	81-126	
Toluene	ug/kg	20	16.5	82	72-127	
Xylene (Total)	ug/kg	60	48.5	81	80-124	
1,2-Dichloroethane-d4 (S)	%			105	69-137	
4-Bromofluorobenzene (S)	%			122	65-146	
Dibromofluoromethane (S)	%			103	70-130	
Toluene-d8 (S)	%			104	68-135	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO: Seneca

Pace Project No.: 30199799

QC Batch: 238798

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 30199799001, 30199799002

SAMPLE DUPLICATE: 1173545

Parameter	Units	30199740001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	21.0	20.7	2	

SAMPLE DUPLICATE: 1173546

Parameter	Units	30199799001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	23.9	25.5	6	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: HO: Seneca
Pace Project No.: 30199799

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

BATCH QUALIFIERS

Batch: 237977

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1c A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

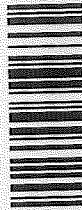
Project: HO: Seneca

Pace Project No.: 30199799

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30199799001	MW-7 2.5-4.5	EPA 5035A	237977	EPA 8260B	238135
30199799002	MW-9 / SS-1/0.5-2.5'	EPA 5035A	237977	EPA 8260B	238135
30199799001	MW-7 2.5-4.5	ASTM D2974-87	238798		
30199799002	MW-9 / SS-1/0.5-2.5'	ASTM D2974-87	238798		

REPORT OF LABORATORY ANALYSIS

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Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: <u>Gribbs & Associates Inc</u>	Report To: <u>Gary Gribbs</u>	Company Name: <u>Gribbs & Associates, Inc</u>	Attention: <u>Gary Gribbs</u>	20100700	
Address: <u>PO Box 44 Delmont PA 15628</u>	Copy To: <u>Gary Gribbs</u>	Address: <u>PO Box 44 Delmont PA 15628</u>	Company Name: <u>Gribbs & Associates, Inc</u>	2061250	
Phone: <u>724-451-2310</u>	Purchase Order No.: <u>15628</u>	Reference: <u>HO: Seneca</u>	Address: <u>PO Box 44 Delmont PA 15628</u>	REGULATORY AGENCY	
Requested Due Date/TAT: <u>Standard</u>	Project Name: <u>HO: Seneca</u>	Pace Project Manager: <u>Laura Picilli</u>	Address: <u>PO Box 44 Delmont PA 15628</u>	NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/>	
	Project Number: <u>Standard</u>	Pace Profile #: <u>Standard</u>	Address: <u>PO Box 44 Delmont PA 15628</u>	UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER <input type="checkbox"/>	
			Address: <u>PO Box 44 Delmont PA 15628</u>	Site Location: <u>PA</u>	
			Address: <u>PO Box 44 Delmont PA 15628</u>	STATE: <u>PA</u>	

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE DW WT WW P SL OL WP AR TS OT	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
			COMPOSITE START	COMPOSITE END/GRAB									
1	MW-7 2.5-4.5'		DATE	TIME									
2	MW-9 5.5-1 / 0.5-2.5'		10/17/16	1430				10/19/16	1700		10/19/16	1700	
3			10/18/16	0945				10/20/16	1500		10/20/16	1500	
4													
5													
6													
7													
8													
9													
10													
11													
12													

ORIGINAL		SAMPLE NAME AND SIGNATURE		Temp in °C		Received on		Custody		Sealed Cooler		Samples Intact	
		PRINT Name of SAMPLER: <u>Jared Thorn</u>											
		SIGNATURE of SAMPLER: <u>Jared Thorn</u>											
		DATE Signed (MM/DD/YY): <u>10/18/16</u>											

Sample Condition Upon Receipt Pittsburgh

30199799

Client Name: Cribbs + Associates Project # _____Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals intact: ☐ yes ☐ noThermometer Used 7 Type of Ice: Wet Blue NoneCooler Temperature Observed Temp 5.9 °C Correction Factor: -0.2 °C Final Temp: 5.7 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 9/10/2016

Comments:

	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC:	✓			5.
-Includes date/time/ID/Analysis Matrix: <u>SL</u>				
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Filtered volume received for Dissolved tests			✓	12.
All containers needing preservation have been checked.			✓	13.
All containers needing preservation are found to be in compliance with EPA recommendation.			✓	
exceptions: <u>VOA</u> coliform, TOC, O&G, Phenolics				
				Initial when completed: <u>9/10</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	14.
Trip Blank Present:			✓	15.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr			✓	Initial when completed: <u>9/10</u> Date:

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

November 15, 2016

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626


RE: Project: HO: Seneca
Pace Project No.: 30201304

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on November 02, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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CERTIFICATIONS

Project: HO: Seneca

Pace Project No.: 30201304

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: HO: Seneca

Pace Project No.: 30201304

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30201304001	MW-8/SS-5/10-12'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30201304002	MW-8/SS-7/14-16'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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PROJECT NARRATIVE

Project: HO: Seneca
Pace Project No.: 30201304

Method: EPA 8260B
Description: 8260B MSV
Client: Cribbs and Associates
Date: November 15, 2016

General Information:

2 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 5035A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 239206

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

Analyte Comments:

QC Batch: 239206

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- MW-8/SS-5/10-12' (Lab ID: 30201304001)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: HO: Seneca

Pace Project No.: 30201304

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: November 15, 2016

Analyte Comments:

QC Batch: 239206

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- MW-8/SS-5/10-12' (Lab ID: 30201304001)
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- MW-8/SS-7/14-16' (Lab ID: 30201304002)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HO: Seneca
Pace Project No.: 30201304

Sample: MW-8/SS-5/10-12' **Lab ID:** 30201304001 **Collected:** 11/01/16 12:30 **Received:** 11/02/16 14:38 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	10.9	ug/kg	4.6	1	11/04/16 09:29	11/04/16 10:56	71-43-2	1c
Ethylbenzene	ND	ug/kg	4.6	1	11/04/16 09:29	11/04/16 10:56	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	4.6	1	11/04/16 09:29	11/04/16 10:56	98-82-8	1c
Methyl-tert-butyl ether	166	ug/kg	4.6	1	11/04/16 09:29	11/04/16 10:56	1634-04-4	1c
Naphthalene	ND	ug/kg	4.6	1	11/04/16 09:29	11/04/16 10:56	91-20-3	1c
Toluene	ND	ug/kg	4.6	1	11/04/16 09:29	11/04/16 10:56	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	4.6	1	11/04/16 09:29	11/04/16 10:56	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	4.6	1	11/04/16 09:29	11/04/16 10:56	108-67-8	1c
Xylene (Total)	ND	ug/kg	13.9	1	11/04/16 09:29	11/04/16 10:56	1330-20-7	
Surrogates								
Toluene-d8 (S)	103	%	68-135	1	11/04/16 09:29	11/04/16 10:56	2037-26-5	
4-Bromofluorobenzene (S)	95	%	65-146	1	11/04/16 09:29	11/04/16 10:56	460-00-4	
1,2-Dichloroethane-d4 (S)	113	%	69-137	1	11/04/16 09:29	11/04/16 10:56	17060-07-0	
Dibromofluoromethane (S)	98	%	70-130	1	11/04/16 09:29	11/04/16 10:56	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	10.6	%	0.10	1	11/14/16 14:23
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Sample: MW-8/SS-7/14-16' **Lab ID:** 30201304002 **Collected:** 11/01/16 13:30 **Received:** 11/02/16 14:38 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	3.6	1	11/04/16 09:29	11/04/16 11:22	71-43-2	1c
Ethylbenzene	ND	ug/kg	3.6	1	11/04/16 09:29	11/04/16 11:22	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	3.6	1	11/04/16 09:29	11/04/16 11:22	98-82-8	1c
Methyl-tert-butyl ether	7.2	ug/kg	3.6	1	11/04/16 09:29	11/04/16 11:22	1634-04-4	1c
Naphthalene	ND	ug/kg	3.6	1	11/04/16 09:29	11/04/16 11:22	91-20-3	1c
Toluene	ND	ug/kg	3.6	1	11/04/16 09:29	11/04/16 11:22	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	3.6	1	11/04/16 09:29	11/04/16 11:22	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	3.6	1	11/04/16 09:29	11/04/16 11:22	108-67-8	1c
Xylene (Total)	ND	ug/kg	10.9	1	11/04/16 09:29	11/04/16 11:22	1330-20-7	
Surrogates								
Toluene-d8 (S)	105	%	68-135	1	11/04/16 09:29	11/04/16 11:22	2037-26-5	
4-Bromofluorobenzene (S)	107	%	65-146	1	11/04/16 09:29	11/04/16 11:22	460-00-4	
1,2-Dichloroethane-d4 (S)	111	%	69-137	1	11/04/16 09:29	11/04/16 11:22	17060-07-0	
Dibromofluoromethane (S)	100	%	70-130	1	11/04/16 09:29	11/04/16 11:22	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	9.0	%	0.10	1	11/14/16 14:23
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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO: Seneca
Pace Project No.: 30201304

QC Batch: 239206 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035A Analysis Description: 8260B MSV UST-SOIL
Associated Lab Samples: 30201304001, 30201304002

METHOD BLANK: 1175453 Matrix: Solid
Associated Lab Samples: 30201304001, 30201304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	11/04/16 09:08	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	11/04/16 09:08	
Benzene	ug/kg	ND	5.0	11/04/16 09:08	
Ethylbenzene	ug/kg	ND	5.0	11/04/16 09:08	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	11/04/16 09:08	
Methyl-tert-butyl ether	ug/kg	ND	5.0	11/04/16 09:08	
Naphthalene	ug/kg	ND	5.0	11/04/16 09:08	
Toluene	ug/kg	ND	5.0	11/04/16 09:08	
Xylene (Total)	ug/kg	ND	15.0	11/04/16 09:08	
1,2-Dichloroethane-d4 (S)	%	98	69-137	11/04/16 09:08	
4-Bromofluorobenzene (S)	%	97	65-146	11/04/16 09:08	
Dibromofluoromethane (S)	%	94	70-130	11/04/16 09:08	
Toluene-d8 (S)	%	102	68-135	11/04/16 09:08	

LABORATORY CONTROL SAMPLE: 1175454

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	19.0	95	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	17.5	88	74-129	
Benzene	ug/kg	20	18.3	92	71-137	
Ethylbenzene	ug/kg	20	18.5	92	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	17.7	89	78-133	
Methyl-tert-butyl ether	ug/kg	20	18.7	94	77-141	
Naphthalene	ug/kg	20	16.9	85	81-126	
Toluene	ug/kg	20	17.6	88	72-127	
Xylene (Total)	ug/kg	60	50.7	84	80-124	
1,2-Dichloroethane-d4 (S)	%			103	69-137	
4-Bromofluorobenzene (S)	%			98	65-146	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			103	68-135	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO: Seneca

Pace Project No.: 30201304

QC Batch: 240179

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 30201304001, 30201304002

SAMPLE DUPLICATE: 1180712

Parameter	Units	30199828001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	11.1	9.5	16	

SAMPLE DUPLICATE: 1180713

Parameter	Units	30201526001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	1.5	1.5	0	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: HO: Seneca
Pace Project No.: 30201304

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

BATCH QUALIFIERS

Batch: 239206

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1c A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HO: Seneca

Pace Project No.: 30201304

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30201304001	MW-8/SS-5/10-12'	EPA 5035A	239206	EPA 8260B	239490
30201304002	MW-8/SS-7/14-16'	EPA 5035A	239206	EPA 8260B	239490
30201304001	MW-8/SS-5/10-12'	ASTM D2974-87	240179		
30201304002	MW-8/SS-7/14-16'	ASTM D2974-87	240179		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Pittsburgh



Client Name: Cribbs

Project # 30201304

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used 6 Type of Ice: Wei Blue None

Cooler Temperature Observed Temp 1.8 °C Correction Factor: -0.2 °C Final Temp: 1.6 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: QNR 11-2-16

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:	X			4.
Sample Labels match COC:	X			5.
-Includes date/time/ID/Analysis Matrix: <u>SL</u>				
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked.			X	13.
All containers needing preservation are found to be in compliance with EPA recommendation.			X	
exceptions: VOA, coliform, TOC, O&G, Phenolics				
				Initial when completed <u>QNR</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	14.
Trip Blank Present:		X		15.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr			X	Initial when completed: Date:

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

December 02, 2016

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

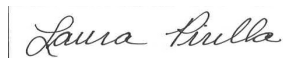
RE: Project: H.O. Seneca Soil Samples
Pace Project No.: 30202686

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on November 16, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: H.O. Seneca Soil Samples

Pace Project No.: 30202686

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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SAMPLE ANALYTE COUNT

Project: H.O. Seneca Soil Samples

Pace Project No.: 30202686

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30202686001	MW-6 4'-6'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30202686002	MW-6 8'-10'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30202686003	MW-10 6'-8'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30202686004	MW-10 8'-10'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30202686005	MW-11 4'-6'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30202686006	MW-11 6'-8'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: H.O. Seneca Soil Samples
Pace Project No.: 30202686

Method: EPA 8260B
Description: 8260B MSV
Client: Cribbs and Associates
Date: December 02, 2016

General Information:

6 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 5035A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 241302

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: 241457

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

Analyte Comments:

QC Batch: 241302

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- MW-10 6'-8' (Lab ID: 30202686003)
- 1,2,4-Trimethylbenzene

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: H.O. Seneca Soil Samples

Pace Project No.: 30202686

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: December 02, 2016

Analyte Comments:

QC Batch: 241302

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- MW-10 6'-8' (Lab ID: 30202686003)
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- MW-11 4'-6' (Lab ID: 30202686005)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- MW-11 6'-8' (Lab ID: 30202686006)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- MW-6 4'-6' (Lab ID: 30202686001)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- MW-6 8'-10' (Lab ID: 30202686002)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: H.O. Seneca Soil Samples

Pace Project No.: 30202686

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: December 02, 2016

Analyte Comments:

QC Batch: 241302

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- MW-6 8'-10' (Lab ID: 30202686002)
- Toluene

QC Batch: 241457

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- MW-10 8'-10' (Lab ID: 30202686004)
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- Benzene
- Ethylbenzene
- Isopropylbenzene (Cumene)
- Methyl-tert-butyl ether
- Naphthalene
- Toluene

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca Soil Samples
Pace Project No.: 30202686

Sample: MW-6 4'-6' **Lab ID:** 30202686001 **Collected:** 11/15/16 12:40 **Received:** 11/16/16 08:11 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 12:27	71-43-2	1c
Ethylbenzene	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 12:27	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 12:27	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 12:27	1634-04-4	1c
Naphthalene	5.5	ug/kg	5.4	1	11/23/16 11:58	11/23/16 12:27	91-20-3	1c
Toluene	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 12:27	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 12:27	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 12:27	108-67-8	1c
Xylene (Total)	ND	ug/kg	16.1	1	11/23/16 11:58	11/23/16 12:27	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%	68-135	1	11/23/16 11:58	11/23/16 12:27	2037-26-5	
4-Bromofluorobenzene (S)	96	%	65-146	1	11/23/16 11:58	11/23/16 12:27	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	69-137	1	11/23/16 11:58	11/23/16 12:27	17060-07-0	
Dibromofluoromethane (S)	95	%	70-130	1	11/23/16 11:58	11/23/16 12:27	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	20.0	%	0.10	1	11/30/16 16:35
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Sample: MW-6 8'-10' **Lab ID:** 30202686002 **Collected:** 11/15/16 12:50 **Received:** 11/16/16 08:11 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	4.4	1	11/23/16 11:58	11/23/16 12:49	71-43-2	1c
Ethylbenzene	ND	ug/kg	4.4	1	11/23/16 11:58	11/23/16 12:49	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	4.4	1	11/23/16 11:58	11/23/16 12:49	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	4.4	1	11/23/16 11:58	11/23/16 12:49	1634-04-4	1c
Naphthalene	ND	ug/kg	4.4	1	11/23/16 11:58	11/23/16 12:49	91-20-3	1c
Toluene	ND	ug/kg	4.4	1	11/23/16 11:58	11/23/16 12:49	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	4.4	1	11/23/16 11:58	11/23/16 12:49	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	4.4	1	11/23/16 11:58	11/23/16 12:49	108-67-8	1c
Xylene (Total)	ND	ug/kg	13.3	1	11/23/16 11:58	11/23/16 12:49	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%	68-135	1	11/23/16 11:58	11/23/16 12:49	2037-26-5	
4-Bromofluorobenzene (S)	93	%	65-146	1	11/23/16 11:58	11/23/16 12:49	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	69-137	1	11/23/16 11:58	11/23/16 12:49	17060-07-0	
Dibromofluoromethane (S)	96	%	70-130	1	11/23/16 11:58	11/23/16 12:49	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	10.5	%	0.10	1	11/30/16 16:36
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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca Soil Samples

Pace Project No.: 30202686

Sample: MW-10 6'-8' **Lab ID:** 30202686003 **Collected:** 11/15/16 11:50 **Received:** 11/16/16 08:11 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	4.8	1	11/23/16 11:58	11/23/16 13:11	71-43-2	1c
Ethylbenzene	ND	ug/kg	4.8	1	11/23/16 11:58	11/23/16 13:11	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	4.8	1	11/23/16 11:58	11/23/16 13:11	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	4.8	1	11/23/16 11:58	11/23/16 13:11	1634-04-4	1c
Naphthalene	ND	ug/kg	4.8	1	11/23/16 11:58	11/23/16 13:11	91-20-3	1c
Toluene	ND	ug/kg	4.8	1	11/23/16 11:58	11/23/16 13:11	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	4.8	1	11/23/16 11:58	11/23/16 13:11	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	4.8	1	11/23/16 11:58	11/23/16 13:11	108-67-8	1c
Xylene (Total)	ND	ug/kg	14.3	1	11/23/16 11:58	11/23/16 13:11	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%	68-135	1	11/23/16 11:58	11/23/16 13:11	2037-26-5	
4-Bromofluorobenzene (S)	97	%	65-146	1	11/23/16 11:58	11/23/16 13:11	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	69-137	1	11/23/16 11:58	11/23/16 13:11	17060-07-0	
Dibromofluoromethane (S)	96	%	70-130	1	11/23/16 11:58	11/23/16 13:11	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	14.0	%	0.10	1	11/30/16 16:36
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Sample: MW-10 8'-10' **Lab ID:** 30202686004 **Collected:** 11/15/16 12:00 **Received:** 11/16/16 08:11 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	230	50	11/28/16 12:00	11/28/16 16:40	71-43-2	1c
Ethylbenzene	ND	ug/kg	230	50	11/28/16 12:00	11/28/16 16:40	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	230	50	11/28/16 12:00	11/28/16 16:40	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	230	50	11/28/16 12:00	11/28/16 16:40	1634-04-4	1c
Naphthalene	ND	ug/kg	230	50	11/28/16 12:00	11/28/16 16:40	91-20-3	1c
Toluene	ND	ug/kg	230	50	11/28/16 12:00	11/28/16 16:40	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	230	50	11/28/16 12:00	11/28/16 16:40	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	230	50	11/28/16 12:00	11/28/16 16:40	108-67-8	1c
Xylene (Total)	ND	ug/kg	691	50	11/28/16 12:00	11/28/16 16:40	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	68-135	50	11/28/16 12:00	11/28/16 16:40	2037-26-5	
4-Bromofluorobenzene (S)	97	%	65-146	50	11/28/16 12:00	11/28/16 16:40	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	69-137	50	11/28/16 12:00	11/28/16 16:40	17060-07-0	
Dibromofluoromethane (S)	93	%	70-130	50	11/28/16 12:00	11/28/16 16:40	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	11.0	%	0.10	1	11/30/16 16:36
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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca Soil Samples

Pace Project No.: 30202686

Sample: MW-11 4'-6' **Lab ID:** 30202686005 **Collected:** 11/15/16 10:20 **Received:** 11/16/16 08:11 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 13:55	71-43-2	1c
Ethylbenzene	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 13:55	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 13:55	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 13:55	1634-04-4	1c
Naphthalene	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 13:55	91-20-3	1c
Toluene	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 13:55	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 13:55	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	5.4	1	11/23/16 11:58	11/23/16 13:55	108-67-8	1c
Xylene (Total)	ND	ug/kg	16.3	1	11/23/16 11:58	11/23/16 13:55	1330-20-7	
Surrogates								
Toluene-d8 (S)	98	%	68-135	1	11/23/16 11:58	11/23/16 13:55	2037-26-5	
4-Bromofluorobenzene (S)	95	%	65-146	1	11/23/16 11:58	11/23/16 13:55	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	69-137	1	11/23/16 11:58	11/23/16 13:55	17060-07-0	
Dibromofluoromethane (S)	98	%	70-130	1	11/23/16 11:58	11/23/16 13:55	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	20.1	%	0.10	1	11/30/16 16:36
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Sample: MW-11 6'-8' **Lab ID:** 30202686006 **Collected:** 11/15/16 10:30 **Received:** 11/16/16 08:11 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	4.3	1	11/23/16 11:58	11/23/16 14:17	71-43-2	1c
Ethylbenzene	ND	ug/kg	4.3	1	11/23/16 11:58	11/23/16 14:17	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	4.3	1	11/23/16 11:58	11/23/16 14:17	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	4.3	1	11/23/16 11:58	11/23/16 14:17	1634-04-4	1c
Naphthalene	ND	ug/kg	4.3	1	11/23/16 11:58	11/23/16 14:17	91-20-3	1c
Toluene	ND	ug/kg	4.3	1	11/23/16 11:58	11/23/16 14:17	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	4.3	1	11/23/16 11:58	11/23/16 14:17	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	4.3	1	11/23/16 11:58	11/23/16 14:17	108-67-8	1c
Xylene (Total)	ND	ug/kg	12.8	1	11/23/16 11:58	11/23/16 14:17	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	68-135	1	11/23/16 11:58	11/23/16 14:17	2037-26-5	
4-Bromofluorobenzene (S)	93	%	65-146	1	11/23/16 11:58	11/23/16 14:17	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	69-137	1	11/23/16 11:58	11/23/16 14:17	17060-07-0	
Dibromofluoromethane (S)	95	%	70-130	1	11/23/16 11:58	11/23/16 14:17	1868-53-7	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	17.4	%	0.10	1	11/30/16 16:36
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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. Seneca Soil Samples

Pace Project No.: 30202686

QC Batch: 241302 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035A Analysis Description: 8260B MSV UST-SOIL
Associated Lab Samples: 30202686001, 30202686002, 30202686003, 30202686005, 30202686006

METHOD BLANK: 1186268 Matrix: Solid
Associated Lab Samples: 30202686001, 30202686002, 30202686003, 30202686005, 30202686006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	11/23/16 11:03	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	11/23/16 11:03	
Benzene	ug/kg	ND	5.0	11/23/16 11:03	
Ethylbenzene	ug/kg	ND	5.0	11/23/16 11:03	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	11/23/16 11:03	
Methyl-tert-butyl ether	ug/kg	ND	5.0	11/23/16 11:03	
Naphthalene	ug/kg	ND	5.0	11/23/16 11:03	
Toluene	ug/kg	ND	5.0	11/23/16 11:03	
Xylene (Total)	ug/kg	ND	15.0	11/23/16 11:03	
1,2-Dichloroethane-d4 (S)	%	100	69-137	11/23/16 11:03	
4-Bromofluorobenzene (S)	%	94	65-146	11/23/16 11:03	
Dibromofluoromethane (S)	%	95	70-130	11/23/16 11:03	
Toluene-d8 (S)	%	103	68-135	11/23/16 11:03	

LABORATORY CONTROL SAMPLE: 1186269

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	21.5	108	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	19.7	98	74-129	
Benzene	ug/kg	20	20.3	102	71-137	
Ethylbenzene	ug/kg	20	19.8	99	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	19.7	99	78-133	
Methyl-tert-butyl ether	ug/kg	20	20.0	100	77-141	
Naphthalene	ug/kg	20	18.3	91	81-126	
Toluene	ug/kg	20	19.8	99	72-127	
Xylene (Total)	ug/kg	60	55.6	93	80-124	
1,2-Dichloroethane-d4 (S)	%			96	69-137	
4-Bromofluorobenzene (S)	%			99	65-146	
Dibromofluoromethane (S)	%			95	70-130	
Toluene-d8 (S)	%			102	68-135	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. Seneca Soil Samples
Pace Project No.: 30202686

QC Batch:	241457	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 5035A	Analysis Description:	8260B MSV UST-SOIL
Associated Lab Samples:	30202686004		

METHOD BLANK: 1187084 Matrix: Solid
Associated Lab Samples: 30202686004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	250	11/28/16 09:42	
1,3,5-Trimethylbenzene	ug/kg	ND	250	11/28/16 09:42	
Benzene	ug/kg	ND	250	11/28/16 09:42	
Ethylbenzene	ug/kg	ND	250	11/28/16 09:42	
Isopropylbenzene (Cumene)	ug/kg	ND	250	11/28/16 09:42	
Methyl-tert-butyl ether	ug/kg	ND	250	11/28/16 09:42	
Naphthalene	ug/kg	ND	250	11/28/16 09:42	
Toluene	ug/kg	ND	250	11/28/16 09:42	
Xylene (Total)	ug/kg	ND	750	11/28/16 09:42	
1,2-Dichloroethane-d4 (S)	%	96	69-137	11/28/16 09:42	
4-Bromofluorobenzene (S)	%	96	65-146	11/28/16 09:42	
Dibromofluoromethane (S)	%	96	70-130	11/28/16 09:42	
Toluene-d8 (S)	%	101	68-135	11/28/16 09:42	

LABORATORY CONTROL SAMPLE: 1187085

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	21.4	107	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	19.9	100	74-129	
Benzene	ug/kg	20	20.4	102	71-137	
Ethylbenzene	ug/kg	20	20.3	102	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	19.5	98	78-133	
Methyl-tert-butyl ether	ug/kg	20	20.0	100	77-141	
Naphthalene	ug/kg	20	17.1	85	81-126	
Toluene	ug/kg	20	19.6	98	72-127	
Xylene (Total)	ug/kg	60	54.9	91	80-124	
1,2-Dichloroethane-d4 (S)	%			99	69-137	
4-Bromofluorobenzene (S)	%			97	65-146	
Dibromofluoromethane (S)	%			100	70-130	
Toluene-d8 (S)	%			102	68-135	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. Seneca Soil Samples

Pace Project No.: 30202686

QC Batch:	241827	Analysis Method:	ASTM D2974-87
QC Batch Method:	ASTM D2974-87	Analysis Description:	Dry Weight/Percent Moisture
Associated Lab Samples:	30202686001, 30202686002, 30202686003, 30202686004, 30202686005, 30202686006		

SAMPLE DUPLICATE: 1188537

Parameter	Units	30202686001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	20.0	23.4	15	

SAMPLE DUPLICATE: 1188538

Parameter	Units	30202686002 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	10.5	11.0	5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: H.O. Seneca Soil Samples
Pace Project No.: 30202686

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

BATCH QUALIFIERS

Batch: 241302

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: 241457

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1c A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: H.O. Seneca Soil Samples

Pace Project No.: 30202686

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30202686001	MW-6 4'-6'	EPA 5035A	241302	EPA 8260B	241405
30202686002	MW-6 8'-10'	EPA 5035A	241302	EPA 8260B	241405
30202686003	MW-10 6'-8'	EPA 5035A	241302	EPA 8260B	241405
30202686004	MW-10 8'-10'	EPA 5035A	241457	EPA 8260B	241461
30202686005	MW-11 4'-6'	EPA 5035A	241302	EPA 8260B	241405
30202686006	MW-11 6'-8'	EPA 5035A	241302	EPA 8260B	241405
30202686001	MW-6 4'-6'	ASTM D2974-87	241827		
30202686002	MW-6 8'-10'	ASTM D2974-87	241827		
30202686003	MW-10 6'-8'	ASTM D2974-87	241827		
30202686004	MW-10 8'-10'	ASTM D2974-87	241827		
30202686005	MW-11 4'-6'	ASTM D2974-87	241827		
30202686006	MW-11 6'-8'	ASTM D2974-87	241827		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Pittsburgh

30202686

Client Name: Cribbs Project # _____Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noThermometer Used 6 Type of Ice: ☒ Wet ☐ Blue ☐ NoneCooler Temperature Observed Temp 4.6 °C Correction Factor: 0.2 °C Final Temp: 4.4 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 09/18/11-16-16

Comments:

	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
-Includes date/time/ID/Analysis Matrix: <u>SL</u>				
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
-Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Filtered volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.
All containers needing preservation have been checked.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed <u>09/18</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.
Trip Blank Present:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	15.
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Rad Aqueous Samples Screened > 0.5 mrem/hr	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Initial when completed: _____ Date: _____

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

February 02, 2017

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

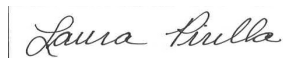
RE: Project: HO: Seneca
Pace Project No.: 30208942

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on January 25, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: HO: Seneca

Pace Project No.: 30208942

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: HO: Seneca

Pace Project No.: 30208942

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30208942001	MW-12 4-6'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30208942002	MW-13 1-2'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA
30208942003	MW-14 1-2'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	TAW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: HO: Seneca
Pace Project No.: 30208942

Method: EPA 8260B
Description: 8260B MSV
Client: Cribbs and Associates
Date: February 02, 2017

General Information:

3 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 5035A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 247829

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

Analyte Comments:

QC Batch: 247829

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- MW-12 4-6" (Lab ID: 30208942001)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: HO: Seneca

Pace Project No.: 30208942

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: February 02, 2017

Analyte Comments:

QC Batch: 247829

1c: A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

- MW-12 4-6' (Lab ID: 30208942001)
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- MW-13 1-2' (Lab ID: 30208942002)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene
- MW-14 1-2' (Lab ID: 30208942003)
 - 1,2,4-Trimethylbenzene
 - 1,3,5-Trimethylbenzene
 - Benzene
 - Ethylbenzene
 - Isopropylbenzene (Cumene)
 - Methyl-tert-butyl ether
 - Naphthalene
 - Toluene

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HO: Seneca
Pace Project No.: 30208942

Sample: MW-12 4-6' **Lab ID:** 30208942001 **Collected:** 01/24/17 11:00 **Received:** 01/25/17 17:00 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	5.9	1	01/30/17 13:11	01/30/17 18:27	71-43-2	1c
Ethylbenzene	ND	ug/kg	5.9	1	01/30/17 13:11	01/30/17 18:27	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	5.9	1	01/30/17 13:11	01/30/17 18:27	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	5.9	1	01/30/17 13:11	01/30/17 18:27	1634-04-4	1c
Naphthalene	ND	ug/kg	5.9	1	01/30/17 13:11	01/30/17 18:27	91-20-3	1c
Toluene	ND	ug/kg	5.9	1	01/30/17 13:11	01/30/17 18:27	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	5.9	1	01/30/17 13:11	01/30/17 18:27	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	5.9	1	01/30/17 13:11	01/30/17 18:27	108-67-8	1c
Xylene (Total)	ND	ug/kg	17.6	1	01/30/17 13:11	01/30/17 18:27	1330-20-7	
Surrogates								
Toluene-d8 (S)	96	%	68-135	1	01/30/17 13:11	01/30/17 18:27	2037-26-5	
4-Bromofluorobenzene (S)	102	%	65-146	1	01/30/17 13:11	01/30/17 18:27	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	69-137	1	01/30/17 13:11	01/30/17 18:27	17060-07-0	
Dibromofluoromethane (S)	102	%	70-130	1	01/30/17 13:11	01/30/17 18:27	1868-53-7	
Percent Moisture Analytical Method: ASTM D2974-87								
Percent Moisture	25.0	%	0.10	1		02/01/17 15:31		

Sample: MW-13 1-2' **Lab ID:** 30208942002 **Collected:** 01/25/17 15:00 **Received:** 01/25/17 17:00 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	5.7	1	01/30/17 13:11	01/30/17 18:53	71-43-2	1c
Ethylbenzene	ND	ug/kg	5.7	1	01/30/17 13:11	01/30/17 18:53	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	5.7	1	01/30/17 13:11	01/30/17 18:53	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	5.7	1	01/30/17 13:11	01/30/17 18:53	1634-04-4	1c
Naphthalene	ND	ug/kg	5.7	1	01/30/17 13:11	01/30/17 18:53	91-20-3	1c
Toluene	ND	ug/kg	5.7	1	01/30/17 13:11	01/30/17 18:53	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	5.7	1	01/30/17 13:11	01/30/17 18:53	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	5.7	1	01/30/17 13:11	01/30/17 18:53	108-67-8	1c
Xylene (Total)	ND	ug/kg	17.1	1	01/30/17 13:11	01/30/17 18:53	1330-20-7	
Surrogates								
Toluene-d8 (S)	97	%	68-135	1	01/30/17 13:11	01/30/17 18:53	2037-26-5	
4-Bromofluorobenzene (S)	102	%	65-146	1	01/30/17 13:11	01/30/17 18:53	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	69-137	1	01/30/17 13:11	01/30/17 18:53	17060-07-0	
Dibromofluoromethane (S)	100	%	70-130	1	01/30/17 13:11	01/30/17 18:53	1868-53-7	
Percent Moisture Analytical Method: ASTM D2974-87								
Percent Moisture	16.7	%	0.10	1		02/01/17 15:31		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HO: Seneca

Pace Project No.: 30208942

Sample: MW-14 1-2' **Lab ID:** 30208942003 **Collected:** 01/25/17 10:40 **Received:** 01/25/17 17:00 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV								
Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	10.7	1	01/30/17 13:11	01/30/17 19:18	71-43-2	1c
Ethylbenzene	ND	ug/kg	10.7	1	01/30/17 13:11	01/30/17 19:18	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	10.7	1	01/30/17 13:11	01/30/17 19:18	98-82-8	1c
Methyl-tert-butyl ether	ND	ug/kg	10.7	1	01/30/17 13:11	01/30/17 19:18	1634-04-4	1c
Naphthalene	ND	ug/kg	10.7	1	01/30/17 13:11	01/30/17 19:18	91-20-3	1c
Toluene	ND	ug/kg	10.7	1	01/30/17 13:11	01/30/17 19:18	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	10.7	1	01/30/17 13:11	01/30/17 19:18	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	10.7	1	01/30/17 13:11	01/30/17 19:18	108-67-8	1c
Xylene (Total)	ND	ug/kg	32.1	1	01/30/17 13:11	01/30/17 19:18	1330-20-7	
Surrogates								
Toluene-d8 (S)	96	%	68-135	1	01/30/17 13:11	01/30/17 19:18	2037-26-5	
4-Bromofluorobenzene (S)	102	%	65-146	1	01/30/17 13:11	01/30/17 19:18	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	69-137	1	01/30/17 13:11	01/30/17 19:18	17060-07-0	
Dibromofluoromethane (S)	100	%	70-130	1	01/30/17 13:11	01/30/17 19:18	1868-53-7	
Percent Moisture								
Analytical Method: ASTM D2974-87								
Percent Moisture	31.8	%	0.10	1		02/01/17 15:31		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO: Seneca
Pace Project No.: 30208942

QC Batch: 247829 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035A Analysis Description: 8260B MSV UST-SOIL
Associated Lab Samples: 30208942001, 30208942002, 30208942003

METHOD BLANK: 1219116 Matrix: Solid
Associated Lab Samples: 30208942001, 30208942002, 30208942003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	01/30/17 12:53	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	01/30/17 12:53	
Benzene	ug/kg	ND	5.0	01/30/17 12:53	
Ethylbenzene	ug/kg	ND	5.0	01/30/17 12:53	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	01/30/17 12:53	
Methyl-tert-butyl ether	ug/kg	ND	5.0	01/30/17 12:53	
Naphthalene	ug/kg	ND	5.0	01/30/17 12:53	
Toluene	ug/kg	ND	5.0	01/30/17 12:53	
Xylene (Total)	ug/kg	ND	15.0	01/30/17 12:53	
1,2-Dichloroethane-d4 (S)	%	98	69-137	01/30/17 12:53	
4-Bromofluorobenzene (S)	%	102	65-146	01/30/17 12:53	
Dibromofluoromethane (S)	%	98	70-130	01/30/17 12:53	
Toluene-d8 (S)	%	97	68-135	01/30/17 12:53	

LABORATORY CONTROL SAMPLE: 1219117

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	18.3	92	79-125	
1,3,5-Trimethylbenzene	ug/kg	20	18.1	91	74-129	
Benzene	ug/kg	20	18.4	92	71-137	
Ethylbenzene	ug/kg	20	18.1	90	78-126	
Isopropylbenzene (Cumene)	ug/kg	20	18.8	94	78-133	
Methyl-tert-butyl ether	ug/kg	20	17.3	86	77-141	
Naphthalene	ug/kg	20	19.5	97	81-126	
Toluene	ug/kg	20	18.6	93	72-127	
Xylene (Total)	ug/kg	60	54.5	91	80-124	
1,2-Dichloroethane-d4 (S)	%			103	69-137	
4-Bromofluorobenzene (S)	%			99	65-146	
Dibromofluoromethane (S)	%			108	70-130	
Toluene-d8 (S)	%			98	68-135	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO: Seneca

Pace Project No.: 30208942

QC Batch: 248087 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 30208942001, 30208942002, 30208942003

SAMPLE DUPLICATE: 1220158

Parameter	Units	60236687001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	57.6	57.5	0	

SAMPLE DUPLICATE: 1220159

Parameter	Units	60236687002 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	54.1	58.8	8	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: HO: Seneca
Pace Project No.: 30208942

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

BATCH QUALIFIERS

Batch: 247829

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1c A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HO: Seneca

Pace Project No.: 30208942

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30208942001	MW-12 4-6'	EPA 5035A	247829	EPA 8260B	247858
30208942002	MW-13 1-2'	EPA 5035A	247829	EPA 8260B	247858
30208942003	MW-14 1-2'	EPA 5035A	247829	EPA 8260B	247858
30208942001	MW-12 4-6'	ASTM D2974-87	248087		
30208942002	MW-13 1-2'	ASTM D2974-87	248087		
30208942003	MW-14 1-2'	ASTM D2974-87	248087		

REPORT OF LABORATORY ANALYSIS

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Section A

Required Client Information:

Company: Cribbs and Associates Inc
Address: PO Box 44
City: Delmar DE 19828
State: DE
Phone: 302-454-2318
Fax: 302-454-2318
Requested Due Date/TAT: Standard

Section B

Required Project Information:

Report To: Gary Cribbs
Copy To: Gary Cribbs
Purchase Order No.:
Project Name: HO: Sewer
Project Number:

Invoice Information:

Attention: Gary Cribbs
Company Name: Cribbs & Associates Inc
Address: PO Box 44 Delmar DE 19828
Pace Quote Reference:
Pace Project Manager: Gary Cribbs
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER

Site Location
STATE: DE

Page: 1 of 1
2061149

ITEM #	Section D Required Client Information		Matrix Codes MATRIX / CODE Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Tissue TS Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Y/N	Requested Analysis Filtered (Y/N)												Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
	SAMPLE ID (A-Z, 0-9 / .-) Sample IDs MUST BE UNIQUE					COMPOSITE START	COMPOSITE END/GRAB	DATE	TIME			DATE	TIME	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃		Methanol	Other												
1	Mw-12	4-6'		SL							4	1																					001	
2	Mw-13	1-2'		SL							4	1																					002	
3	Mw-14	1-2'		SL							4	1																					003	
4																																		
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ADDITIONAL COMMENTS				RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION		DATE		TIME		SAMPLE CONDITIONS																		
Analyze all samples for lead, thiamine, copper, & arsenic				Paul Thomas Cripps/K&S		1/25/17		1640		Cripps/K&S		1/25/17		1640		175/17 1640																		
PADEP new shortlist				Cripps/K&S		1/25/17		1200		K&S/PADEP		1/25/17		1700		175/17 1700 5.8																		
for unleaded gasoline																4																		
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ADDITIONAL COMMENTS
Analyze all samples for lead, trace metals, and PCBs. PAFED new short list for unleaded gasoline.

RELINQUISHED BY / AFFILIATION
Jared Thorne Cribbs
1/25/17 1640

DATE
1/25/17 1700

ACCEPTED BY / AFFILIATION
Jared Thorne Cribbs
1/25/17 1700

DATE
1/25/17 1700

TIME
1700

SAMPLE CONDITIONS
Temp in °C: 5.8
Received on Ice (Y/N): Y
Custody Sealed Cooler (Y/N): N
Samples Intact (Y/N): Y

Sample Condition Upon Receipt Pittsburgh

30208942



Client Name: Cribbs & Assoc. Project # 30208942

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used 7 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 5.9 °C Correction Factor: -0.1 °C Final Temp: 5.8 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: KH 1-25-17

Comments:

	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.
Sample Labels match COC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
-Includes date/time/ID: _____ Matrix: <u>SL</u>				
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
-Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Orthophosphate field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.
Organic Samples checked for dechlorination:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.
Filtered volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.
All containers have been checked for preservation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
exceptions: <u>VOA</u> coliform, TOC, O&G, Phenolics				
				Initial when completed: <u>KH</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	16.
Trip Blank Present:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Rad Aqueous Samples Screened > 0.5 mrem/hr	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Initial when completed: <u>KH</u> Date: <u>1-25-17</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Site Characterization Report

Seneca Mini Mart

Seneca, Pennsylvania

APPENDIX F

Laboratory Analytical Results – Groundwater

July 26, 2016

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

RE: Project: H.O. Seneca Initial Sample
Pace Project No.: 30189495

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on July 13, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: H.O. Seneca Initial Sample

Pace Project No.: 30189495

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: H.O. Seneca Initial Sample

Pace Project No.: 30189495

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30189495001	MW-1	EPA 8260B	JAS	13	PASI-PA
30189495002	MW-2	EPA 8260B	JAS	13	PASI-PA
30189495003	MW-3	EPA 8260B	JAS	13	PASI-PA
30189495004	MW-4	EPA 8260B	JAS	13	PASI-PA
30189495005	MW-5	EPA 8260B	JAS	13	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: H.O. Seneca Initial Sample

Pace Project No.: 30189495

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: July 26, 2016

General Information:

5 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 226642

S2: Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

- MW-2 (Lab ID: 30189495002)
 - 1,2-Dichloroethane-d4 (S)
 - Dibromofluoromethane (S)
- MW-3 (Lab ID: 30189495003)
 - 1,2-Dichloroethane-d4 (S)
 - Dibromofluoromethane (S)
 - Toluene-d8 (S)
- MW-4 (Lab ID: 30189495004)
 - 1,2-Dichloroethane-d4 (S)
- MW-5 (Lab ID: 30189495005)
 - 1,2-Dichloroethane-d4 (S)
 - Dibromofluoromethane (S)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: H.O. Seneca Initial Sample

Pace Project No.: 30189495

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: July 26, 2016

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca Initial Sample
Pace Project No.: 30189495

Sample: MW-1		Lab ID: 30189495001		Collected: 07/12/16 12:20		Received: 07/13/16 09:25		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Benzene		63.2	ug/L	5.0	1		07/19/16 06:47	71-43-2	
Ethylbenzene		321	ug/L	50.0	10		07/19/16 18:30	100-41-4	
Isopropylbenzene (Cumene)		17.5	ug/L	5.0	1		07/19/16 06:47	98-82-8	
Methyl-tert-butyl ether		ND	ug/L	5.0	1		07/19/16 06:47	1634-04-4	
Naphthalene		94.3	ug/L	5.0	1		07/19/16 06:47	91-20-3	
Toluene		ND	ug/L	5.0	1		07/19/16 06:47	108-88-3	
1,2,4-Trimethylbenzene		301	ug/L	50.0	10		07/19/16 18:30	95-63-6	
1,3,5-Trimethylbenzene		81.5	ug/L	5.0	1		07/19/16 06:47	108-67-8	
Xylene (Total)		694	ug/L	50.0	10		07/19/16 18:30	1330-20-7	
Surrogates									
Toluene-d8 (S)		100	%	84-115	1		07/19/16 06:47	2037-26-5	
4-Bromofluorobenzene (S)		87	%	81-119	1		07/19/16 06:47	460-00-4	
1,2-Dichloroethane-d4 (S)		104	%	77-126	1		07/19/16 06:47	17060-07-0	
Dibromofluoromethane (S)		97	%	70-130	1		07/19/16 06:47	1868-53-7	

Sample: MW-2		Lab ID: 30189495002		Collected: 07/12/16 10:30		Received: 07/13/16 09:25		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B MSV		Analytical Method: EPA 8260B							
Benzene	664	ug/L	100	20		07/19/16 18:55	71-43-2		
Ethylbenzene	509	ug/L	100	20		07/19/16 18:55	100-41-4		
Isopropylbenzene (Cumene)	39.5	ug/L	5.0	1		07/19/16 07:15	98-82-8		
Methyl-tert-butyl ether	12.3	ug/L	5.0	1		07/19/16 07:15	1634-04-4		
Naphthalene	170	ug/L	5.0	1		07/19/16 07:15	91-20-3		
Toluene	106	ug/L	5.0	1		07/19/16 07:15	108-88-3		
1,2,4-Trimethylbenzene	1100	ug/L	20.0	20		07/19/16 18:55	95-63-6		
1,3,5-Trimethylbenzene	328	ug/L	20.0	20		07/19/16 18:55	108-67-8		
Xylene (Total)	2210	ug/L	100	20		07/19/16 18:55	1330-20-7		
Surrogates									
Toluene-d8 (S)	93	%	84-115	1		07/19/16 07:15	2037-26-5		
4-Bromofluorobenzene (S)	93	%	81-119	1		07/19/16 07:15	460-00-4		
1,2-Dichloroethane-d4 (S)	63	%	77-126	1		07/19/16 07:15	17060-07-0	S2	
Dibromofluoromethane (S)	142	%	70-130	1		07/19/16 07:15	1868-53-7	S2	

Sample: MW-3		Lab ID: 30189495003		Collected: 07/12/16 11:45		Received: 07/13/16 09:25		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Benzene		15000	ug/L	500	100		07/19/16 19:20	71-43-2	
Ethylbenzene		3070	ug/L	500	100		07/19/16 19:20	100-41-4	
Isopropylbenzene (Cumene)		85.0	ug/L	5.0	1		07/19/16 07:43	98-82-8	
Methyl-tert-butyl ether		41.7	ug/L	5.0	1		07/19/16 07:43	1634-04-4	
Naphthalene		ND	ug/L	500	100		07/19/16 19:20	91-20-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca Initial Sample
Pace Project No.: 30189495

Sample: MW-3		Lab ID: 30189495003		Collected: 07/12/16 11:45		Received: 07/13/16 09:25		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Toluene		10500	ug/L	500	100		07/19/16 19:20	108-88-3	
1,2,4-Trimethylbenzene		2320	ug/L	100	100		07/19/16 19:20	95-63-6	
1,3,5-Trimethylbenzene		595	ug/L	100	100		07/19/16 19:20	108-67-8	
Xylene (Total)		15600	ug/L	500	100		07/19/16 19:20	1330-20-7	
Surrogates									
Toluene-d8 (S)		28	%	84-115	1		07/19/16 07:43	2037-26-5	S2
4-Bromofluorobenzene (S)		95	%	81-119	1		07/19/16 07:43	460-00-4	
1,2-Dichloroethane-d4 (S)		62	%	77-126	1		07/19/16 07:43	17060-07-0	S2
Dibromofluoromethane (S)		140	%	70-130	1		07/19/16 07:43	1868-53-7	S2

Sample: MW-4		Lab ID: 30189495004		Collected: 07/12/16 11:10		Received: 07/13/16 09:25		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B MSV		Analytical Method: EPA 8260B							
Benzene	2240	ug/L	250	50		07/19/16 19:45	71-43-2		
Ethylbenzene	1240	ug/L	250	50		07/19/16 19:45	100-41-4		
Isopropylbenzene (Cumene)	81.3	ug/L	5.0	1		07/19/16 08:10	98-82-8		
Methyl-tert-butyl ether	7.8	ug/L	5.0	1		07/19/16 08:10	1634-04-4		
Naphthalene	291	ug/L	250	50		07/19/16 19:45	91-20-3		
Toluene	667	ug/L	250	50		07/19/16 19:45	108-88-3		
1,2,4-Trimethylbenzene	1200	ug/L	50.0	50		07/19/16 19:45	95-63-6		
1,3,5-Trimethylbenzene	300	ug/L	50.0	50		07/19/16 19:45	108-67-8		
Xylene (Total)	3070	ug/L	250	50		07/19/16 19:45	1330-20-7		
Surrogates									
Toluene-d8 (S)	106	%	84-115	1		07/19/16 08:10	2037-26-5		
4-Bromofluorobenzene (S)	99	%	81-119	1		07/19/16 08:10	460-00-4		
1,2-Dichloroethane-d4 (S)	54	%	77-126	1		07/19/16 08:10	17060-07-0	S2	
Dibromofluoromethane (S)	85	%	70-130	1		07/19/16 08:10	1868-53-7		

Sample: MW-5		Lab ID: 30189495005		Collected: 07/12/16 12:55		Received: 07/13/16 09:25		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Benzene		3940	ug/L	250	50		07/19/16 20:10	71-43-2	
Ethylbenzene		2140	ug/L	250	50		07/19/16 20:10	100-41-4	
Isopropylbenzene (Cumene)		96.3	ug/L	5.0	1		07/19/16 08:38	98-82-8	
Methyl-tert-butyl ether		51.7	ug/L	5.0	1		07/19/16 08:38	1634-04-4	
Naphthalene		150	ug/L	5.0	1		07/19/16 08:38	91-20-3	
Toluene		85.2	ug/L	5.0	1		07/19/16 08:38	108-88-3	
1,2,4-Trimethylbenzene		1570	ug/L	250	50		07/19/16 20:10	95-63-6	
1,3,5-Trimethylbenzene		485	ug/L	250	50		07/19/16 20:10	108-67-8	
Xylene (Total)		8130	ug/L	250	50		07/19/16 20:10	1330-20-7	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca Initial Sample

Pace Project No.: 30189495

Sample: MW-5		Lab ID: 30189495005		Collected: 07/12/16 12:55		Received: 07/13/16 09:25		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Surrogates									
Toluene-d8 (S)		101	%	84-115	1		07/19/16 08:38	2037-26-5	
4-Bromofluorobenzene (S)		96	%	81-119	1		07/19/16 08:38	460-00-4	
1,2-Dichloroethane-d4 (S)		60	%	77-126	1		07/19/16 08:38	17060-07-0	S2
Dibromofluoromethane (S)		147	%	70-130	1		07/19/16 08:38	1868-53-7	S2

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QUALITY CONTROL DATA

Project: H.O. Seneca Initial Sample
Pace Project No.: 30189495

QC Batch: 226642 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 30189495001, 30189495002, 30189495003, 30189495004, 30189495005

METHOD BLANK: 1110673 Matrix: Water
Associated Lab Samples: 30189495001, 30189495002, 30189495003, 30189495004, 30189495005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	07/19/16 01:15	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	07/19/16 01:15	
Benzene	ug/L	ND	1.0	07/19/16 01:15	
Ethylbenzene	ug/L	ND	1.0	07/19/16 01:15	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	07/19/16 01:15	
Methyl-tert-butyl ether	ug/L	ND	1.0	07/19/16 01:15	
Naphthalene	ug/L	ND	2.0	07/19/16 01:15	
Toluene	ug/L	ND	1.0	07/19/16 01:15	
Xylene (Total)	ug/L	ND	3.0	07/19/16 01:15	
1,2-Dichloroethane-d4 (S)	%	98	77-126	07/19/16 01:15	
4-Bromofluorobenzene (S)	%	102	81-119	07/19/16 01:15	
Dibromofluoromethane (S)	%	96	70-130	07/19/16 01:15	
Toluene-d8 (S)	%	98	84-115	07/19/16 01:15	

LABORATORY CONTROL SAMPLE: 1110674

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	18.5	92	75-128	
1,3,5-Trimethylbenzene	ug/L	20	17.6	88	74-125	
Benzene	ug/L	20	19.0	95	69-115	
Ethylbenzene	ug/L	20	19.4	97	71-116	
Isopropylbenzene (Cumene)	ug/L	20	16.5	82	79-121	
Methyl-tert-butyl ether	ug/L	20	19.6	98	83-140	
Naphthalene	ug/L	20	18.4	92	64-140	
Toluene	ug/L	20	19.4	97	70-115	
Xylene (Total)	ug/L	60	57.3	96	73-118	
1,2-Dichloroethane-d4 (S)	%			86	77-126	
4-Bromofluorobenzene (S)	%			102	81-119	
Dibromofluoromethane (S)	%			94	70-130	
Toluene-d8 (S)	%			102	84-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1110970 1110971

Parameter	Units	30189595001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	18.9	19.2	94	96	69-121	2	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	17.5	18.3	87	91	68-118	4	
Benzene	ug/L	ND	20	20	21.2	20.5	106	103	63-123	3	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. Seneca Initial Sample

Pace Project No.: 30189495

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1110970 1110971											
Parameter	Units	30189595001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Ethylbenzene	ug/L	ND	20	20	20.6	20.2	103	101	70-120	2	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	17.1	17.6	85	88	71-129	3	
Methyl-tert-butyl ether	ug/L	6.9	20	20	23.7	23.3	84	82	63-143	2	
Naphthalene	ug/L	ND	20	20	18.0	18.4	90	92	55-122	2	
Toluene	ug/L	ND	20	20	20.7	20.7	103	104	66-124	0	
Xylene (Total)	ug/L	ND	60	60	60.5	59.2	101	99	68-123	2	
1,2-Dichloroethane-d4 (S)	%						84	83	77-126		
4-Bromofluorobenzene (S)	%						100	103	81-119		
Dibromofluoromethane (S)	%						95	92	70-130		
Toluene-d8 (S)	%						108	103	84-115		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: H.O. Seneca Initial Sample

Pace Project No.: 30189495

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

S2 Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: H.O. Seneca Initial Sample

Pace Project No.: 30189495

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30189495001	MW-1	EPA 8260B	226642		
30189495002	MW-2	EPA 8260B	226642		
30189495003	MW-3	EPA 8260B	226642		
30189495004	MW-4	EPA 8260B	226642		
30189495005	MW-5	EPA 8260B	226642		

REPORT OF LABORATORY ANALYSIS

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Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: CEABBS & ASSOC.	Report To: Gray Ceabbs	Company Name: " "	Attention: Gray Ceabbs	Company Name: " "	Attention: " "
Address: PO Box 44 Delmont PA 15626	Copy To:	Address:		Address:	
Email To:		Purchase Order No.:		Pace Quote Reference:	
Phone: 724-454-2340	Fax:	Project Name: H.O. Seven Total Sample	Pace Project Manager: Laura Paella	Pace Profile #:	
Requested Due Date/TAT: STANDARD		Project Number:		Requested Analysis Filtered (Y/N)	

ITEM #	Matrix Codes MATRIX / CODE Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives						Analysis Test ↑	Y/N	Requested Analysis Filtered (Y/N)												Pace Project No./ Lab I.D.
				COMPOSITE START	COMPOSITE END/GRAB			DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME													
1	MW-1	WT G	G			7-12-16	12:20																					001
2	MW-2	WT G	G			7-12-16	10:30																					002
3	MW-3	WT G	G			7-12-16	11:45																					003
4	MW-4	WT G	G			7-12-16	11:10																					004
5	MW-5	WT G	G			7-12-16	12:55																					005
6																												
7																												
8																												
9																												
10																												
11																												
12																												

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
New Sheetlist for PACAP UNLOCKED Grass Inc. Parameters	<i>[Signature]</i>	7-13-16	9:15	<i>[Signature]</i>	7-13-16	09:25	Ice (Y/N) <input checked="" type="checkbox"/> Sealed Cooler (Y/N) <input checked="" type="checkbox"/> Samples Intact (Y/N) <input checked="" type="checkbox"/>

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on	Custody	Samples Intact
PRINT Name of SAMPLER: <i>Gray Ceabbs</i>					
SIGNATURE of SAMPLER: <i>[Signature]</i>					

Sample Condition Upon Receipt Pittsburgh



Client Name: Cribbs

Project # 30189495

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used 8 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 1.5 °C Correction Factor: +0.1 °C Final Temp: 1.6 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: BLM 7-13-16

Comments:

	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
-Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Filtered volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.
All containers needing preservation have been checked.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
exceptions: <u>VOA</u> , coliform, TOC, O&G, Phenolics				Initial when completed <u>BLM</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	14.
Trip Blank Present:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	15.
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

October 14, 2016

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

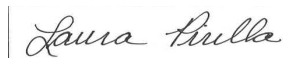
RE: Project: H.O. Seneca
Pace Project No.: 30198306

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on October 06, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: H.O. Seneca

Pace Project No.: 30198306

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: H.O. Seneca

Pace Project No.: 30198306

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30198306001	MW-1	EPA 8260B	LEL	13	PASI-PA
30198306002	MW-2	EPA 8260B	LEL	13	PASI-PA
30198306003	MW-3	EPA 8260B	LEL	13	PASI-PA
30198306004	MW-4	EPA 8260B	LEL	13	PASI-PA
30198306005	MW-5	EPA 8260B	LEL	13	PASI-PA
30198306006	Upgradient Stream	EPA 8260B	LEL	13	PASI-PA
30198306007	Downgradient Stream	EPA 8260B	LEL	13	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: H.O. Seneca

Pace Project No.: 30198306

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: October 14, 2016

General Information:

7 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca
Pace Project No.: 30198306

Sample: MW-1		Lab ID: 30198306001	Collected: 10/04/16 11:05		Received: 10/06/16 08:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	92.1	ug/L	5.0	1		10/11/16 07:07	71-43-2	
Ethylbenzene	1100	ug/L	50.0	10		10/11/16 17:20	100-41-4	
Isopropylbenzene (Cumene)	53.7	ug/L	5.0	1		10/11/16 07:07	98-82-8	
Methyl-tert-butyl ether	6.2	ug/L	5.0	1		10/11/16 07:07	1634-04-4	
Naphthalene	233	ug/L	5.0	1		10/11/16 07:07	91-20-3	
Toluene	9.8	ug/L	5.0	1		10/11/16 07:07	108-88-3	
1,2,4-Trimethylbenzene	604	ug/L	50.0	10		10/11/16 17:20	95-63-6	
1,3,5-Trimethylbenzene	214	ug/L	5.0	1		10/11/16 07:07	108-67-8	
Xylene (Total)	1270	ug/L	50.0	10		10/11/16 17:20	1330-20-7	
Surrogates								
Toluene-d8 (S)	94	%	84-115	1		10/11/16 07:07	2037-26-5	
4-Bromofluorobenzene (S)	95	%	81-119	1		10/11/16 07:07	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	77-126	1		10/11/16 07:07	17060-07-0	
Dibromofluoromethane (S)	102	%	70-130	1		10/11/16 07:07	1868-53-7	

Sample: MW-2		Lab ID: 30198306002	Collected: 10/04/16 12:00	Received: 10/06/16 08:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	1800	ug/L	50.0	10		10/11/16 17:45	71-43-2	
Ethylbenzene	752	ug/L	50.0	10		10/11/16 17:45	100-41-4	
Isopropylbenzene (Cumene)	66.5	ug/L	5.0	1		10/11/16 03:46	98-82-8	
Methyl-tert-butyl ether	21.3	ug/L	5.0	1		10/11/16 03:46	1634-04-4	
Naphthalene	134	ug/L	5.0	1		10/11/16 03:46	91-20-3	
Toluene	82.6	ug/L	5.0	1		10/11/16 03:46	108-88-3	
1,2,4-Trimethylbenzene	635	ug/L	10.0	10		10/11/16 17:45	95-63-6	
1,3,5-Trimethylbenzene	264	ug/L	1.0	1		10/11/16 03:46	108-67-8	
Xylene (Total)	740	ug/L	5.0	1		10/11/16 03:46	1330-20-7	
Surrogates								
Toluene-d8 (S)	96	%	84-115	1		10/11/16 03:46	2037-26-5	
4-Bromofluorobenzene (S)	95	%	81-119	1		10/11/16 03:46	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	77-126	1		10/11/16 03:46	17060-07-0	
Dibromofluoromethane (S)	95	%	70-130	1		10/11/16 03:46	1868-53-7	

Sample: MW-3		Lab ID: 30198306003		Collected: 10/04/16 15:15		Received: 10/06/16 08:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B MSV		Analytical Method: EPA 8260B							
Benzene	17800	ug/L	250	50		10/11/16 20:17	71-43-2		
Ethylbenzene	3000	ug/L	250	50		10/11/16 20:17	100-41-4		
Isopropylbenzene (Cumene)	88.2	ug/L	5.0	1		10/11/16 04:11	98-82-8		
Methyl-tert-butyl ether	39.7	ug/L	5.0	1		10/11/16 04:11	1634-04-4		
Naphthalene	411	ug/L	250	50		10/11/16 20:17	91-20-3		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca
Pace Project No.: 30198306

Sample: MW-3		Lab ID: 30198306003	Collected: 10/04/16 15:15		Received: 10/06/16 08:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Toluene	10200	ug/L	250	50		10/11/16 20:17	108-88-3	
1,2,4-Trimethylbenzene	2020	ug/L	50.0	50		10/11/16 20:17	95-63-6	
1,3,5-Trimethylbenzene	557	ug/L	50.0	50		10/11/16 20:17	108-67-8	
Xylene (Total)	15600	ug/L	250	50		10/11/16 20:17	1330-20-7	
Surrogates								
Toluene-d8 (S)	92	%	84-115	1		10/11/16 04:11	2037-26-5	
4-Bromofluorobenzene (S)	100	%	81-119	1		10/11/16 04:11	460-00-4	
1,2-Dichloroethane-d4 (S)	109	%	77-126	1		10/11/16 04:11	17060-07-0	
Dibromofluoromethane (S)	94	%	70-130	1		10/11/16 04:11	1868-53-7	

Sample: MW-4		Lab ID: 30198306004	Collected: 10/04/16 11:35		Received: 10/06/16 08:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	1200	ug/L	50.0	10		10/11/16 18:11	71-43-2	
Ethylbenzene	485	ug/L	50.0	10		10/11/16 18:11	100-41-4	
Isopropylbenzene (Cumene)	55.1	ug/L	5.0	1		10/11/16 07:45	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		10/11/16 07:45	1634-04-4	
Naphthalene	133	ug/L	5.0	1		10/11/16 07:45	91-20-3	
Toluene	170	ug/L	5.0	1		10/11/16 07:45	108-88-3	
1,2,4-Trimethylbenzene	313	ug/L	1.0	1		10/11/16 07:45	95-63-6	
1,3,5-Trimethylbenzene	103	ug/L	1.0	1		10/11/16 07:45	108-67-8	
Xylene (Total)	922	ug/L	50.0	10		10/11/16 18:11	1330-20-7	
Surrogates								
Toluene-d8 (S)	96	%	84-115	1		10/11/16 07:45	2037-26-5	
4-Bromofluorobenzene (S)	94	%	81-119	1		10/11/16 07:45	460-00-4	
1,2-Dichloroethane-d4 (S)	109	%	77-126	1		10/11/16 07:45	17060-07-0	
Dibromofluoromethane (S)	97	%	70-130	1		10/11/16 07:45	1868-53-7	

Sample: MW-5		Lab ID: 30198306005	Collected: 10/04/16 12:30		Received: 10/06/16 08:55		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	9860	ug/L	250	50		10/12/16 20:06	71-43-2	
Ethylbenzene	2300	ug/L	100	20		10/11/16 19:51	100-41-4	
Isopropylbenzene (Cumene)	99.2	ug/L	5.0	1		10/11/16 08:10	98-82-8	
Methyl-tert-butyl ether	75.5	ug/L	5.0	1		10/11/16 08:10	1634-04-4	
Naphthalene	384	ug/L	100	20		10/11/16 19:51	91-20-3	
Toluene	32.1	ug/L	5.0	1		10/11/16 08:10	108-88-3	
1,2,4-Trimethylbenzene	1950	ug/L	100	20		10/11/16 19:51	95-63-6	
1,3,5-Trimethylbenzene	554	ug/L	100	20		10/11/16 19:51	108-67-8	
Xylene (Total)	6450	ug/L	100	20		10/11/16 19:51	1330-20-7	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca
Pace Project No.: 30198306

Sample: MW-5		Lab ID: 30198306005		Collected: 10/04/16 12:30		Received: 10/06/16 08:55		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Surrogates									
Toluene-d8 (S)		98	%	84-115	1		10/11/16 08:10	2037-26-5	
4-Bromofluorobenzene (S)		103	%	81-119	1		10/11/16 08:10	460-00-4	
1,2-Dichloroethane-d4 (S)		102	%	77-126	1		10/11/16 08:10	17060-07-0	
Dibromofluoromethane (S)		92	%	70-130	1		10/11/16 08:10	1868-53-7	

Sample: Upgradient Stream		Lab ID: 30198306006	Collected: 10/04/16 10:00	Received: 10/06/16 08:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		10/11/16 06:17	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		10/11/16 06:17	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		10/11/16 06:17	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		10/11/16 06:17	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		10/11/16 06:17	91-20-3	
Toluene	ND	ug/L	5.0	1		10/11/16 06:17	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		10/11/16 06:17	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		10/11/16 06:17	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		10/11/16 06:17	1330-20-7	
Surrogates								
Toluene-d8 (S)	98	%	84-115	1		10/11/16 06:17	2037-26-5	
4-Bromofluorobenzene (S)	100	%	81-119	1		10/11/16 06:17	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	77-126	1		10/11/16 06:17	17060-07-0	
Dibromofluoromethane (S)	101	%	70-130	1		10/11/16 06:17	1868-53-7	

Sample: Downgradient Stream		Lab ID: 30198306007	Collected: 10/04/16 10:30	Received: 10/06/16 08:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		10/11/16 06:42	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		10/11/16 06:42	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		10/11/16 06:42	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		10/11/16 06:42	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		10/11/16 06:42	91-20-3	
Toluene	ND	ug/L	5.0	1		10/11/16 06:42	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		10/11/16 06:42	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		10/11/16 06:42	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		10/11/16 06:42	1330-20-7	
Surrogates								
Toluene-d8 (S)	99	%	84-115	1		10/11/16 06:42	2037-26-5	
4-Bromofluorobenzene (S)	99	%	81-119	1		10/11/16 06:42	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	77-126	1		10/11/16 06:42	17060-07-0	
Dibromofluoromethane (S)	99	%	70-130	1		10/11/16 06:42	1868-53-7	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. Seneca
Pace Project No.: 30198306

QC Batch:	236154	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 8260B	Analysis Description:	8260B MSV UST-WATER
Associated Lab Samples:	30198306001, 30198306002, 30198306003, 30198306004, 30198306005, 30198306006, 30198306007		

METHOD BLANK:	1160179	Matrix:	Water
Associated Lab Samples:	30198306001, 30198306002, 30198306003, 30198306004, 30198306005, 30198306006, 30198306007		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	10/11/16 01:15	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	10/11/16 01:15	
Benzene	ug/L	ND	1.0	10/11/16 01:15	
Ethylbenzene	ug/L	ND	1.0	10/11/16 01:15	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	10/11/16 01:15	
Methyl-tert-butyl ether	ug/L	ND	1.0	10/11/16 01:15	
Naphthalene	ug/L	ND	2.0	10/11/16 01:15	
Toluene	ug/L	ND	1.0	10/11/16 01:15	
Xylene (Total)	ug/L	ND	3.0	10/11/16 01:15	
1,2-Dichloroethane-d4 (S)	%	105	77-126	10/11/16 01:15	
4-Bromofluorobenzene (S)	%	96	81-119	10/11/16 01:15	
Dibromofluoromethane (S)	%	99	70-130	10/11/16 01:15	
Toluene-d8 (S)	%	98	84-115	10/11/16 01:15	

LABORATORY CONTROL SAMPLE: 1160180

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.4	97	75-128	
1,3,5-Trimethylbenzene	ug/L	20	18.9	95	74-125	
Benzene	ug/L	20	19.1	96	69-115	
Ethylbenzene	ug/L	20	19.6	98	71-116	
Isopropylbenzene (Cumene)	ug/L	20	19.2	96	79-121	
Methyl-tert-butyl ether	ug/L	20	19.3	97	83-140	
Naphthalene	ug/L	20	17.8	89	64-140	
Toluene	ug/L	20	18.9	95	70-115	
Xylene (Total)	ug/L	60	58.7	98	73-118	
1,2-Dichloroethane-d4 (S)	%			102	77-126	
4-Bromofluorobenzene (S)	%			95	81-119	
Dibromofluoromethane (S)	%			101	70-130	
Toluene-d8 (S)	%			98	84-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1160181 1160182

Parameter	Units	30198495003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	18.2	15.1	91	76	69-121	18	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	17.8	14.7	89	73	68-118	19	
Benzene	ug/L	ND	20	20	18.3	14.9	92	75	63-123	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. Seneca

Pace Project No.: 30198306

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1160181 1160182											
		30198495003	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Ethylbenzene	ug/L	ND	20	20	19.0	15.9	95	79	70-120	18	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	18.4	15.0	92	75	71-129	20	
Methyl-tert-butyl ether	ug/L	ND	20	20	13.6	16.2	68	81	63-143	17	
Naphthalene	ug/L	ND	20	20	16.9	14.6	85	73	55-122	15	
Toluene	ug/L	ND	20	20	20.5	16.8	103	84	66-124	20	
Xylene (Total)	ug/L	ND	60	60	56.6	47.4	94	79	68-123	18	
1,2-Dichloroethane-d4 (S)	%						100	103	77-126		
4-Bromofluorobenzene (S)	%						99	95	81-119		
Dibromofluoromethane (S)	%						100	101	70-130		
Toluene-d8 (S)	%						99	100	84-115		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: H.O. Seneca
Pace Project No.: 30198306

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: H.O. Seneca

Pace Project No.: 30198306

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30198306001	MW-1	EPA 8260B	236154		
30198306002	MW-2	EPA 8260B	236154		
30198306003	MW-3	EPA 8260B	236154		
30198306004	MW-4	EPA 8260B	236154		
30198306005	MW-5	EPA 8260B	236154		
30198306006	Upgradient Stream	EPA 8260B	236154		
30198306007	Downgradient Stream	EPA 8260B	236154		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Chigas & Assoc. Inc.	Report To:	Gray Carless	Attention:	Gray Carless
Address:	PO Box 44	Copy To:		Company Name:	"
	Delmont PA 15626			Address:	"
Email To:		Purchase Order No.:		Pace Quote Reference:	
Phone:	724-454-2310	Project Name:	H.O. Clintonville	Pace Project Manager:	Laura Pacella
Requested Due Date/TAT:	Standard	Project Number:		Pace Profile #:	

Page: 1 of 1
 2061147

REGULATORY AGENCY
☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ RCRA ☐ OTHER

Site Location
 STATE: PA

[illegible]

Sample Condition Upon Receipt Pittsburgh

30198306

Client Name: Cribbs

Project # _____

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noThermometer Used 6 Type of Ice: Wet Blue NoneCooler Temperature Observed Temp 0.8 °C Correction Factor: -0.2 °C Final Temp: 0.6 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: Ugha 10-6-16

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:	X			4.
Sample Labels match COC:	X			5.
-Includes date/time/ID/Analysis Matrix: <u>Wt</u>				
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked.			X	13.
All containers needing preservation are found to be in compliance with EPA recommendation.			X	
exceptions: <u>VOA</u> coliform, TOC, O&G, Phenolics				
				Initial when completed <u>Ugha</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):		X		14.
Trip Blank Present:		X		15.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr			X	Initial when completed: _____ Date: _____

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

December 20, 2016

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

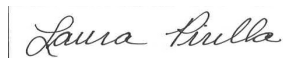
RE: Project: H.O. Seneca New Wells
Pace Project No.: 30204388

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on December 06, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: H.O. Seneca New Wells

Pace Project No.: 30204388

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: H.O. Seneca New Wells

Pace Project No.: 30204388

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30204388001	MW-8	EPA 8260B	JAS	13	PASI-PA
30204388002	MW-9	EPA 8260B	JAS	13	PASI-PA
30204388003	MW-10	EPA 8260B	JAS	13	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: H.O. Seneca New Wells

Pace Project No.: 30204388

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: December 20, 2016

General Information:

3 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca New Wells

Pace Project No.: 30204388

Sample: MW-8		Lab ID: 30204388001		Collected: 12/06/16 12:30		Received: 12/06/16 14:40		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B MSV		Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/15/16 06:27	71-43-2		
Ethylbenzene	ND	ug/L	5.0	1		12/15/16 06:27	100-41-4		
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/15/16 06:27	98-82-8		
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/15/16 06:27	1634-04-4		
Naphthalene	ND	ug/L	5.0	1		12/15/16 06:27	91-20-3		
Toluene	ND	ug/L	5.0	1		12/15/16 06:27	108-88-3		
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/15/16 06:27	95-63-6		
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/15/16 06:27	108-67-8		
Xylene (Total)	ND	ug/L	5.0	1		12/15/16 06:27	1330-20-7		
Surrogates									
Toluene-d8 (S)	95	%	84-115	1		12/15/16 06:27	2037-26-5		
4-Bromofluorobenzene (S)	97	%	81-119	1		12/15/16 06:27	460-00-4		
1,2-Dichloroethane-d4 (S)	108	%	77-126	1		12/15/16 06:27	17060-07-0		
Dibromofluoromethane (S)	96	%	70-130	1		12/15/16 06:27	1868-53-7		

Sample: MW-9		Lab ID: 30204388002		Collected: 12/06/16 11:30		Received: 12/06/16 14:40		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B MSV		Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/15/16 06:52	71-43-2		
Ethylbenzene	ND	ug/L	5.0	1		12/15/16 06:52	100-41-4		
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/15/16 06:52	98-82-8		
Methyl-tert-butyl ether	10.4	ug/L	5.0	1		12/15/16 06:52	1634-04-4		
Naphthalene	ND	ug/L	5.0	1		12/15/16 06:52	91-20-3		
Toluene	ND	ug/L	5.0	1		12/15/16 06:52	108-88-3		
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/15/16 06:52	95-63-6		
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/15/16 06:52	108-67-8		
Xylene (Total)	ND	ug/L	5.0	1		12/15/16 06:52	1330-20-7		
Surrogates									
Toluene-d8 (S)	94	%	84-115	1		12/15/16 06:52	2037-26-5		
4-Bromofluorobenzene (S)	93	%	81-119	1		12/15/16 06:52	460-00-4		
1,2-Dichloroethane-d4 (S)	102	%	77-126	1		12/15/16 06:52	17060-07-0		
Dibromofluoromethane (S)	96	%	70-130	1		12/15/16 06:52	1868-53-7		

Sample: MW-10		Lab ID: 30204388003		Collected: 12/06/16 10:30		Received: 12/06/16 14:40		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Benzene		16.3	ug/L	5.0	1		12/15/16 07:17	71-43-2	
Ethylbenzene		315	ug/L	5.0	1		12/15/16 07:17	100-41-4	
Isopropylbenzene (Cumene)		59.4	ug/L	5.0	1		12/15/16 07:17	98-82-8	
Methyl-tert-butyl ether		15.9	ug/L	5.0	1		12/15/16 07:17	1634-04-4	
Naphthalene		99.3	ug/L	5.0	1		12/15/16 07:17	91-20-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca New Wells

Pace Project No.: 30204388

Sample: MW-10		Lab ID: 30204388003		Collected: 12/06/16 10:30		Received: 12/06/16 14:40		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Toluene		ND	ug/L	5.0	1		12/15/16 07:17	108-88-3	
1,2,4-Trimethylbenzene		260	ug/L	1.0	1		12/15/16 07:17	95-63-6	
1,3,5-Trimethylbenzene		9.2	ug/L	1.0	1		12/15/16 07:17	108-67-8	
Xylene (Total)		8.3	ug/L	5.0	1		12/15/16 07:17	1330-20-7	
Surrogates									
Toluene-d8 (S)		97	%	84-115	1		12/15/16 07:17	2037-26-5	
4-Bromofluorobenzene (S)		99	%	81-119	1		12/15/16 07:17	460-00-4	
1,2-Dichloroethane-d4 (S)		105	%	77-126	1		12/15/16 07:17	17060-07-0	
Dibromofluoromethane (S)		96	%	70-130	1		12/15/16 07:17	1868-53-7	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. Seneca New Wells

Pace Project No.: 30204388

QC Batch: 243328 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 30204388001, 30204388002, 30204388003

METHOD BLANK: 1196912 Matrix: Water

Associated Lab Samples: 30204388001, 30204388002, 30204388003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	12/15/16 00:09	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	12/15/16 00:09	
Benzene	ug/L	ND	1.0	12/15/16 00:09	
Ethylbenzene	ug/L	ND	1.0	12/15/16 00:09	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	12/15/16 00:09	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/15/16 00:09	
Naphthalene	ug/L	ND	2.0	12/15/16 00:09	
Toluene	ug/L	ND	1.0	12/15/16 00:09	
Xylene (Total)	ug/L	ND	3.0	12/15/16 00:09	
1,2-Dichloroethane-d4 (S)	%	108	77-126	12/15/16 00:09	
4-Bromofluorobenzene (S)	%	101	81-119	12/15/16 00:09	
Dibromofluoromethane (S)	%	97	70-130	12/15/16 00:09	
Toluene-d8 (S)	%	96	84-115	12/15/16 00:09	

LABORATORY CONTROL SAMPLE: 1196913

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	21.3	107	75-128	
1,3,5-Trimethylbenzene	ug/L	20	21.3	107	74-125	
Benzene	ug/L	20	20.0	100	69-115	
Ethylbenzene	ug/L	20	20.5	103	71-116	
Isopropylbenzene (Cumene)	ug/L	20	20.9	105	79-121	
Methyl-tert-butyl ether	ug/L	20	24.2	121	83-140	
Naphthalene	ug/L	20	21.3	106	64-140	
Toluene	ug/L	20	20.2	101	70-115	
Xylene (Total)	ug/L	60	63.0	105	73-118	
1,2-Dichloroethane-d4 (S)	%			116	77-126	
4-Bromofluorobenzene (S)	%			98	81-119	
Dibromofluoromethane (S)	%			101	70-130	
Toluene-d8 (S)	%			99	84-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1196914 1196915

Parameter	Units	30204570001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	22.4	22.2	112	111	69-121	1	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	22.9	22.1	115	111	68-118	4	
Benzene	ug/L	ND	20	20	21.6	20.7	108	103	63-123	4	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. Seneca New Wells

Pace Project No.: 30204388

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1196914 1196915											
		30204570001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Ethylbenzene	ug/L	ND	20	20	21.8	21.7	109	109	70-120	0	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	22.8	22.2	114	111	71-129	3	
Methyl-tert-butyl ether	ug/L	ND	20	20	22.8	22.4	114	112	63-143	2	
Naphthalene	ug/L	ND	20	20	20.6	20.5	103	103	55-122	1	
Toluene	ug/L	ND	20	20	21.7	21.8	109	109	66-124	1	
Xylene (Total)	ug/L	ND	60	60	66.7	66.1	111	110	68-123	1	
1,2-Dichloroethane-d4 (S)	%						103	96	77-126		
4-Bromofluorobenzene (S)	%						99	98	81-119		
Dibromofluoromethane (S)	%						100	96	70-130		
Toluene-d8 (S)	%						99	101	84-115		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: H.O. Seneca New Wells

Pace Project No.: 30204388

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: H.O. Seneca New Wells

Pace Project No.: 30204388

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30204388001	MW-8	EPA 8260B	243328		
30204388002	MW-9	EPA 8260B	243328		
30204388003	MW-10	EPA 8260B	243328		

REPORT OF LABORATORY ANALYSIS

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WO#: 30204388



st Document
completed accurately.

Section A
Required Client Information:

Company: CEBAS & Assoc, Inc.
Address: PO Box 44
Delmont PA 15626
Email To: _____
Phone: 724.454-2314 Fax: _____
Requested Due Date/TAT: Standard

Section B
Required Project Information:

Report To: Gray Cebas
Copy To: _____
Purchase Order No.: _____
Project Name: H.O. Seven New Wells
Project Number: _____

Attention: Gray Cebas
Company Name: _____
Address: 11
Pace Quote Reference: _____
Pace Project Manager: Laura Pella
Pace Profile #: _____

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER _____

Site Location
STATE: PA

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water DW Waste Water WT Product WW Soil/Solid P Oil SL Wipe OL Air WP Tissue AR Other TS OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives Unpreserved H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other	Y/N	Analysis Test ↑	Y/N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
					COMPOSITE START	COMPOSITE END/GRAB	DATE	TIME								
1	Mw-8		wt G	G		12-6-16	12:30		3							001
2	Mw-9		wt G	G		12-6-16	10:30		3							002
3	Mw-10		wt G	G		12-6-16	10:30		3							003
4																
5																
6																
7																
8																
9																
10																
11																
12																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
							Temp in °C	Received on	Custody	Sealed Cooler
New Sheetlist For	<u>Gray Cebas</u>	12-6-16	14:40	<u>Gray Cebas</u>	12-6-16	14:40		4	N	Y
PADED UNLEADED										
Gaseous Parameters										

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Gray Cebas
SIGNATURE OF SAMPLER: Gray Cebas
DATE Signed (MM/DD/YYYY): 12/6/16

Sample Condition Upon Receipt Pittsburgh



Client Name: Cribbs

Project # 30204388

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used 7 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 3.4 °C Correction Factor: 0.2 °C Final Temp: 32 °C
Temp should be above freezing to 6°C

Date and Initials of person examining contents: Q9NR 126-16

Comments:

	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:	X			4.
Sample Labels match COC:	X			5.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked.			X	13.
All containers needing preservation are found to be in compliance with EPA recommendation.			X	
exceptions: <u>VOA</u> coliform, TOC, O&G, Phenolics				Initial when completed <u>Q9NR</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):		X		14.
Trip Blank Present:		X		15.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr			X	Initial when completed: Date:

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

January 24, 2017

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

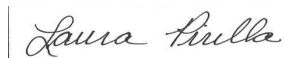
RE: Project: H.O. Seneca MW-6 & 7
Pace Project No.: 30208193

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on January 17, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: H.O. Seneca MW-6 & 7

Pace Project No.: 30208193

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: H.O. Seneca MW-6 & 7

Pace Project No.: 30208193

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30208193001	MW-6	EPA 8260B	JAS	13	PASI-PA
30208193002	MW-7	EPA 8260B	JAS	13	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: H.O. Seneca MW-6 & 7

Pace Project No.: 30208193

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: January 24, 2017

General Information:

2 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca MW-6 & 7

Pace Project No.: 30208193

Sample: MW-6 **Lab ID: 30208193001** Collected: 01/17/17 12:30 Received: 01/17/17 16:25 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		01/20/17 14:35	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		01/20/17 14:35	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		01/20/17 14:35	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		01/20/17 14:35	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		01/20/17 14:35	91-20-3	
Toluene	ND	ug/L	5.0	1		01/20/17 14:35	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		01/20/17 14:35	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		01/20/17 14:35	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		01/20/17 14:35	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%	59-140	1		01/20/17 14:35	2037-26-5	
4-Bromofluorobenzene (S)	103	%	78-117	1		01/20/17 14:35	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%	70-128	1		01/20/17 14:35	17060-07-0	
Dibromofluoromethane (S)	94	%	66-132	1		01/20/17 14:35	1868-53-7	

Sample: MW-7 **Lab ID: 30208193002** Collected: 01/17/17 13:15 Received: 01/17/17 16:25 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		01/20/17 15:02	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		01/20/17 15:02	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		01/20/17 15:02	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		01/20/17 15:02	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		01/20/17 15:02	91-20-3	
Toluene	ND	ug/L	5.0	1		01/20/17 15:02	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		01/20/17 15:02	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		01/20/17 15:02	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		01/20/17 15:02	1330-20-7	
Surrogates								
Toluene-d8 (S)	95	%	59-140	1		01/20/17 15:02	2037-26-5	
4-Bromofluorobenzene (S)	100	%	78-117	1		01/20/17 15:02	460-00-4	
1,2-Dichloroethane-d4 (S)	89	%	70-128	1		01/20/17 15:02	17060-07-0	
Dibromofluoromethane (S)	88	%	66-132	1		01/20/17 15:02	1868-53-7	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. Seneca MW-6 & 7

Pace Project No.: 30208193

QC Batch:	246914	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 8260B	Analysis Description:	8260B MSV UST-WATER
Associated Lab Samples: 30208193001, 30208193002			

METHOD BLANK: 1214167 Matrix: Water

Associated Lab Samples: 30208193001, 30208193002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	01/20/17 11:23	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	01/20/17 11:23	
Benzene	ug/L	ND	1.0	01/20/17 11:23	
Ethylbenzene	ug/L	ND	1.0	01/20/17 11:23	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	01/20/17 11:23	
Methyl-tert-butyl ether	ug/L	ND	1.0	01/20/17 11:23	
Naphthalene	ug/L	ND	2.0	01/20/17 11:23	
Toluene	ug/L	ND	1.0	01/20/17 11:23	
Xylene (Total)	ug/L	ND	3.0	01/20/17 11:23	
1,2-Dichloroethane-d4 (S)	%	96	70-128	01/20/17 11:23	
4-Bromofluorobenzene (S)	%	109	78-117	01/20/17 11:23	
Dibromofluoromethane (S)	%	98	66-132	01/20/17 11:23	
Toluene-d8 (S)	%	99	59-140	01/20/17 11:23	

LABORATORY CONTROL SAMPLE: 1214168

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.5	97	78-116	
1,3,5-Trimethylbenzene	ug/L	20	19.4	97	77-114	
Benzene	ug/L	20	17.3	86	80-113	
Ethylbenzene	ug/L	20	17.9	90	80-115	
Isopropylbenzene (Cumene)	ug/L	20	19.2	96	78-114	
Methyl-tert-butyl ether	ug/L	20	17.8	89	82-126	
Naphthalene	ug/L	20	21.2	106	61-139	
Toluene	ug/L	20	19.3	97	82-116	
Xylene (Total)	ug/L	60	55.7	93	82-115	
1,2-Dichloroethane-d4 (S)	%			91	70-128	
4-Bromofluorobenzene (S)	%			106	78-117	
Dibromofluoromethane (S)	%			96	66-132	
Toluene-d8 (S)	%			107	59-140	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1214850 1214851

Parameter	Units	30208256001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	20.5	20.2	103	101	69-121	2	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	19.7	19.4	99	97	68-118	2	
Benzene	ug/L	ND	20	20	19.5	18.5	97	93	63-123	5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. Seneca MW-6 & 7

Pace Project No.: 30208193

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1214850 1214851											
Parameter	Units	30208256001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Ethylbenzene	ug/L	ND	20	20	18.5	18.5	92	92	70-120	0	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	20.0	19.3	100	97	71-129	3	
Methyl-tert-butyl ether	ug/L	121	20	20	135	128	69	32	63-143	6	ML
Naphthalene	ug/L	ND	20	20	20.5	20.6	103	103	55-122	1	
Toluene	ug/L	ND	20	20	20.3	19.7	101	98	66-124	3	
Xylene (Total)	ug/L	ND	60	60	58.0	56.5	97	94	68-123	3	
1,2-Dichloroethane-d4 (S)	%						100	99	70-128		
4-Bromofluorobenzene (S)	%						104	107	78-117		
Dibromofluoromethane (S)	%						99	98	66-132		
Toluene-d8 (S)	%						108	107	59-140		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: H.O. Seneca MW-6 & 7

Pace Project No.: 30208193

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

ML Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: H.O. Seneca MW-6 & 7

Pace Project No.: 30208193

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30208193001	MW-6	EPA 8260B	246914		
30208193002	MW-7	EPA 8260B	246914		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: CLAGS & Assoc. Inc.	Report To: Gary Ceigars	Attention: Gary Ceigars	Company Name: CLAGS	Page: / of /	REGULATORY AGENCY NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER <input type="checkbox"/>
Address: PO Box 44 DELMAR	Copy To:		Address: 11	2080028	
PA 15626	Purchase Order No.:		Pace Quote Reference: 11		
Email To:	Project Name: H.O. SENECA MW-627		Pace Project Manager: Laura Pacilla		
Phone: 724-454-2310 Fax:	Project Number:		Pace Profile #:		
Requested Due Date/TAT: Standard				Site Location STATE: PA	

Section D Required Client Information		Section E Requested Analysis Filtered (Y/N)		Section F Requested Analysis Filtered (Y/N)	
SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE Matrix Codes MATRIX / CODE Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Tissue TS Other OT		SAMPLE TYPE (G=GRAB C=COMP) MATRIX CODE (see valid codes to left) DATE TIME COMPOSITE START COMPOSITE END/GRAB		PRESERVATIVES Unpreserved H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other	
SAMPLE NO. / Lab I.D. Pace Project No. / Lab I.D.		ANALYSIS TEST Y/N		Temp in °C Received on Sealed Cooler Custody Samples Intact	
ADDITIONAL COMMENTS New Shortlist Fee PADEP UNLEADED Gasoline Parameters		RELINQUISHED BY / AFFILIATION Date TIME		ACCEPTED BY / AFFILIATION Date TIME	
ITEM # 1 2 3 4 5 6 7 8 9 10 11 12		SAMPLE NO. / Lab I.D. 100 200 300 400 500 600 700 800 900 1000 1100 1200		SAMPLE CONDITIONS 1-17-17 12:30 1-17-17 13:15 1-17-17 16:25 1-17-17 16:25 1-17-17 16:25 1-17-17 16:25 1-17-17 16:25 1-17-17 16:25 1-17-17 16:25 1-17-17 16:25 1-17-17 16:25 1-17-17 16:25 1-17-17 16:25	
SIGNATURE OF SAMPLER: <i>[Signature]</i> PRINT Name of SAMPLER: <i>[Name]</i> DATE Signed (MM/DD/YY): <i>[Date]</i>		SIGNATURE OF SAMPLER: <i>[Signature]</i> PRINT Name of SAMPLER: <i>[Name]</i> DATE Signed (MM/DD/YY): <i>[Date]</i>		SIGNATURE OF SAMPLER: <i>[Signature]</i> PRINT Name of SAMPLER: <i>[Name]</i> DATE Signed (MM/DD/YY): <i>[Date]</i>	

Sample Condition Upon Receipt Pittsburgh



30208193

Client Name: Cripps

Project # _____

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noThermometer Used 6 Type of Ice: ☒ Wet ☐ Blue ☐ NoneCooler Temperature Observed Temp 1.0 °C Correction Factor: 10.2 °C Final Temp: 1.2 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: AKR 1-12-17

Comments:

	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:	X			4.
Sample Labels match COC:	X			5.
-Includes date/time/ID Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Organic Samples checked for dechlorination:			X	13.
Filtered volume received for Dissolved tests			X	14.
All containers have been checked for preservation.			X	15.
All containers needing preservation are found to be in compliance with EPA recommendation.			X	
exceptions: <u>VOA</u> , coliform, TOC, O&G, Phenolics				
				Initial when completed <u>AKR</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):		X		16.
Trip Blank Present:		X		17.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr			X	Initial when completed: _____ Date: _____

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

February 09, 2017

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

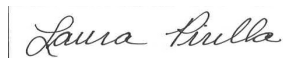
RE: Project: H.O. SENECA MW-12,13,14
Pace Project No.: 30209623

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on February 02, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: H.O. SENECA MW-12,13,14

Pace Project No.: 30209623

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: H.O. SENECA MW-12,13,14

Pace Project No.: 30209623

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30209623001	MW-12	EPA 8260B	LEL	13	PASI-PA
30209623002	MW-13	EPA 8260B	LEL	13	PASI-PA
30209623003	MW-14	EPA 8260B	LEL	13	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: H.O. SENECA MW-12,13,14

Pace Project No.: 30209623

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: February 09, 2017

General Information:

3 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. SENECA MW-12,13,14

Pace Project No.: 30209623

Sample: MW-12 **Lab ID: 30209623001** Collected: 02/01/17 11:00 Received: 02/02/17 09:59 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		02/08/17 21:11	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		02/08/17 21:11	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		02/08/17 21:11	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		02/08/17 21:11	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		02/08/17 21:11	91-20-3	
Toluene	ND	ug/L	5.0	1		02/08/17 21:11	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		02/08/17 21:11	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		02/08/17 21:11	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		02/08/17 21:11	1330-20-7	
Surrogates								
Toluene-d8 (S)	104	%	59-140	1		02/08/17 21:11	2037-26-5	
4-Bromofluorobenzene (S)	99	%	78-117	1		02/08/17 21:11	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-128	1		02/08/17 21:11	17060-07-0	
Dibromofluoromethane (S)	100	%	66-132	1		02/08/17 21:11	1868-53-7	

Sample: MW-13 **Lab ID: 30209623002** Collected: 02/01/17 11:45 Received: 02/02/17 09:59 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		02/08/17 21:36	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		02/08/17 21:36	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		02/08/17 21:36	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		02/08/17 21:36	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		02/08/17 21:36	91-20-3	
Toluene	ND	ug/L	5.0	1		02/08/17 21:36	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		02/08/17 21:36	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		02/08/17 21:36	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		02/08/17 21:36	1330-20-7	
Surrogates								
Toluene-d8 (S)	98	%	59-140	1		02/08/17 21:36	2037-26-5	
4-Bromofluorobenzene (S)	102	%	78-117	1		02/08/17 21:36	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-128	1		02/08/17 21:36	17060-07-0	
Dibromofluoromethane (S)	97	%	66-132	1		02/08/17 21:36	1868-53-7	

Sample: MW-14 **Lab ID: 30209623003** Collected: 02/01/17 12:45 Received: 02/02/17 09:59 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		02/08/17 22:02	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		02/08/17 22:02	100-41-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. SENECA MW-12,13,14

Pace Project No.: 30209623

Sample: MW-14 **Lab ID: 30209623003** Collected: 02/01/17 12:45 Received: 02/02/17 09:59 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		02/08/17 22:02	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		02/08/17 22:02	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		02/08/17 22:02	91-20-3	
Toluene	ND	ug/L	5.0	1		02/08/17 22:02	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		02/08/17 22:02	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		02/08/17 22:02	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		02/08/17 22:02	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%	59-140	1		02/08/17 22:02	2037-26-5	
4-Bromofluorobenzene (S)	101	%	78-117	1		02/08/17 22:02	460-00-4	
1,2-Dichloroethane-d4 (S)	109	%	70-128	1		02/08/17 22:02	17060-07-0	
Dibromofluoromethane (S)	101	%	66-132	1		02/08/17 22:02	1868-53-7	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. SENECA MW-12,13,14

Pace Project No.: 30209623

QC Batch:	248785	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 8260B	Analysis Description:	8260B MSV UST-WATER
Associated Lab Samples:	30209623001, 30209623002, 30209623003		

METHOD BLANK: 1223400 Matrix: Water

Associated Lab Samples: 30209623001, 30209623002, 30209623003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	02/08/17 15:14	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	02/08/17 15:14	
Benzene	ug/L	ND	1.0	02/08/17 15:14	
Ethylbenzene	ug/L	ND	1.0	02/08/17 15:14	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	02/08/17 15:14	
Methyl-tert-butyl ether	ug/L	ND	1.0	02/08/17 15:14	
Naphthalene	ug/L	ND	2.0	02/08/17 15:14	
Toluene	ug/L	ND	1.0	02/08/17 15:14	
Xylene (Total)	ug/L	ND	3.0	02/08/17 15:14	
1,2-Dichloroethane-d4 (S)	%	103	70-128	02/08/17 15:14	
4-Bromofluorobenzene (S)	%	100	78-117	02/08/17 15:14	
Dibromofluoromethane (S)	%	102	66-132	02/08/17 15:14	
Toluene-d8 (S)	%	101	59-140	02/08/17 15:14	

LABORATORY CONTROL SAMPLE: 1223401

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	21.1	106	78-116	
1,3,5-Trimethylbenzene	ug/L	20	20.8	104	77-114	
Benzene	ug/L	20	19.7	98	80-113	
Ethylbenzene	ug/L	20	20.1	100	80-115	
Isopropylbenzene (Cumene)	ug/L	20	21.0	105	78-114	
Methyl-tert-butyl ether	ug/L	20	18.7	94	82-126	
Naphthalene	ug/L	20	22.5	113	61-139	
Toluene	ug/L	20	20.3	101	82-116	
Xylene (Total)	ug/L	60	61.5	103	82-115	
1,2-Dichloroethane-d4 (S)	%			105	70-128	
4-Bromofluorobenzene (S)	%			102	78-117	
Dibromofluoromethane (S)	%			98	66-132	
Toluene-d8 (S)	%			100	59-140	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223402 1223403

Parameter	Units	30209987003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	16.1	18.2	80	91	69-121	12	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	15.9	17.8	79	89	68-118	11	
Benzene	ug/L	ND	20	20	16.2	17.1	81	86	63-123	5	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. SENECA MW-12,13,14

Pace Project No.: 30209623

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223402 1223403											
			MS	MSD					% Rec		
	30209987003		Spike	Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Ethylbenzene	ug/L	ND	20	20	16.2	16.7	81	84	70-120	3	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	16.2	18.7	81	93	71-129	14	
Methyl-tert-butyl ether	ug/L	ND	20	20	17.9	16.1	89	80	63-143	10	
Naphthalene	ug/L	ND	20	20	16.7	18.2	84	91	55-122	8	
Toluene	ug/L	ND	20	20	16.7	17.4	83	87	66-124	4	
Xylene (Total)	ug/L	ND	60	60	49.8	52.0	83	87	68-123	4	
1,2-Dichloroethane-d4 (S)	%						105	109	70-128		
4-Bromofluorobenzene (S)	%						97	101	78-117		
Dibromofluoromethane (S)	%						102	100	66-132		
Toluene-d8 (S)	%						103	99	59-140		

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: H.O. SENECA MW-12,13,14

Pace Project No.: 30209623

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: H.O. SENECA MW-12,13,14

Pace Project No.: 30209623

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30209623001	MW-12	EPA 8260B	248785		
30209623002	MW-13	EPA 8260B	248785		
30209623003	MW-14	EPA 8260B	248785		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company: Ceibas & Assoc. Inc.	Report To: Gary Ceibas	Attention: Gary Ceibas		Page: 1	of 1
Address: PO Box 44 Delmont PA 15626	Copy To:	Company Name:	Address:	2080032	
Phone: 724-454-2340	Purchase Order No.:	Address:	Reference:	REGULATORY AGENCY	
Fax:	Project Name: H.O. SENELA MW-13,14	Reference:	Pace Project Manager:	NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER	
Requested Due Date/TAT: 5/24/09	Project Number:	Reference:	Pace Profile #:	UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER <input type="checkbox"/>	
				Site Location STATE: PA	

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE DW Drinking Water WT Waste Water WW Wipe P Product SL Soil/Solid OL Oil WP Wipe AR Air TS Tissue OT Other	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives Unpreserved H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other	Y/N	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
					COMPOSITE START	COMPOSITE END/GRAB							
1	MW-12		WT G	G	DATE	TIME							861
2	MW-13		WT G	G	2-1-17	11:00		3					902
3	MW-14		WT G	G	2-1-17	11:45		3					903
4					2-1-17	12:45		3					
5													
6													
7													
8													
9													
10													
11													
12													

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION		DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	
	[Signature]		2-2-17	9:59	[Signature]	2-2-17	9:59	Y	N
New Sheetlist For									
PAPER UNLEASED									
Gasoline Parameters									
ORIGINAL									
SAMPLER NAME AND SIGNATURE					Temp in °C				
PRINT Name of SAMPLER: Mike J. Vetter					Received on				
SIGNATURE of SAMPLER: [Signature]					Custody Sealed Cooler (Y/N)				
DATE Signed (MM/DD/YYYY): 02/01/17					Samples Intact (Y/N)				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Sample Condition Upon Receipt Pittsburgh

30209623

Client Name: Cribbs & Assoc. Project # _____Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noThermometer Used 8 Type of Ice: Wet Blue NoneCooler Temperature Observed Temp 3.1 °C Correction Factor: +0.2 °C Final Temp: 3.3 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: BLM 2-2-17

Comments:

	Yes	No	N/A	
Chain of Custody Present:	/			1.
Chain of Custody Filled Out:	/			2.
Chain of Custody Relinquished:	/			3.
Sampler Name & Signature on COC:	/			4.
Sample Labels match COC:	/			5.
-Includes date/time/ID Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	/			6.
Short Hold Time Analysis (<72hr remaining):	/			7.
Rush Turn Around Time Requested:	/			8.
Sufficient Volume:	/			9.
Correct Containers Used:	/			10.
-Pace Containers Used:	/			
Containers Intact:	/			11.
Orthophosphate field filtered			/	12.
Organic Samples checked for dechlorination:			/	13.
Filtered volume received for Dissolved tests			/	14.
All containers have been checked for preservation.			/	15.
All containers needing preservation are found to be in compliance with EPA recommendation.			/	
exceptions: <u>VOA</u> , coliform, TOC, O&G, Phenolics				
				Initial when completed <u>BLM</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):		/		16.
Trip Blank Present:		/		17.
Trip Blank Custody Seals Present			/	
Rad Aqueous Samples Screened > 0.5 mrem/hr			/	Initial when completed: Date:

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

March 02, 2017

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626


RE: Project: HO: Seneca
Pace Project No.: 30211653

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on February 23, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
(724)850-5616
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: HO: Seneca

Pace Project No.: 30211653

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: HO: Seneca

Pace Project No.: 30211653

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30211653001	MW-11	EPA 8260B	JAS	13	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: HO: Seneca

Pace Project No.: 30211653

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: March 02, 2017

General Information:

1 sample was analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HO: Seneca

Pace Project No.: 30211653

Sample: MW-11 **Lab ID: 30211653001** Collected: 02/22/17 10:00 Received: 02/23/17 14:00 Matrix: Water

Comments: • Trip blank not received with the sample.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		02/28/17 16:04	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		02/28/17 16:04	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		02/28/17 16:04	98-82-8	
Methyl-tert-butyl ether	11.6	ug/L	5.0	1		02/28/17 16:04	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		02/28/17 16:04	91-20-3	CH
Toluene	ND	ug/L	5.0	1		02/28/17 16:04	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		02/28/17 16:04	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		02/28/17 16:04	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		02/28/17 16:04	1330-20-7	
Surrogates								
Toluene-d8 (S)	87	%	59-140	1		02/28/17 16:04	2037-26-5	
4-Bromofluorobenzene (S)	105	%	78-117	1		02/28/17 16:04	460-00-4	
1,2-Dichloroethane-d4 (S)	107	%	70-128	1		02/28/17 16:04	17060-07-0	
Dibromofluoromethane (S)	104	%	66-132	1		02/28/17 16:04	1868-53-7	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO: Seneca

Pace Project No.: 30211653

QC Batch:	250544	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 8260B	Analysis Description:	8260B MSV UST-WATER
Associated Lab Samples:	30211653001		

METHOD BLANK: 1232745 Matrix: Water

Associated Lab Samples: 30211653001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	02/28/17 14:09	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	02/28/17 14:09	
Benzene	ug/L	ND	1.0	02/28/17 14:09	
Ethylbenzene	ug/L	ND	1.0	02/28/17 14:09	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	02/28/17 14:09	
Methyl-tert-butyl ether	ug/L	ND	1.0	02/28/17 14:09	
Naphthalene	ug/L	ND	2.0	02/28/17 14:09	
Toluene	ug/L	ND	1.0	02/28/17 14:09	
Xylene (Total)	ug/L	ND	3.0	02/28/17 14:09	
1,2-Dichloroethane-d4 (S)	%	105	70-128	02/28/17 14:09	
4-Bromofluorobenzene (S)	%	102	78-117	02/28/17 14:09	
Dibromofluoromethane (S)	%	97	66-132	02/28/17 14:09	
Toluene-d8 (S)	%	121	59-140	02/28/17 14:09	

LABORATORY CONTROL SAMPLE: 1232746

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.8	99	78-116	
1,3,5-Trimethylbenzene	ug/L	20	19.1	95	77-114	
Benzene	ug/L	20	18.4	92	80-113	
Ethylbenzene	ug/L	20	21.2	106	80-115	
Isopropylbenzene (Cumene)	ug/L	20	19.7	98	78-114	
Methyl-tert-butyl ether	ug/L	20	22.0	110	82-126	
Naphthalene	ug/L	20	26.5	133	61-139	
Toluene	ug/L	20	19.8	99	82-116	
Xylene (Total)	ug/L	60	64.3	107	82-115	
1,2-Dichloroethane-d4 (S)	%			95	70-128	
4-Bromofluorobenzene (S)	%			99	78-117	
Dibromofluoromethane (S)	%			95	66-132	
Toluene-d8 (S)	%			96	59-140	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1232747 1232748

Parameter	Units	30211683001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	22.2	21.3	111	107	69-121	4	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	21.2	20.7	106	104	68-118	2	
Benzene	ug/L	ND	20	20	21.9	22.1	110	111	63-123	1	

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QUALITY CONTROL DATA

Project: HO: Seneca

Pace Project No.: 30211653

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1232747 1232748											
		30211683001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Ethylbenzene	ug/L	ND	20	20	22.5	22.6	112	113	70-120	0	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	22.5	21.1	113	106	71-129	6	
Methyl-tert-butyl ether	ug/L	3.1	20	20	23.4	21.8	101	93	63-143	7	
Naphthalene	ug/L	ND	20	20	23.0	20.8	115	104	55-122	10	
Toluene	ug/L	ND	20	20	21.4	22.5	107	113	66-124	5	
Xylene (Total)	ug/L	ND	60	60	69.1	67.9	115	113	68-123	2	
1,2-Dichloroethane-d4 (S)	%						101	99	70-128		
4-Bromofluorobenzene (S)	%						106	104	78-117		
Dibromofluoromethane (S)	%						101	104	66-132		
Toluene-d8 (S)	%						98	102	59-140		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: HO: Seneca
Pace Project No.: 30211653

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

CH The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HO: Seneca

Pace Project No.: 30211653

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30211653001	MW-11	EPA 8260B	250544		

REPORT OF LABORATORY ANALYSIS

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Section A

Required Client Information:

Company: *Cribbs & Associates, Inc*
Address: *PO Box 44*
Belmont PA 15008
Email To: *C.Cribbs@cribbsandassociates.com*
Phone: *724-454-2310* Fax:
Requested Due Date/TAT: *Standard*

Section B

Required Project Information:

Report To: *Gary Cribbs*
Copy To: *Gary Cribbs*
Purchase Order No.:
Project Name: *HQ: Services*
Project Number:

Invoice Information:

Attention: *Gary Cribbs*
Company Name: *Cribbs & Associates, Inc*
Address: *PO Box 44 Belmont PA 15008*
Pace Quote Reference:
Pace Project Manager: *Laura P. Miller*
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location

STATE: *PA*

Page: *1* of *1*

1809715

ITEM #	Section D Required Client Information		Section C COLLECTED		SAMPLE TYPE (G=GRAB C=COMP) (see valid codes to left)	MATRIX CODE	DATE	TIME	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Requested Analysis Filtered (Y/N)		Pace Project No./ Lab I.D.
	Matrix Codes MATRIX / CODE Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other	COMPOSITE START	COMPOSITE END/GRAB	DATE										TIME	DATE		TIME	Y/N	Analysis Test	Residual Chlorine (Y/N)
1	MW-4				WT C		2/23/17	1000								100
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																

*Analyze all samples for PAHs
NEW SHORTLIST for unloading
gasoline.*

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: *Jared Thorn*
SIGNATURE of SAMPLER: *Jared Thorn*

DATE Signed (MM/DD/YY): *2/23/17*

Temp in °C
Received on
Ice (Y/N)
Custody
Sealed Cooler (Y/N)
Samples Intact (Y/N)

Sample Condition Upon Receipt Pittsburgh

ARM

Face Analytical

Client Name: Cribbs

Project # 30211653

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used U Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 1.0 °C Correction Factor 10.2 °C Final Temp: 1.8 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ARM 2/23/17

Comments:

	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
-Includes date/time/ID Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
-Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Orthophosphate field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.
Organic Samples checked for dechlorination:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.
Filtered volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.
All containers have been checked for preservation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.
All containers needing preservation are found to be in compliance with EPA recommendation.				
exceptions: <u>VOA</u> , coliform, TOC, O&G, Phenolics				
				Initial when completed <u>ARM</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	16.
Trip Blank Present:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	17.
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Rad Aqueous Samples Screened > 0.5 mrem/hr	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Initial when completed: Date:

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

April 14, 2017

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

RE: Project: H.O. SENECA
Pace Project No.: 30214776

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on March 31, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
(724)850-5616
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: H.O. SENECA

Pace Project No.: 30214776

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

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SAMPLE ANALYTE COUNT

Project: H.O. SENECA

Pace Project No.: 30214776

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30214776001	MW-1	EPA 8260B	RES	13	PASI-PA
30214776002	MW-2	EPA 8260B	RES	13	PASI-PA
30214776003	MW-3	EPA 8260B	RES	13	PASI-PA
30214776004	MW-4	EPA 8260B	RES	13	PASI-PA
30214776005	MW-5	EPA 8260B	RES	13	PASI-PA
30214776006	MW-6	EPA 8260B	RES	13	PASI-PA
30214776007	MW-7	EPA 8260B	RES	13	PASI-PA
30214776008	MW-8	EPA 8260B	RES	13	PASI-PA
30214776009	MW-9	EPA 8260B	RES	13	PASI-PA
30214776010	MW-10	EPA 8260B	RES	13	PASI-PA
30214776011	MW-11	EPA 8260B	RES	13	PASI-PA
30214776012	MW-12	EPA 8260B	RES	13	PASI-PA
30214776013	MW-13	EPA 8260B	RES	13	PASI-PA
30214776014	MW-14	EPA 8260B	RES	13	PASI-PA
30214776015	SWTR-1	EPA 8260B	RES	13	PASI-PA
30214776016	SWTR-2	EPA 8260B	RES	13	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: H.O. SENECA

Pace Project No.: 30214776

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: April 14, 2017

General Information:

16 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. SENECA

Pace Project No.: 30214776

Sample: MW-1 **Lab ID: 30214776001** Collected: 03/29/17 11:35 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	76.2	ug/L	5.0	1		04/06/17 18:59	71-43-2	
Ethylbenzene	638	ug/L	25.0	5		04/11/17 20:50	100-41-4	
Isopropylbenzene (Cumene)	43.2	ug/L	5.0	1		04/06/17 18:59	98-82-8	
Methyl-tert-butyl ether	9.3	ug/L	5.0	1		04/06/17 18:59	1634-04-4	
Naphthalene	179	ug/L	5.0	1		04/06/17 18:59	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 18:59	108-88-3	
1,2,4-Trimethylbenzene	573	ug/L	25.0	5		04/11/17 20:50	95-63-6	
1,3,5-Trimethylbenzene	219	ug/L	5.0	1		04/06/17 18:59	108-67-8	
Xylene (Total)	497	ug/L	5.0	1		04/06/17 18:59	1330-20-7	
Surrogates								
Toluene-d8 (S)	98	%	59-140	1		04/06/17 18:59	2037-26-5	
4-Bromofluorobenzene (S)	100	%	78-117	1		04/06/17 18:59	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-128	1		04/06/17 18:59	17060-07-0	
Dibromofluoromethane (S)	92	%	66-132	1		04/06/17 18:59	1868-53-7	

Sample: MW-2 **Lab ID: 30214776002** Collected: 03/29/17 12:25 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	783	ug/L	25.0	5		04/10/17 22:00	71-43-2	
Ethylbenzene	250	ug/L	5.0	1		04/06/17 19:26	100-41-4	
Isopropylbenzene (Cumene)	18.8	ug/L	5.0	1		04/06/17 19:26	98-82-8	
Methyl-tert-butyl ether	14.8	ug/L	5.0	1		04/06/17 19:26	1634-04-4	
Naphthalene	37.4	ug/L	5.0	1		04/06/17 19:26	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 19:26	108-88-3	
1,2,4-Trimethylbenzene	118	ug/L	1.0	1		04/06/17 19:26	95-63-6	
1,3,5-Trimethylbenzene	97.7	ug/L	1.0	1		04/06/17 19:26	108-67-8	
Xylene (Total)	91.1	ug/L	5.0	1		04/06/17 19:26	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%	59-140	1		04/06/17 19:26	2037-26-5	
4-Bromofluorobenzene (S)	100	%	78-117	1		04/06/17 19:26	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-128	1		04/06/17 19:26	17060-07-0	
Dibromofluoromethane (S)	86	%	66-132	1		04/06/17 19:26	1868-53-7	

Sample: MW-3 **Lab ID: 30214776003** Collected: 03/29/17 15:10 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	13400	ug/L	500	100		04/06/17 22:33	71-43-2	
Ethylbenzene	4410	ug/L	500	100		04/06/17 22:33	100-41-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. SENECA

Pace Project No.: 30214776

Sample: MW-3 **Lab ID: 30214776003** Collected: 03/29/17 15:10 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Isopropylbenzene (Cumene)	191	ug/L	25.0	5		04/06/17 22:06	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	25.0	5		04/06/17 22:06	1634-04-4	
Naphthalene	880	ug/L	25.0	5		04/06/17 22:06	91-20-3	
Toluene	8810	ug/L	500	100		04/06/17 22:33	108-88-3	
1,2,4-Trimethylbenzene	4920	ug/L	100	100		04/06/17 22:33	95-63-6	
1,3,5-Trimethylbenzene	1590	ug/L	5.0	5		04/06/17 22:06	108-67-8	
Xylene (Total)	23900	ug/L	500	100		04/06/17 22:33	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%	59-140	5		04/06/17 22:06	2037-26-5	
4-Bromofluorobenzene (S)	99	%	78-117	5		04/06/17 22:06	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-128	5		04/06/17 22:06	17060-07-0	
Dibromofluoromethane (S)	84	%	66-132	5		04/06/17 22:06	1868-53-7	

Sample: MW-4 **Lab ID: 30214776004** Collected: 03/29/17 14:30 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	1760	ug/L	100	20		04/06/17 20:46	71-43-2	
Ethylbenzene	764	ug/L	100	20		04/06/17 20:46	100-41-4	
Isopropylbenzene (Cumene)	71.9	ug/L	5.0	1		04/06/17 20:19	98-82-8	
Methyl-tert-butyl ether	5.1	ug/L	5.0	1		04/06/17 20:19	1634-04-4	
Naphthalene	145	ug/L	5.0	1		04/06/17 20:19	91-20-3	
Toluene	47.0	ug/L	5.0	1		04/06/17 20:19	108-88-3	
1,2,4-Trimethylbenzene	394	ug/L	20.0	20		04/06/17 20:46	95-63-6	
1,3,5-Trimethylbenzene	133	ug/L	1.0	1		04/06/17 20:19	108-67-8	
Xylene (Total)	1400	ug/L	100	20		04/06/17 20:46	1330-20-7	
Surrogates								
Toluene-d8 (S)	99	%	59-140	1		04/06/17 20:19	2037-26-5	
4-Bromofluorobenzene (S)	99	%	78-117	1		04/06/17 20:19	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-128	1		04/06/17 20:19	17060-07-0	
Dibromofluoromethane (S)	81	%	66-132	1		04/06/17 20:19	1868-53-7	

Sample: MW-5 **Lab ID: 30214776005** Collected: 03/29/17 14:00 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	9180	ug/L	250	50		04/10/17 22:53	71-43-2	
Ethylbenzene	2420	ug/L	100	20		04/06/17 21:39	100-41-4	
Isopropylbenzene (Cumene)	100	ug/L	5.0	1		04/06/17 21:13	98-82-8	
Methyl-tert-butyl ether	40.6	ug/L	5.0	1		04/06/17 21:13	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. SENECA

Pace Project No.: 30214776

Sample: MW-5 **Lab ID: 30214776005** Collected: 03/29/17 14:00 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Naphthalene	386	ug/L	5.0	1		04/06/17 21:13	91-20-3	
Toluene	27.3	ug/L	5.0	1		04/06/17 21:13	108-88-3	
1,2,4-Trimethylbenzene	2010	ug/L	100	20		04/06/17 21:39	95-63-6	
1,3,5-Trimethylbenzene	585	ug/L	100	20		04/06/17 21:39	108-67-8	
Xylene (Total)	3220	ug/L	100	20		04/06/17 21:39	1330-20-7	
Surrogates								
Toluene-d8 (S)	106	%	59-140	1		04/06/17 21:13	2037-26-5	
4-Bromofluorobenzene (S)	99	%	78-117	1		04/06/17 21:13	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-128	1		04/06/17 21:13	17060-07-0	
Dibromofluoromethane (S)	77	%	66-132	1		04/06/17 21:13	1868-53-7	

Sample: MW-6 **Lab ID: 30214776006** Collected: 03/29/17 13:15 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		04/06/17 14:33	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		04/06/17 14:33	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		04/06/17 14:33	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/06/17 14:33	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/06/17 14:33	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 14:33	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 14:33	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 14:33	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		04/06/17 14:33	1330-20-7	
Surrogates								
Toluene-d8 (S)	104	%	59-140	1		04/06/17 14:33	2037-26-5	
4-Bromofluorobenzene (S)	103	%	78-117	1		04/06/17 14:33	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-128	1		04/06/17 14:33	17060-07-0	
Dibromofluoromethane (S)	93	%	66-132	1		04/06/17 14:33	1868-53-7	

Sample: MW-7 **Lab ID: 30214776007** Collected: 03/29/17 10:50 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		04/06/17 15:00	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		04/06/17 15:00	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		04/06/17 15:00	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/06/17 15:00	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/06/17 15:00	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 15:00	108-88-3	

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ANALYTICAL RESULTS

Project: H.O. SENECA

Pace Project No.: 30214776

Sample: MW-7 **Lab ID: 30214776007** Collected: 03/29/17 10:50 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 15:00	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 15:00	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		04/06/17 15:00	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	59-140	1		04/06/17 15:00	2037-26-5	
4-Bromofluorobenzene (S)	98	%	78-117	1		04/06/17 15:00	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-128	1		04/06/17 15:00	17060-07-0	
Dibromofluoromethane (S)	96	%	66-132	1		04/06/17 15:00	1868-53-7	

Sample: MW-8 **Lab ID: 30214776008** Collected: 03/28/17 12:50 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		04/06/17 19:52	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		04/06/17 19:52	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		04/06/17 19:52	98-82-8	
Methyl-tert-butyl ether	422	ug/L	25.0	5		04/10/17 22:26	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/06/17 19:52	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 19:52	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 19:52	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 19:52	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		04/06/17 19:52	1330-20-7	
Surrogates								
Toluene-d8 (S)	103	%	59-140	1		04/06/17 19:52	2037-26-5	
4-Bromofluorobenzene (S)	100	%	78-117	1		04/06/17 19:52	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	70-128	1		04/06/17 19:52	17060-07-0	
Dibromofluoromethane (S)	94	%	66-132	1		04/06/17 19:52	1868-53-7	

Sample: MW-9 **Lab ID: 30214776009** Collected: 03/28/17 11:15 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		04/06/17 15:26	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		04/06/17 15:26	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		04/06/17 15:26	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/06/17 15:26	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/06/17 15:26	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 15:26	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 15:26	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 15:26	108-67-8	

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ANALYTICAL RESULTS

Project: H.O. SENECA

Pace Project No.: 30214776

Sample: MW-9 **Lab ID: 30214776009** Collected: 03/28/17 11:15 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Xylene (Total)	ND	ug/L	5.0	1		04/06/17 15:26	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%	59-140	1		04/06/17 15:26	2037-26-5	
4-Bromofluorobenzene (S)	104	%	78-117	1		04/06/17 15:26	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-128	1		04/06/17 15:26	17060-07-0	
Dibromofluoromethane (S)	94	%	66-132	1		04/06/17 15:26	1868-53-7	

Sample: MW-10 **Lab ID: 30214776010** Collected: 03/28/17 12:10 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	8.9	ug/L	5.0	1		04/06/17 15:53	71-43-2	
Ethylbenzene	141	ug/L	5.0	1		04/06/17 15:53	100-41-4	
Isopropylbenzene (Cumene)	23.1	ug/L	5.0	1		04/06/17 15:53	98-82-8	
Methyl-tert-butyl ether	16.3	ug/L	5.0	1		04/06/17 15:53	1634-04-4	
Naphthalene	31.5	ug/L	5.0	1		04/06/17 15:53	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 15:53	108-88-3	
1,2,4-Trimethylbenzene	22.3	ug/L	1.0	1		04/06/17 15:53	95-63-6	
1,3,5-Trimethylbenzene	2.6	ug/L	1.0	1		04/06/17 15:53	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		04/06/17 15:53	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%	59-140	1		04/06/17 15:53	2037-26-5	
4-Bromofluorobenzene (S)	103	%	78-117	1		04/06/17 15:53	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-128	1		04/06/17 15:53	17060-07-0	
Dibromofluoromethane (S)	91	%	66-132	1		04/06/17 15:53	1868-53-7	

Sample: MW-11 **Lab ID: 30214776011** Collected: 03/28/17 10:00 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		04/06/17 16:20	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		04/06/17 16:20	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		04/06/17 16:20	98-82-8	
Methyl-tert-butyl ether	11.2	ug/L	5.0	1		04/06/17 16:20	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/06/17 16:20	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 16:20	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 16:20	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 16:20	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		04/06/17 16:20	1330-20-7	

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ANALYTICAL RESULTS

Project: H.O. SENECA

Pace Project No.: 30214776

Sample: MW-11 **Lab ID: 30214776011** Collected: 03/28/17 10:00 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Surrogates								
Toluene-d8 (S)	104	%	59-140	1		04/06/17 16:20	2037-26-5	
4-Bromofluorobenzene (S)	102	%	78-117	1		04/06/17 16:20	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-128	1		04/06/17 16:20	17060-07-0	
Dibromofluoromethane (S)	94	%	66-132	1		04/06/17 16:20	1868-53-7	

Sample: MW-12 **Lab ID: 30214776012** Collected: 03/28/17 13:40 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		04/06/17 16:46	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		04/06/17 16:46	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		04/06/17 16:46	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/06/17 16:46	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/06/17 16:46	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 16:46	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 16:46	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 16:46	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		04/06/17 16:46	1330-20-7	
Surrogates								
Toluene-d8 (S)	99	%	59-140	1		04/06/17 16:46	2037-26-5	
4-Bromofluorobenzene (S)	100	%	78-117	1		04/06/17 16:46	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-128	1		04/06/17 16:46	17060-07-0	
Dibromofluoromethane (S)	95	%	66-132	1		04/06/17 16:46	1868-53-7	

Sample: MW-13 **Lab ID: 30214776013** Collected: 03/28/17 14:30 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		04/06/17 17:13	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		04/06/17 17:13	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		04/06/17 17:13	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/06/17 17:13	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/06/17 17:13	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 17:13	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 17:13	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 17:13	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		04/06/17 17:13	1330-20-7	
Surrogates								
Toluene-d8 (S)	103	%	59-140	1		04/06/17 17:13	2037-26-5	

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ANALYTICAL RESULTS

Project: H.O. SENECA

Pace Project No.: 30214776

Sample: MW-13 **Lab ID: 30214776013** Collected: 03/28/17 14:30 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Surrogates								
4-Bromofluorobenzene (S)	101	%	78-117	1		04/06/17 17:13	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	70-128	1		04/06/17 17:13	17060-07-0	
Dibromofluoromethane (S)	95	%	66-132	1		04/06/17 17:13	1868-53-7	

Sample: MW-14 **Lab ID: 30214776014** Collected: 03/28/17 15:15 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		04/06/17 17:39	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		04/06/17 17:39	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		04/06/17 17:39	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/06/17 17:39	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/06/17 17:39	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 17:39	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 17:39	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 17:39	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		04/06/17 17:39	1330-20-7	
Surrogates								
Toluene-d8 (S)	103	%	59-140	1		04/06/17 17:39	2037-26-5	
4-Bromofluorobenzene (S)	100	%	78-117	1		04/06/17 17:39	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-128	1		04/06/17 17:39	17060-07-0	
Dibromofluoromethane (S)	95	%	66-132	1		04/06/17 17:39	1868-53-7	

Sample: SWTR-1 **Lab ID: 30214776015** Collected: 03/29/17 10:00 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		04/06/17 18:06	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		04/06/17 18:06	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		04/06/17 18:06	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/06/17 18:06	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/06/17 18:06	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 18:06	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 18:06	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 18:06	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		04/06/17 18:06	1330-20-7	
Surrogates								
Toluene-d8 (S)	103	%	59-140	1		04/06/17 18:06	2037-26-5	
4-Bromofluorobenzene (S)	101	%	78-117	1		04/06/17 18:06	460-00-4	

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ANALYTICAL RESULTS

Project: H.O. SENECA

Pace Project No.: 30214776

Sample: SWTR-1 **Lab ID: 30214776015** Collected: 03/29/17 10:00 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Surrogates								
1,2-Dichloroethane-d4 (S)	105	%	70-128	1		04/06/17 18:06	17060-07-0	
Dibromofluoromethane (S)	93	%	66-132	1		04/06/17 18:06	1868-53-7	

Sample: SWTR-2 **Lab ID: 30214776016** Collected: 03/28/17 14:15 Received: 03/31/17 11:35 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		04/06/17 18:32	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		04/06/17 18:32	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		04/06/17 18:32	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/06/17 18:32	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/06/17 18:32	91-20-3	
Toluene	ND	ug/L	5.0	1		04/06/17 18:32	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 18:32	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/06/17 18:32	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		04/06/17 18:32	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%	59-140	1		04/06/17 18:32	2037-26-5	
4-Bromofluorobenzene (S)	99	%	78-117	1		04/06/17 18:32	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-128	1		04/06/17 18:32	17060-07-0	
Dibromofluoromethane (S)	96	%	66-132	1		04/06/17 18:32	1868-53-7	

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QUALITY CONTROL DATA

Project: H.O. SENECA

Pace Project No.: 30214776

QC Batch:	254568	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 8260B	Analysis Description:	8260B MSV UST-WATER
Associated Lab Samples:	30214776001, 30214776002, 30214776003, 30214776004, 30214776005, 30214776006, 30214776007, 30214776008, 30214776009, 30214776010, 30214776011, 30214776012, 30214776013, 30214776014, 30214776015, 30214776016		

METHOD BLANK: 1253459

Matrix: Water

Associated Lab Samples: 30214776001, 30214776002, 30214776003, 30214776004, 30214776005, 30214776006, 30214776007, 30214776008, 30214776009, 30214776010, 30214776011, 30214776012, 30214776013, 30214776014, 30214776015, 30214776016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	04/06/17 14:06	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	04/06/17 14:06	
Benzene	ug/L	ND	1.0	04/06/17 14:06	
Ethylbenzene	ug/L	ND	1.0	04/06/17 14:06	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	04/06/17 14:06	
Methyl-tert-butyl ether	ug/L	ND	1.0	04/06/17 14:06	
Naphthalene	ug/L	ND	2.0	04/06/17 14:06	
Toluene	ug/L	ND	1.0	04/06/17 14:06	
Xylene (Total)	ug/L	ND	3.0	04/06/17 14:06	
1,2-Dichloroethane-d4 (S)	%	104	70-128	04/06/17 14:06	
4-Bromofluorobenzene (S)	%	102	78-117	04/06/17 14:06	
Dibromofluoromethane (S)	%	98	66-132	04/06/17 14:06	
Toluene-d8 (S)	%	102	59-140	04/06/17 14:06	

LABORATORY CONTROL SAMPLE: 1253460

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	18.7	93	78-116	
1,3,5-Trimethylbenzene	ug/L	20	18.9	95	77-114	
Benzene	ug/L	20	18.4	92	80-113	
Ethylbenzene	ug/L	20	19.5	98	80-115	
Isopropylbenzene (Cumene)	ug/L	20	19.4	97	78-114	
Methyl-tert-butyl ether	ug/L	20	18.0	90	82-126	
Naphthalene	ug/L	20	21.5	107	61-139	
Toluene	ug/L	20	19.6	98	82-116	
Xylene (Total)	ug/L	60	57.1	95	82-115	
1,2-Dichloroethane-d4 (S)	%			100	70-128	
4-Bromofluorobenzene (S)	%			102	78-117	
Dibromofluoromethane (S)	%			100	66-132	
Toluene-d8 (S)	%			103	59-140	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: H.O. SENECA

Pace Project No.: 30214776

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1253522 1253523											
Parameter	Units	30214776007		MS	MSD	MS		MS	MSD	% Rec	
		Result	Conc.	Spike	Spike	Result	Result	% Rec	% Rec	Limits	RPD
1,2,4-Trimethylbenzene	ug/L	ND	20	20	20	16.2	17.6	81	88	69-121	8
1,3,5-Trimethylbenzene	ug/L	ND	20	20	20	16.3	17.8	82	89	68-118	9
Benzene	ug/L	ND	20	20	20	16.6	17.4	83	87	63-123	5
Ethylbenzene	ug/L	ND	20	20	20	17.1	17.9	85	90	70-120	5
Isopropylbenzene (Cumene)	ug/L	ND	20	20	20	17.0	18.2	85	91	71-129	7
Methyl-tert-butyl ether	ug/L	ND	20	20	20	15.8	15.3	79	76	63-143	3
Naphthalene	ug/L	ND	20	20	20	16.6	18.1	83	91	55-122	9
Toluene	ug/L	ND	20	20	20	17.4	18.3	87	92	66-124	5
Xylene (Total)	ug/L	ND	60	60	60	50.8	53.4	85	89	68-123	5
1,2-Dichloroethane-d4 (S)	%							108	105	70-128	
4-Bromofluorobenzene (S)	%							103	102	78-117	
Dibromofluoromethane (S)	%							99	101	66-132	
Toluene-d8 (S)	%							104	101	59-140	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: H.O. SENECA

Pace Project No.: 30214776

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: H.O. SENECA

Pace Project No.: 30214776

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30214776001	MW-1	EPA 8260B	254568		
30214776002	MW-2	EPA 8260B	254568		
30214776003	MW-3	EPA 8260B	254568		
30214776004	MW-4	EPA 8260B	254568		
30214776005	MW-5	EPA 8260B	254568		
30214776006	MW-6	EPA 8260B	254568		
30214776007	MW-7	EPA 8260B	254568		
30214776008	MW-8	EPA 8260B	254568		
30214776009	MW-9	EPA 8260B	254568		
30214776010	MW-10	EPA 8260B	254568		
30214776011	MW-11	EPA 8260B	254568		
30214776012	MW-12	EPA 8260B	254568		
30214776013	MW-13	EPA 8260B	254568		
30214776014	MW-14	EPA 8260B	254568		
30214776015	SWTR-1	EPA 8260B	254568		
30214776016	SWTR-2	EPA 8260B	254568		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.



30214776

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: Ce385 & Assoc. Inc.	Report To: Gray Cc385	Attention: Gray Cc385	Company Name: "	Page: 1 of Z	REGULATORY AGENCY <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER Site Location: PA STATE: PA
Address: PO Box 44	Copy To:	Company Name: "	Address: "	1769246	
Delmont PA 15626	Purchase Order No.:	Pace Quote Reference:	Pace Project Manager:		
Email To:	Project Name: H.O. Service	Pace Project Manager:	Pace Profile #:		
Phone: 724-454-2310 Fax:	Project Number:				
Requested Due Date/TAT: STANDARD					

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE DW WT WW P SL OL WP AR TS OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Analysis Test ↑	Y/N	Requested Analysis Filtered (Y/N)	Pace Project No./ Lab I.D.		
					COMPOSITE START	COMPOSITE END/GRAB			Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other						
1	MW-1		WT G	G		DATE	TIME	DATE	TIME									↑ Analysis Test ↑			30214776	
2	MW-2		WT G	G			3-29-17 11:35		3-29-17 11:35	3									See Below			001
3	MW-3		WT G	G			3-29-17 12:25		3-29-17 12:25	3												002
4	MW-4		WT G	G			3-29-17 15:10		3-29-17 15:10	3												003
5	MW-5		WT G	G			3-29-17 14:30		3-29-17 14:30	3												004
6	MW-6		WT G	G			3-29-17 14:00		3-29-17 14:00	3												005
7	MW-7		WT G	G			3-29-17 13:15		3-29-17 13:15	3												006
8	MW-8		WT G	G			3-29-17 10:50		3-29-17 10:50	3												007
9	MW-9		WT G	G			3-29-17 12:50		3-29-17 12:50	3												008
10	MW-10		WT G	G			3-29-17 11:15		3-29-17 11:15	3												009
11	MW-11		WT G	G			3-29-17 12:10		3-29-17 12:10	3												010
12	MW-12		WT G	G			3-29-17 10:00		3-29-17 10:00	3												011
			WT G	G			3-29-17 13:40		3-29-17 13:40	3												012

ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS		
New Sheet list for		<i>[Signature]</i>	3-30-17	11:00	<i>[Signature]</i>	3-30-17	11:00			
UNLEADED Gasoline		<i>[Signature]</i>	3-30-17	11:35	<i>[Signature]</i>	3-30-17	11:35	5.4	✓	
Parameters										
SAMPLER NAME AND SIGNATURE		PRINT Name of SAMPLER: <i>[Signature]</i>		DATE Signed (MM/DD/YY): <i>03/28/17</i>		Temp in °C		Received on Ice (Y/N)	Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.



30214776

Page: Z of Z
1769247

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: <u>Ce-133 & Assoc. Inc</u>	Report To: <u>Gray Carabbs</u>	Attention: <u>Gray Carabbs</u>	Company Name: <u>"</u>	REGULATORY AGENCY	
Address: <u>PO. Box 414</u>	Copy To:	Address: <u>"</u>	Pace Quote Reference: <u>"</u>	<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER	
Email To: <u>Delmont PA 15626</u>	Purchase Order No.:	Pace Project Manager: <u>Louisa PARILLA</u>	Pace Profile #:	<input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER	
Phone: <u>724-454-2310</u>	Project Name: <u>H.O. SEVECA</u>	Site Location: <u>PA</u>	STATE: <u>PA</u>		
Requested Due Date/TAT: <u>STANDARD</u>	Project Number:				

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Y / N	Requested Analysis Filtered (Y/N)												Pace Project No./ Lab I.D.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
					COMPOSITE START		DATE	TIME			COMPOSITE END/GRAB	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION		DATE		TIME		SAMPLE CONDITIONS			
													Received on	Sealed Cooler	Temp in °C	Samples Intact
New Sheet list For	<u>Gray Carabbs</u>		3-30-17		11:00		<u>Gray Carabbs</u>		3-30-17		11:00					
UNENDED Gasoline	<u>Gray Carabbs</u>		3-30-17		11:35		<u>Gray Carabbs</u>		3-30-17		11:35		5.4	Y	N	Y
Parameters																

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER: <u>Gray Carabbs</u>	DATE Signed (MM/DD/YY): <u>03/28/17</u>
SIGNATURE of SAMPLER: <u>Gray Carabbs</u>	

Sample Condition Upon Receipt Pittsburgh

BLM

Pace Analytical

Client Name: Cribbs & AssocProject # 30214776Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noThermometer Used 6 Type of Ice: Wet Blue NoneCooler Temperature Observed Temp 5.4 °C Correction Factor: 0 °C Final Temp: 5.4 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: BTM 3/3/12

Comments:

	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>			1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>			2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>			3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>			4.
Sample Labels match COC:	<input checked="" type="checkbox"/>			5.
-Includes date/time/ID				
Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>			6.
Short Hold Time Analysis (<72hr remaining):		<input checked="" type="checkbox"/>		7.
Rush Turn Around Time Requested:		<input checked="" type="checkbox"/>		8.
Sufficient Volume:	<input checked="" type="checkbox"/>			9.
Correct Containers Used:	<input checked="" type="checkbox"/>			10.
-Pace Containers Used:	<input checked="" type="checkbox"/>			
Containers Intact:	<input checked="" type="checkbox"/>			11.
Orthophosphate field filtered			<input checked="" type="checkbox"/>	12.
Organic Samples checked for dechlorination:			<input checked="" type="checkbox"/>	13.
Filtered volume received for Dissolved tests			<input checked="" type="checkbox"/>	14.
All containers have been checked for preservation.			<input checked="" type="checkbox"/>	15.
All containers needing preservation are found to be in compliance with EPA recommendation.			<input checked="" type="checkbox"/>	
exceptions: <u>VOA</u> , coliform, TOC, O&G, Phenolics				
				Initial when completed <u>BTM</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):		<input checked="" type="checkbox"/>		16.
Trip Blank Present:		<input checked="" type="checkbox"/>		17.
Trip Blank Custody Seals Present			<input checked="" type="checkbox"/>	
Rad Aqueous Samples Screened > 0.5 mrem/hr			<input checked="" type="checkbox"/>	Initial when completed: <u>BTM</u> Date: <u>3/3/12</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

May 09, 2017

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626


RE: Project: HO: Seneca
Pace Project No.: 30217300

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on April 27, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
(724)850-5616
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: HO: Seneca

Pace Project No.: 30217300

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: HO: Seneca

Pace Project No.: 30217300

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30217300001	MW-8	EPA 8260B	JAS	13	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: HO: Seneca

Pace Project No.: 30217300

Method: EPA 8260B

Description: 8260B MSV

Client: Cribbs and Associates

Date: May 09, 2017

General Information:

1 sample was analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HO: Seneca

Pace Project No.: 30217300

Sample: MW-8 **Lab ID: 30217300001** Collected: 04/25/17 12:00 Received: 04/27/17 13:25 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		05/06/17 20:09	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		05/06/17 20:09	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		05/06/17 20:09	98-82-8	
Methyl-tert-butyl ether	520	ug/L	50.0	10		05/06/17 20:33	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		05/06/17 20:09	91-20-3	
Toluene	ND	ug/L	5.0	1		05/06/17 20:09	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		05/06/17 20:09	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		05/06/17 20:09	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		05/06/17 20:09	1330-20-7	
Surrogates								
Toluene-d8 (S)	96	%	59-140	1		05/06/17 20:09	2037-26-5	
4-Bromofluorobenzene (S)	93	%	78-117	1		05/06/17 20:09	460-00-4	
1,2-Dichloroethane-d4 (S)	110	%	70-128	1		05/06/17 20:09	17060-07-0	
Dibromofluoromethane (S)	100	%	66-132	1		05/06/17 20:09	1868-53-7	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO: Seneca

Pace Project No.: 30217300

QC Batch:	257538	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 8260B	Analysis Description:	8260B MSV UST-WATER
Associated Lab Samples:	30217300001		

METHOD BLANK: 1268577 Matrix: Water

Associated Lab Samples: 30217300001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	05/05/17 11:38	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	05/05/17 11:38	
Benzene	ug/L	ND	1.0	05/05/17 11:38	
Ethylbenzene	ug/L	ND	1.0	05/05/17 11:38	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	05/05/17 11:38	
Methyl-tert-butyl ether	ug/L	ND	1.0	05/05/17 11:38	
Naphthalene	ug/L	ND	2.0	05/05/17 11:38	
Toluene	ug/L	ND	1.0	05/05/17 11:38	
Xylene (Total)	ug/L	ND	3.0	05/05/17 11:38	
1,2-Dichloroethane-d4 (S)	%	106	70-128	05/05/17 11:38	
4-Bromofluorobenzene (S)	%	92	78-117	05/05/17 11:38	
Dibromofluoromethane (S)	%	102	66-132	05/05/17 11:38	
Toluene-d8 (S)	%	95	59-140	05/05/17 11:38	

METHOD BLANK: 1269366 Matrix: Water

Associated Lab Samples: 30217300001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	05/06/17 15:39	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	05/06/17 15:39	
Benzene	ug/L	ND	1.0	05/06/17 15:39	
Ethylbenzene	ug/L	ND	1.0	05/06/17 15:39	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	05/06/17 15:39	
Methyl-tert-butyl ether	ug/L	ND	1.0	05/06/17 15:39	
Naphthalene	ug/L	ND	2.0	05/06/17 15:39	
Toluene	ug/L	ND	1.0	05/06/17 15:39	
Xylene (Total)	ug/L	ND	3.0	05/06/17 15:39	
1,2-Dichloroethane-d4 (S)	%	101	70-128	05/06/17 15:39	
4-Bromofluorobenzene (S)	%	91	78-117	05/06/17 15:39	
Dibromofluoromethane (S)	%	101	66-132	05/06/17 15:39	
Toluene-d8 (S)	%	96	59-140	05/06/17 15:39	

LABORATORY CONTROL SAMPLE: 1268578

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	18.0	90	78-116	
1,3,5-Trimethylbenzene	ug/L	20	17.4	87	77-114	
Benzene	ug/L	20	19.8	99	80-113	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO: Seneca

Pace Project No.: 30217300

LABORATORY CONTROL SAMPLE: 1268578

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Ethylbenzene	ug/L	20	20.2	101	80-115	
Isopropylbenzene (Cumene)	ug/L	20	17.5	87	78-114	
Methyl-tert-butyl ether	ug/L	20	21.9	109	82-126	
Naphthalene	ug/L	20	19.0	95	61-139	
Toluene	ug/L	20	19.7	99	82-116	
Xylene (Total)	ug/L	60	59.3	99	82-115	
1,2-Dichloroethane-d4 (S)	%			102	70-128	
4-Bromofluorobenzene (S)	%			92	78-117	
Dibromofluoromethane (S)	%			100	66-132	
Toluene-d8 (S)	%			99	59-140	

LABORATORY CONTROL SAMPLE: 1269367

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	18.9	94	78-116	
1,3,5-Trimethylbenzene	ug/L	20	18.2	91	77-114	
Benzene	ug/L	20	22.1	111	80-113	
Ethylbenzene	ug/L	20	19.8	99	80-115	
Isopropylbenzene (Cumene)	ug/L	20	18.7	94	78-114	
Methyl-tert-butyl ether	ug/L	20	21.4	107	82-126	
Naphthalene	ug/L	20	19.7	99	61-139	
Toluene	ug/L	20	20.7	104	82-116	
Xylene (Total)	ug/L	60	59.7	100	82-115	
1,2-Dichloroethane-d4 (S)	%			104	70-128	
4-Bromofluorobenzene (S)	%			92	78-117	
Dibromofluoromethane (S)	%			104	66-132	
Toluene-d8 (S)	%			98	59-140	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1268579 1268580

Parameter	Units	30217850002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	19.9	20.6	100	103	69-121	3	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	18.2	19.4	91	97	68-118	7	
Benzene	ug/L	ND	20	20	22.1	23.5	111	117	63-123	6	
Ethylbenzene	ug/L	ND	20	20	19.9	20.9	100	104	70-120	5	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	18.8	20.1	94	100	71-129	7	
Methyl-tert-butyl ether	ug/L	ND	20	20	19.4	19.8	95	97	63-143	2	
Naphthalene	ug/L	ND	20	20	18.7	20.1	93	101	55-122	8	
Toluene	ug/L	ND	20	20	21.0	21.7	105	108	66-124	3	
Xylene (Total)	ug/L	ND	60	60	59.1	62.5	98	104	68-123	6	
1,2-Dichloroethane-d4 (S)	%						105	104	70-128		
4-Bromofluorobenzene (S)	%						96	95	78-117		
Dibromofluoromethane (S)	%						101	104	66-132		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO: Seneca

Pace Project No.: 30217300

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1268579 1268580											
Parameter	Units	30217850002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Toluene-d8 (S)	%						97	98	59-140		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: HO: Seneca
Pace Project No.: 30217300

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HO: Seneca

Pace Project No.: 30217300

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30217300001	MW-8	EPA 8260B	257538		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		30217300		Page: 1 of 1	
Company:	Cribbs and Associates Inc	Report To:	Gary Cribbs	Attention:	Gary Cribbs	REGULATORY AGENCY			
Address:	PO Box 44 PA	Copy To:	Gary Cribbs	Company Name:	Cribbs and Associates, Inc.	NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/>			
Email To:	Delmont PA 15622	Purchase Order No.:		Address:	PO Box 44 Delmont PA 15622	UST <input checked="" type="checkbox"/> RCRA <input type="checkbox"/> OTHER <input type="checkbox"/>			
Phone:	724-454-2310	Project Name:	140: Seneca	Place Quote Reference:		Site Location			
Fax:		Project Number:		Place Project Manager:	Laura Pirilla	STATE: PA			
Requested Due Date/TAT:	Standard			Place Profile #:					

[illegible]

Page 11 of 12

[illegible]

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER:

DATE Signed

Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
--------------------------	-----------------------------------	-------------------------

By accepting and returning this invoice, you are accepting Face's NEI 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name:

Cribbs

Project #

30217300

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other

Tracking #:

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used 10 Type of Ice: ☒ Wet ☐ Blue ☐ None

Cooler Temperature Observed Temp 16 °C Correction Factor: 0.0 °C Final Temp: 1.6 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: JRM 12/27/17

Comments:

Yes No N/A

Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
-Includes date/time/ID Matrix: WT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
-Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Orthophosphate field filtered	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12.
Organic Samples checked for dechlorination:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13.
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14.
All containers have been checked for preservation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed JRM Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16.
Trip Blank Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Rad Aqueous Samples Screened > 0.5 mrem/hr	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: Date:

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

June 29, 2017

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

RE: Project: HO:Seneca
Pace Project No.: 30221585

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on June 15, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Samantha Bayura for
Laura M. Pirilla
laura.pirilla@pacelabs.com
(724)850-5616
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: HO:Seneca

Pace Project No.: 30221585

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: HO:Seneca

Pace Project No.: 30221585

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30221585001	MW-1	EPA 8260B	LEL	13	PASI-PA
30221585002	MW-2	EPA 8260B	LEL	13	PASI-PA
30221585003	MW-3	EPA 8260B	LEL	13	PASI-PA
30221585004	MW-4	EPA 8260B	LEL	13	PASI-PA
30221585005	MW-5	EPA 8260B	LEL	13	PASI-PA
30221585006	MW-6	EPA 8260B	LEL	13	PASI-PA
30221585007	MW-7	EPA 8260B	LEL	13	PASI-PA
30221585008	MW-8	EPA 8260B	LEL	13	PASI-PA
30221585009	MW-9	EPA 8260B	LEL	13	PASI-PA
30221585010	MW-10	EPA 8260B	LEL	13	PASI-PA
30221585011	MW-11	EPA 8260B	LEL	13	PASI-PA
30221585012	MW-12	EPA 8260B	LEL	13	PASI-PA
30221585013	MW-13	EPA 8260B	LEL	13	PASI-PA
30221585014	MW-14	EPA 8260B	LEL	13	PASI-PA
30221585015	MW-15	EPA 8260B	LEL	13	PASI-PA
30221585016	Upstream	EPA 8260B	LEL	13	PASI-PA
30221585017	Downstream	EPA 8260B	LEL	13	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: HO:Seneca
Pace Project No.: 30221585

Method: EPA 8260B
Description: 8260B MSV
Client: Cribbs and Associates
Date: June 29, 2017

General Information:

17 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HO:Seneca
Pace Project No.: 30221585

Sample: MW-1		Lab ID: 30221585001	Collected: 06/13/17 12:55		Received: 06/15/17 08:42		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	45.9	ug/L	5.0	1		06/20/17 05:24	71-43-2	
Ethylbenzene	370	ug/L	25.0	5		06/20/17 05:50	100-41-4	
Isopropylbenzene (Cumene)	30.1	ug/L	5.0	1		06/20/17 05:24	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		06/20/17 05:24	1634-04-4	
Naphthalene	93.6	ug/L	5.0	1		06/20/17 05:24	91-20-3	
Toluene	ND	ug/L	5.0	1		06/20/17 05:24	108-88-3	
1,2,4-Trimethylbenzene	297	ug/L	5.0	1		06/20/17 05:24	95-63-6	
1,3,5-Trimethylbenzene	69.1	ug/L	5.0	1		06/20/17 05:24	108-67-8	
Xylene (Total)	325	ug/L	5.0	1		06/20/17 05:24	1330-20-7	
Surrogates								
Toluene-d8 (S)	98	%	59-140	1		06/20/17 05:24	2037-26-5	
4-Bromofluorobenzene (S)	98	%	78-117	1		06/20/17 05:24	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-128	1		06/20/17 05:24	17060-07-0	
Dibromofluoromethane (S)	102	%	66-132	1		06/20/17 05:24	1868-53-7	

Sample: MW-2		Lab ID: 30221585002		Collected: 06/13/17 13:50		Received: 06/15/17 08:42		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B MSV		Analytical Method: EPA 8260B							
Benzene	884	ug/L	25.0	5		06/20/17 06:41	71-43-2		
Ethylbenzene	319	ug/L	5.0	1		06/20/17 06:15	100-41-4		
Isopropylbenzene (Cumene)	23.6	ug/L	5.0	1		06/20/17 06:15	98-82-8		
Methyl-tert-butyl ether	15.9	ug/L	5.0	1		06/20/17 06:15	1634-04-4		
Naphthalene	46.5	ug/L	5.0	1		06/20/17 06:15	91-20-3		
Toluene	10.5	ug/L	5.0	1		06/20/17 06:15	108-88-3		
1,2,4-Trimethylbenzene	179	ug/L	1.0	1		06/20/17 06:15	95-63-6		
1,3,5-Trimethylbenzene	87.3	ug/L	1.0	1		06/20/17 06:15	108-67-8		
Xylene (Total)	290	ug/L	5.0	1		06/20/17 06:15	1330-20-7		
Surrogates									
Toluene-d8 (S)	98	%	59-140	1		06/20/17 06:15	2037-26-5		
4-Bromofluorobenzene (S)	101	%	78-117	1		06/20/17 06:15	460-00-4		
1,2-Dichloroethane-d4 (S)	105	%	70-128	1		06/20/17 06:15	17060-07-0		
Dibromofluoromethane (S)	99	%	66-132	1		06/20/17 06:15	1868-53-7		

Sample: MW-3		Lab ID: 30221585003		Collected: 06/13/17 14:40		Received: 06/15/17 08:42		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Benzene		17000	ug/L	500	100		06/20/17 10:17	71-43-2	
Ethylbenzene		2980	ug/L	500	100		06/20/17 10:17	100-41-4	
Isopropylbenzene (Cumene)		73.4	ug/L	25.0	5		06/20/17 09:51	98-82-8	
Methyl-tert-butyl ether		ND	ug/L	25.0	5		06/20/17 09:51	1634-04-4	
Naphthalene		537	ug/L	25.0	5		06/20/17 09:51	91-20-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HO:Seneca
Pace Project No.: 30221585

Sample: MW-3		Lab ID: 30221585003	Collected: 06/13/17 14:40	Received: 06/15/17 08:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Toluene	7270	ug/L	500	100		06/20/17 10:17	108-88-3	
1,2,4-Trimethylbenzene	2730	ug/L	100	100		06/20/17 10:17	95-63-6	
1,3,5-Trimethylbenzene	595	ug/L	5.0	5		06/20/17 09:51	108-67-8	
Xylene (Total)	16800	ug/L	500	100		06/20/17 10:17	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	59-140	5		06/20/17 09:51	2037-26-5	
4-Bromofluorobenzene (S)	100	%	78-117	5		06/20/17 09:51	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-128	5		06/20/17 09:51	17060-07-0	
Dibromofluoromethane (S)	96	%	66-132	5		06/20/17 09:51	1868-53-7	

Sample: MW-4		Lab ID: 30221585004	Collected: 06/13/17 13:05	Received: 06/15/17 08:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	1600	ug/L	100	20		06/20/17 08:35	71-43-2	
Ethylbenzene	626	ug/L	100	20		06/20/17 08:35	100-41-4	
Isopropylbenzene (Cumene)	66.5	ug/L	5.0	1		06/20/17 08:09	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		06/20/17 08:09	1634-04-4	
Naphthalene	153	ug/L	5.0	1		06/20/17 08:09	91-20-3	
Toluene	25.7	ug/L	5.0	1		06/20/17 08:09	108-88-3	
1,2,4-Trimethylbenzene	289	ug/L	1.0	1		06/20/17 08:09	95-63-6	
1,3,5-Trimethylbenzene	86.7	ug/L	1.0	1		06/20/17 08:09	108-67-8	
Xylene (Total)	856	ug/L	5.0	1		06/20/17 08:09	1330-20-7	
Surrogates								
Toluene-d8 (S)	99	%	59-140	1		06/20/17 08:09	2037-26-5	
4-Bromofluorobenzene (S)	102	%	78-117	1		06/20/17 08:09	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-128	1		06/20/17 08:09	17060-07-0	
Dibromofluoromethane (S)	96	%	66-132	1		06/20/17 08:09	1868-53-7	

Sample: MW-5		Lab ID: 30221585005	Collected: 06/13/17 12:00	Received: 06/15/17 08:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	10500	ug/L	250	50		06/20/17 09:26	71-43-2	
Ethylbenzene	3020	ug/L	250	50		06/20/17 09:26	100-41-4	
Isopropylbenzene (Cumene)	109	ug/L	5.0	1		06/20/17 09:00	98-82-8	
Methyl-tert-butyl ether	61.3	ug/L	5.0	1		06/20/17 09:00	1634-04-4	
Naphthalene	4470	ug/L	250	50		06/20/17 09:26	91-20-3	
Toluene	53.9	ug/L	5.0	1		06/20/17 09:00	108-88-3	
1,2,4-Trimethylbenzene	3510	ug/L	250	50		06/20/17 09:26	95-63-6	
1,3,5-Trimethylbenzene	1040	ug/L	250	50		06/20/17 09:26	108-67-8	
Xylene (Total)	8660	ug/L	250	50		06/20/17 09:26	1330-20-7	

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ANALYTICAL RESULTS

Project: HO:Seneca
Pace Project No.: 30221585

Sample: MW-5		Lab ID: 30221585005		Collected: 06/13/17 12:00		Received: 06/15/17 08:42		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Surrogates									
Toluene-d8 (S)		104	%	59-140	1		06/20/17 09:00	2037-26-5	
4-Bromofluorobenzene (S)		106	%	78-117	1		06/20/17 09:00	460-00-4	
1,2-Dichloroethane-d4 (S)		106	%	70-128	1		06/20/17 09:00	17060-07-0	
Dibromofluoromethane (S)		93	%	66-132	1		06/20/17 09:00	1868-53-7	

Sample: MW-6		Lab ID: 30221585006	Collected: 06/13/17 11:50	Received: 06/15/17 08:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		06/20/17 01:10	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		06/20/17 01:10	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		06/20/17 01:10	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		06/20/17 01:10	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		06/20/17 01:10	91-20-3	
Toluene	ND	ug/L	5.0	1		06/20/17 01:10	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 01:10	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 01:10	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		06/20/17 01:10	1330-20-7	
Surrogates								
Toluene-d8 (S)	99	%	59-140	1		06/20/17 01:10	2037-26-5	
4-Bromofluorobenzene (S)	105	%	78-117	1		06/20/17 01:10	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-128	1		06/20/17 01:10	17060-07-0	
Dibromofluoromethane (S)	105	%	66-132	1		06/20/17 01:10	1868-53-7	

Sample: MW-7		Lab ID: 30221585007	Collected: 06/13/17 11:05	Received: 06/15/17 08:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		06/20/17 01:35	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		06/20/17 01:35	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		06/20/17 01:35	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		06/20/17 01:35	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		06/20/17 01:35	91-20-3	
Toluene	ND	ug/L	5.0	1		06/20/17 01:35	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 01:35	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 01:35	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		06/20/17 01:35	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	59-140	1		06/20/17 01:35	2037-26-5	
4-Bromofluorobenzene (S)	102	%	78-117	1		06/20/17 01:35	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-128	1		06/20/17 01:35	17060-07-0	
Dibromofluoromethane (S)	106	%	66-132	1		06/20/17 01:35	1868-53-7	

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ANALYTICAL RESULTS

Project: HO:Seneca
Pace Project No.: 30221585

Sample: MW-8		Lab ID: 30221585008		Collected: 06/12/17 15:30		Received: 06/15/17 08:42		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B MSV		Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		06/20/17 07:06	71-43-2		
Ethylbenzene	ND	ug/L	5.0	1		06/20/17 07:06	100-41-4		
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		06/20/17 07:06	98-82-8		
Methyl-tert-butyl ether	421	ug/L	25.0	5		06/20/17 07:44	1634-04-4		
Naphthalene	ND	ug/L	5.0	1		06/20/17 07:06	91-20-3		
Toluene	ND	ug/L	5.0	1		06/20/17 07:06	108-88-3		
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 07:06	95-63-6		
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 07:06	108-67-8		
Xylene (Total)	ND	ug/L	5.0	1		06/20/17 07:06	1330-20-7		
Surrogates									
Toluene-d8 (S)	99	%	59-140	1		06/20/17 07:06	2037-26-5		
4-Bromofluorobenzene (S)	101	%	78-117	1		06/20/17 07:06	460-00-4		
1,2-Dichloroethane-d4 (S)	109	%	70-128	1		06/20/17 07:06	17060-07-0		
Dibromofluoromethane (S)	106	%	66-132	1		06/20/17 07:06	1868-53-7		

Sample: MW-9		Lab ID: 30221585009		Collected: 06/12/17 14:15		Received: 06/15/17 08:42		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B MSV		Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		06/20/17 02:01	71-43-2		
Ethylbenzene	ND	ug/L	5.0	1		06/20/17 02:01	100-41-4		
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		06/20/17 02:01	98-82-8		
Methyl-tert-butyl ether	ND	ug/L	5.0	1		06/20/17 02:01	1634-04-4		
Naphthalene	ND	ug/L	5.0	1		06/20/17 02:01	91-20-3		
Toluene	ND	ug/L	5.0	1		06/20/17 02:01	108-88-3		
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 02:01	95-63-6		
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 02:01	108-67-8		
Xylene (Total)	ND	ug/L	5.0	1		06/20/17 02:01	1330-20-7		
Surrogates									
Toluene-d8 (S)	98	%	59-140	1		06/20/17 02:01	2037-26-5		
4-Bromofluorobenzene (S)	100	%	78-117	1		06/20/17 02:01	460-00-4		
1,2-Dichloroethane-d4 (S)	105	%	70-128	1		06/20/17 02:01	17060-07-0		
Dibromofluoromethane (S)	105	%	66-132	1		06/20/17 02:01	1868-53-7		

Sample: MW-10		Lab ID: 30221585010		Collected: 06/12/17 15:05		Received: 06/15/17 08:42		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Benzene		5.3	ug/L	5.0	1		06/20/17 04:08	71-43-2	
Ethylbenzene		81.8	ug/L	5.0	1		06/20/17 04:08	100-41-4	
Isopropylbenzene (Cumene)		14.4	ug/L	5.0	1		06/20/17 04:08	98-82-8	
Methyl-tert-butyl ether		21.3	ug/L	5.0	1		06/20/17 04:08	1634-04-4	
Naphthalene		11.1	ug/L	5.0	1		06/20/17 04:08	91-20-3	

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ANALYTICAL RESULTS

Project: HO:Seneca
Pace Project No.: 30221585

Sample: MW-10		Lab ID: 30221585010	Collected: 06/12/17 15:05	Received: 06/15/17 08:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Toluene	ND	ug/L	5.0	1		06/20/17 04:08	108-88-3	
1,2,4-Trimethylbenzene	6.4	ug/L	1.0	1		06/20/17 04:08	95-63-6	
1,3,5-Trimethylbenzene	1.9	ug/L	1.0	1		06/20/17 04:08	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		06/20/17 04:08	1330-20-7	
Surrogates								
Toluene-d8 (S)	96	%	59-140	1		06/20/17 04:08	2037-26-5	
4-Bromofluorobenzene (S)	101	%	78-117	1		06/20/17 04:08	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-128	1		06/20/17 04:08	17060-07-0	
Dibromofluoromethane (S)	105	%	66-132	1		06/20/17 04:08	1868-53-7	

Sample: MW-11		Lab ID: 30221585011	Collected: 06/12/17 13:50	Received: 06/15/17 08:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		06/20/17 04:33	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		06/20/17 04:33	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		06/20/17 04:33	98-82-8	
Methyl-tert-butyl ether	13.2	ug/L	5.0	1		06/20/17 04:33	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		06/20/17 04:33	91-20-3	
Toluene	ND	ug/L	5.0	1		06/20/17 04:33	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 04:33	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 04:33	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		06/20/17 04:33	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%	59-140	1		06/20/17 04:33	2037-26-5	
4-Bromofluorobenzene (S)	102	%	78-117	1		06/20/17 04:33	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-128	1		06/20/17 04:33	17060-07-0	
Dibromofluoromethane (S)	106	%	66-132	1		06/20/17 04:33	1868-53-7	

Sample: MW-12		Lab ID: 30221585012	Collected: 06/12/17 11:45	Received: 06/15/17 08:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		06/20/17 02:26	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		06/20/17 02:26	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		06/20/17 02:26	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		06/20/17 02:26	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		06/20/17 02:26	91-20-3	
Toluene	ND	ug/L	5.0	1		06/20/17 02:26	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 02:26	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 02:26	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		06/20/17 02:26	1330-20-7	

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ANALYTICAL RESULTS

Project: HO:Seneca
Pace Project No.: 30221585

Sample: MW-12		Lab ID: 30221585012		Collected: 06/12/17 11:45		Received: 06/15/17 08:42		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Surrogates									
Toluene-d8 (S)		98	%	59-140	1		06/20/17 02:26	2037-26-5	
4-Bromofluorobenzene (S)		101	%	78-117	1		06/20/17 02:26	460-00-4	
1,2-Dichloroethane-d4 (S)		108	%	70-128	1		06/20/17 02:26	17060-07-0	
Dibromofluoromethane (S)		107	%	66-132	1		06/20/17 02:26	1868-53-7	

Sample: MW-13		Lab ID: 30221585013	Collected: 06/12/17 11:50	Received: 06/15/17 08:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		06/20/17 02:52	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		06/20/17 02:52	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		06/20/17 02:52	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		06/20/17 02:52	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		06/20/17 02:52	91-20-3	
Toluene	ND	ug/L	5.0	1		06/20/17 02:52	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 02:52	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 02:52	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		06/20/17 02:52	1330-20-7	
Surrogates								
Toluene-d8 (S)	97	%	59-140	1		06/20/17 02:52	2037-26-5	
4-Bromofluorobenzene (S)	107	%	78-117	1		06/20/17 02:52	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	70-128	1		06/20/17 02:52	17060-07-0	
Dibromofluoromethane (S)	103	%	66-132	1		06/20/17 02:52	1868-53-7	

Sample: MW-14		Lab ID: 30221585014	Collected: 06/12/17 12:50	Received: 06/15/17 08:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		06/20/17 03:17	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		06/20/17 03:17	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		06/20/17 03:17	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		06/20/17 03:17	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		06/20/17 03:17	91-20-3	
Toluene	ND	ug/L	5.0	1		06/20/17 03:17	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 03:17	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 03:17	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		06/20/17 03:17	1330-20-7	
Surrogates								
Toluene-d8 (S)	99	%	59-140	1		06/20/17 03:17	2037-26-5	
4-Bromofluorobenzene (S)	102	%	78-117	1		06/20/17 03:17	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-128	1		06/20/17 03:17	17060-07-0	
Dibromofluoromethane (S)	102	%	66-132	1		06/20/17 03:17	1868-53-7	

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ANALYTICAL RESULTS

Project: HO:Seneca
Pace Project No.: 30221585

Sample: MW-15		Lab ID: 30221585015		Collected: 06/12/17 16:00		Received: 06/15/17 08:42		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B MSV		Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		06/20/17 04:59	71-43-2		
Ethylbenzene	ND	ug/L	5.0	1		06/20/17 04:59	100-41-4		
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		06/20/17 04:59	98-82-8		
Methyl-tert-butyl ether	ND	ug/L	5.0	1		06/20/17 04:59	1634-04-4		
Naphthalene	ND	ug/L	5.0	1		06/20/17 04:59	91-20-3		
Toluene	ND	ug/L	5.0	1		06/20/17 04:59	108-88-3		
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 04:59	95-63-6		
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 04:59	108-67-8		
Xylene (Total)	ND	ug/L	5.0	1		06/20/17 04:59	1330-20-7		
Surrogates									
Toluene-d8 (S)	100	%	59-140	1		06/20/17 04:59	2037-26-5		
4-Bromofluorobenzene (S)	101	%	78-117	1		06/20/17 04:59	460-00-4		
1,2-Dichloroethane-d4 (S)	102	%	70-128	1		06/20/17 04:59	17060-07-0		
Dibromofluoromethane (S)	105	%	66-132	1		06/20/17 04:59	1868-53-7		

Sample: Upstream		Lab ID: 30221585016		Collected: 06/12/17 12:30		Received: 06/15/17 08:42		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B MSV		Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		06/20/17 03:43	71-43-2		
Ethylbenzene	ND	ug/L	5.0	1		06/20/17 03:43	100-41-4		
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		06/20/17 03:43	98-82-8		
Methyl-tert-butyl ether	ND	ug/L	5.0	1		06/20/17 03:43	1634-04-4		
Naphthalene	ND	ug/L	5.0	1		06/20/17 03:43	91-20-3		
Toluene	ND	ug/L	5.0	1		06/20/17 03:43	108-88-3		
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 03:43	95-63-6		
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		06/20/17 03:43	108-67-8		
Xylene (Total)	ND	ug/L	5.0	1		06/20/17 03:43	1330-20-7		
Surrogates									
Toluene-d8 (S)	97	%	59-140	1		06/20/17 03:43	2037-26-5		
4-Bromofluorobenzene (S)	98	%	78-117	1		06/20/17 03:43	460-00-4		
1,2-Dichloroethane-d4 (S)	105	%	70-128	1		06/20/17 03:43	17060-07-0		
Dibromofluoromethane (S)	104	%	66-132	1		06/20/17 03:43	1868-53-7		

Sample: Downstream		Lab ID: 30221585017		Collected: 06/12/17 12:40		Received: 06/15/17 08:42		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B MSV		Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		06/20/17 03:55	71-43-2		
Ethylbenzene	ND	ug/L	5.0	1		06/20/17 03:55	100-41-4		
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		06/20/17 03:55	98-82-8		
Methyl-tert-butyl ether	ND	ug/L	5.0	1		06/20/17 03:55	1634-04-4		
Naphthalene	ND	ug/L	5.0	1		06/20/17 03:55	91-20-3		

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ANALYTICAL RESULTS

Project: HO:Seneca

Pace Project No.: 30221585

Sample: Downstream		Lab ID: 30221585017		Collected: 06/12/17 12:40		Received: 06/15/17 08:42		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Toluene		ND	ug/L	5.0	1		06/20/17 03:55	108-88-3	
1,2,4-Trimethylbenzene		ND	ug/L	1.0	1		06/20/17 03:55	95-63-6	
1,3,5-Trimethylbenzene		ND	ug/L	1.0	1		06/20/17 03:55	108-67-8	
Xylene (Total)		ND	ug/L	5.0	1		06/20/17 03:55	1330-20-7	
Surrogates									
Toluene-d8 (S)		96	%	59-140	1		06/20/17 03:55	2037-26-5	
4-Bromofluorobenzene (S)		107	%	78-117	1		06/20/17 03:55	460-00-4	
1,2-Dichloroethane-d4 (S)		104	%	70-128	1		06/20/17 03:55	17060-07-0	
Dibromofluoromethane (S)		104	%	66-132	1		06/20/17 03:55	1868-53-7	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO:Seneca
Pace Project No.: 30221585

QC Batch:	262332	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 8260B	Analysis Description:	8260B MSV UST-WATER
Associated Lab Samples:	30221585001, 30221585002, 30221585003, 30221585004, 30221585005, 30221585006, 30221585007, 30221585008, 30221585009, 30221585010, 30221585011, 30221585012, 30221585013, 30221585014, 30221585015, 30221585016		

METHOD BLANK: 1292160 Matrix: Water

Associated Lab Samples: 30221585001, 30221585002, 30221585003, 30221585004, 30221585005, 30221585006, 30221585007, 30221585008, 30221585009, 30221585010, 30221585011, 30221585012, 30221585013, 30221585014, 30221585015, 30221585016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	06/20/17 00:44	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	06/20/17 00:44	
Benzene	ug/L	ND	1.0	06/20/17 00:44	
Ethylbenzene	ug/L	ND	1.0	06/20/17 00:44	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	06/20/17 00:44	
Methyl-tert-butyl ether	ug/L	ND	1.0	06/20/17 00:44	
Naphthalene	ug/L	ND	2.0	06/20/17 00:44	
Toluene	ug/L	ND	1.0	06/20/17 00:44	
Xylene (Total)	ug/L	ND	3.0	06/20/17 00:44	
1,2-Dichloroethane-d4 (S)	%	105	70-128	06/20/17 00:44	
4-Bromofluorobenzene (S)	%	102	78-117	06/20/17 00:44	
Dibromofluoromethane (S)	%	99	66-132	06/20/17 00:44	
Toluene-d8 (S)	%	98	59-140	06/20/17 00:44	

LABORATORY CONTROL SAMPLE: 1292161

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	18.5	92	78-116	
1,3,5-Trimethylbenzene	ug/L	20	18.0	90	77-114	
Benzene	ug/L	20	17.8	89	80-113	
Ethylbenzene	ug/L	20	18.8	94	80-115	
Isopropylbenzene (Cumene)	ug/L	20	18.0	90	78-114	
Methyl-tert-butyl ether	ug/L	20	19.0	95	82-126	
Naphthalene	ug/L	20	24.0	120	61-139	
Toluene	ug/L	20	18.2	91	82-116	
Xylene (Total)	ug/L	60	57.3	96	82-115	
1,2-Dichloroethane-d4 (S)	%			102	70-128	
4-Bromofluorobenzene (S)	%			99	78-117	
Dibromofluoromethane (S)	%			104	66-132	
Toluene-d8 (S)	%			102	59-140	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO:Seneca

Pace Project No.: 30221585

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1292162 1292163											
Parameter	Units	30221585006		MS	MSD	MS		MSD	MS		MSD
		Result	Conc.	Spike	Spike	Result	Result	% Rec	% Rec	% Rec	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	20	19.1	19.5	95	97	69-121	2
1,3,5-Trimethylbenzene	ug/L	ND	20	20	20	18.1	19.1	90	96	68-118	6
Benzene	ug/L	ND	20	20	20	19.5	20.4	85	90	63-123	4
Ethylbenzene	ug/L	ND	20	20	20	17.3	17.9	87	90	70-120	3
Isopropylbenzene (Cumene)	ug/L	ND	20	20	20	17.9	19.1	89	95	71-129	7
Methyl-tert-butyl ether	ug/L	ND	20	20	20	17.6	18.8	83	89	63-143	7
Naphthalene	ug/L	ND	20	20	20	24.1	23.0	103	98	55-122	4
Toluene	ug/L	ND	20	20	20	16.8	17.4	84	87	66-124	4
Xylene (Total)	ug/L	ND	60	60	60	53.1	54.9	88	91	68-123	3
1,2-Dichloroethane-d4 (S)	%							103	97	70-128	
4-Bromofluorobenzene (S)	%							103	102	78-117	
Dibromofluoromethane (S)	%							104	102	66-132	
Toluene-d8 (S)	%							98	96	59-140	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO:Seneca
Pace Project No.: 30221585

QC Batch:	262334	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 8260B	Analysis Description:	8260B MSV UST-WATER
Associated Lab Samples:	30221585017		

METHOD BLANK: 1292164 Matrix: Water
Associated Lab Samples: 30221585017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	06/20/17 00:57	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	06/20/17 00:57	
Benzene	ug/L	ND	1.0	06/20/17 00:57	
Ethylbenzene	ug/L	ND	1.0	06/20/17 00:57	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	06/20/17 00:57	
Methyl-tert-butyl ether	ug/L	ND	1.0	06/20/17 00:57	
Naphthalene	ug/L	ND	2.0	06/20/17 00:57	
Toluene	ug/L	ND	1.0	06/20/17 00:57	
Xylene (Total)	ug/L	ND	3.0	06/20/17 00:57	
1,2-Dichloroethane-d4 (S)	%	100	70-128	06/20/17 00:57	
4-Bromofluorobenzene (S)	%	102	78-117	06/20/17 00:57	
Dibromofluoromethane (S)	%	105	66-132	06/20/17 00:57	
Toluene-d8 (S)	%	98	59-140	06/20/17 00:57	

LABORATORY CONTROL SAMPLE: 1292165

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	18.8	94	78-116	
1,3,5-Trimethylbenzene	ug/L	20	18.9	94	77-114	
Benzene	ug/L	20	17.8	89	80-113	
Ethylbenzene	ug/L	20	18.6	93	80-115	
Isopropylbenzene (Cumene)	ug/L	20	18.6	93	78-114	
Methyl-tert-butyl ether	ug/L	20	18.2	91	82-126	
Naphthalene	ug/L	20	18.7	94	61-139	
Toluene	ug/L	20	18.4	92	82-116	
Xylene (Total)	ug/L	60	56.9	95	82-115	
1,2-Dichloroethane-d4 (S)	%			96	70-128	
4-Bromofluorobenzene (S)	%			102	78-117	
Dibromofluoromethane (S)	%			97	66-132	
Toluene-d8 (S)	%			102	59-140	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1292166 1292167

Parameter	Units	30221669001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	20.5	18.4	103	92	69-121	11	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	20.4	18.2	102	91	68-118	11	
Benzene	ug/L	ND	20	20	18.4	16.3	92	82	63-123	12	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO:Seneca

Pace Project No.: 30221585

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1292166 1292167											
Parameter	Units	30221669001		MS		MSD		MS		MSD	
		Result	Conc.	Spike	Conc.	Result	Conc.	% Rec	% Rec	% Rec	RPD
Ethylbenzene	ug/L	ND	20	20	20	19.9	18.2	100	91	70-120	9
Isopropylbenzene (Cumene)	ug/L	ND	20	20	20	20.3	18.4	101	92	71-129	9
Methyl-tert-butyl ether	ug/L	ND	20	20	20	14.5	14.1	73	70	63-143	3
Naphthalene	ug/L	ND	20	20	20	20.6	18.0	103	90	55-122	14
Toluene	ug/L	ND	20	20	20	19.2	17.9	96	89	66-124	7
Xylene (Total)	ug/L	ND	60	60	60	60.6	56.1	101	94	68-123	8
1,2-Dichloroethane-d4 (S)	%							96	94	70-128	
4-Bromofluorobenzene (S)	%							102	104	78-117	
Dibromofluoromethane (S)	%							97	99	66-132	
Toluene-d8 (S)	%							99	104	59-140	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: HO:Seneca
Pace Project No.: 30221585

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HO:Seneca

Pace Project No.: 30221585

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30221585001	MW-1	EPA 8260B	262332		
30221585002	MW-2	EPA 8260B	262332		
30221585003	MW-3	EPA 8260B	262332		
30221585004	MW-4	EPA 8260B	262332		
30221585005	MW-5	EPA 8260B	262332		
30221585006	MW-6	EPA 8260B	262332		
30221585007	MW-7	EPA 8260B	262332		
30221585008	MW-8	EPA 8260B	262332		
30221585009	MW-9	EPA 8260B	262332		
30221585010	MW-10	EPA 8260B	262332		
30221585011	MW-11	EPA 8260B	262332		
30221585012	MW-12	EPA 8260B	262332		
30221585013	MW-13	EPA 8260B	262332		
30221585014	MW-14	EPA 8260B	262332		
30221585015	MW-15	EPA 8260B	262332		
30221585016	Upstream	EPA 8260B	262332		
30221585017	Downstream	EPA 8260B	262334		

REPORT OF LABORATORY ANALYSIS

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WO#: 30221585



CHAIN-
The Chain-of



Section A
Required Client Information:

Company: Cribbs & Associates, Inc
 Address: PO Box 44
 Delmont PA 15626
 Email To: Cribbs@CribbsandAssociates.com
 Phone: 724-754-2310 Fax:
 Requested Due Date/TAT: Standard

Report To: Gary Cribbs
 Copy To: Gary Cribbs
 Purchase Order No.:
 Project Name: HQ: Seneca
 Project Number:

Attention: Gary Cribbs
 Company Name: Cribbs and Associates Inc
 Address: PO Box 44 Delmont PA 15626
 Pace Quote Reference:
 Pace Project Manager: Laura Pirillo
 Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER

Site Location
 STATE: PA

Page: 1 of 2
 1769262

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Tissue TS Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED			SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Analysis Test ↑ Y/N ↓	Requested Analysis Filtered (Y/N)												Pace Project No./ Lab I.D.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					COMPOSITE START	COMPOSITE END/GRAB	DATE			TIME	DATE	TIME	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol		Other																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

ADDITIONAL COMMENTS: Analyze all samples for PADEP NEW SHORTLIST for Unleaded gasoline

RELINQUISHED BY / AFFILIATION: Jared Thern DATE: 6/15/17 TIME: 0842

ACCEPTED BY / AFFILIATION: Ben Mullen DATE: 6-15-17 TIME: 0842

SAMPLE CONDITIONS: Y N Y N Y

Temp in °C:

Received on:

Custody Sealed Cooler:

Samples Intact:

DATE Signed (MM/DD/YYYY): 06/13/17

PRINT Name of SAMPLER: Jared Thern

SIGNATURE of SAMPLER: Jared Thern

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.



Section C
Invoice Information:

Page: 2 of 2
1769263

Section A Required Client Information:

Company: Cribbs & Associates, Inc. Report To: Gary Cribbs
 Address: PO Box 44 Copy To: Gary Cribbs
Delmont PA 15620
 Email To: GCribbs@CribbsAssociates.com Purchase Order No.:
 Phone: 724-454-2310 Project Name: HO: Seneca
 Requested Due Date/TAT: 5/24/2007 Project Number:
 Regulatory Agency: PA
☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER

Section B Required Project Information:

Attention: Gary Cribbs
 Company Name: Cribbs and Associates, Inc.
 Address: PO Box 44 Delmont PA 15620
 Pace Quote Reference:
 Pace Project Manager: Laura Picella
 Pace Profile #:

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Tissue TS Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED			SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Analysis Test ↑ Y/N	Requested Analysis Filtered (Y/N)												Pace Project No./ Lab I.D.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
					COMPOSITE START	COMPOSITE END/GRAB	DATE			TIME	DATE	TIME	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol		Other																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	
							Received on	Temp in °C
Analyze all samples for PADEP new sheetlist for Unleaded Gasoline	Jared Thoren Cribbs Associates	6/15/17	0842	BEN MAMMAM	6/15/17	0840.4	Y	N

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: Jared Thoren DATE Signed (MM/DD/YY): 6/13/17
 SIGNATURE of SAMPLER: Jared Thoren

Sample Condition Upon Receipt Pittsburgh



Client Name: Cripps & Assoc.

Project # 30 22 15 85

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used 6 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 0.4 °C Correction Factor: 0.0 °C Final Temp: 0.4 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: KH 6/15/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
-Includes date/time/ID Matrix: <u>W+</u>				
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
-Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Orthophosphate field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.
Organic Samples checked for dechlorination:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.
Filtered volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.
All containers have been checked for preservation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
exceptions: <u>VOA</u> coliform, TOC, O&G, Phenolics				
				Initial when completed: <u>KH</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	16.
Trip Blank Present:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	17.
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Rad Aqueous Samples Screened > 0.5 mrem/hr	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Initial when completed: _____ Date: _____

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

August 04, 2017

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

RE: Project: HO:Seneca
Pace Project No.: 30225797

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on July 31, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
(724)850-5616
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: HO:Seneca

Pace Project No.: 30225797

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: HO:Seneca

Pace Project No.: 30225797

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30225797001	MW-15	EPA 8260B	JAS	13	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: HO:Seneca
Pace Project No.: 30225797

Method: EPA 8260B
Description: 8260B MSV
Client: Cribbs and Associates
Date: August 04, 2017

General Information:

1 sample was analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HO:Seneca

Pace Project No.: 30225797

Sample: MW-15 **Lab ID: 30225797001** Collected: 07/31/17 11:25 Received: 07/31/17 16:46 Matrix: Water

Comments: • Trip blank not present in cooler with samples at time of receipt at the lab.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		08/03/17 15:27	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/03/17 15:27	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/03/17 15:27	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/03/17 15:27	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/03/17 15:27	91-20-3	
Toluene	ND	ug/L	5.0	1		08/03/17 15:27	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/03/17 15:27	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/03/17 15:27	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		08/03/17 15:27	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%	59-140	1		08/03/17 15:27	2037-26-5	
4-Bromofluorobenzene (S)	100	%	78-117	1		08/03/17 15:27	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-128	1		08/03/17 15:27	17060-07-0	
Dibromofluoromethane (S)	99	%	66-132	1		08/03/17 15:27	1868-53-7	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO:Seneca
Pace Project No.: 30225797

QC Batch: 267170	Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B	Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 30225797001	

METHOD BLANK: 1315254 Matrix: Water
Associated Lab Samples: 30225797001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	08/03/17 12:33	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	08/03/17 12:33	
Benzene	ug/L	ND	1.0	08/03/17 12:33	
Ethylbenzene	ug/L	ND	1.0	08/03/17 12:33	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	08/03/17 12:33	
Methyl-tert-butyl ether	ug/L	ND	1.0	08/03/17 12:33	
Naphthalene	ug/L	ND	2.0	08/03/17 12:33	
Toluene	ug/L	ND	1.0	08/03/17 12:33	
Xylene (Total)	ug/L	ND	3.0	08/03/17 12:33	
1,2-Dichloroethane-d4 (S)	%	101	70-128	08/03/17 12:33	
4-Bromofluorobenzene (S)	%	97	78-117	08/03/17 12:33	
Dibromofluoromethane (S)	%	100	66-132	08/03/17 12:33	
Toluene-d8 (S)	%	97	59-140	08/03/17 12:33	

LABORATORY CONTROL SAMPLE: 1315255

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.6	98	78-116	
1,3,5-Trimethylbenzene	ug/L	20	19.0	95	77-114	
Benzene	ug/L	20	18.5	92	80-113	
Ethylbenzene	ug/L	20	19.6	98	80-115	
Isopropylbenzene (Cumene)	ug/L	20	19.5	98	78-114	
Methyl-tert-butyl ether	ug/L	20	23.3	116	82-126	
Naphthalene	ug/L	20	21.6	108	61-139	
Toluene	ug/L	20	20.0	100	82-116	
Xylene (Total)	ug/L	60	59.9	100	82-115	
1,2-Dichloroethane-d4 (S)	%			95	70-128	
4-Bromofluorobenzene (S)	%			101	78-117	
Dibromofluoromethane (S)	%			102	66-132	
Toluene-d8 (S)	%			100	59-140	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1315256 1315257

Parameter	Units	30225836001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	23.1	23.2	116	116	69-121	0	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	21.5	22.1	108	110	68-118	3	
Benzene	ug/L	ND	20	20	20.8	20.6	104	103	63-123	1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO:Seneca

Pace Project No.: 30225797

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1315256 1315257											
Parameter	30225836001		MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
	Units	Result	Spike Conc.	Spike Conc.								Result	Result	% Rec	% Rec	Limits
Ethylbenzene	ug/L	ND	20	20	22.6	21.5	113	108	70-120	5	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	21.7	22.7	108	113	71-129	4	
Methyl-tert-butyl ether	ug/L	ND	20	20	22.2	23.0	111	115	63-143	3	
Naphthalene	ug/L	ND	20	20	23.0	22.7	115	114	55-122	1	
Toluene	ug/L	ND	20	20	21.7	20.9	108	105	66-124	3	
Xylene (Total)	ug/L	ND	60	60	66.7	66.0	111	110	68-123	1	
1,2-Dichloroethane-d4 (S)	%						101	96	70-128		
4-Bromofluorobenzene (S)	%						99	100	78-117		
Dibromofluoromethane (S)	%						105	101	66-132		
Toluene-d8 (S)	%						100	102	59-140		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: HO:Seneca
Pace Project No.: 30225797

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HO:Seneca

Pace Project No.: 30225797

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30225797001	MW-15	EPA 8260B	267170		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.



Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: <u>Cribbs and Associates, Inc.</u>	Report To: <u>Gary Cribbs</u>	Attention: <u>Gary Cribbs</u>	Company Name: <u>Cribbs and Associates, Inc.</u>	Regulatory Agency: <u>PA</u>	Page: <u>1</u> of <u>1</u>
Address: <u>PO Box 44</u>	Copy To: <u>Gary Cribbs</u>		Address: <u>PO Box 44 Delmont PA 15620</u>	<input checked="" type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER	<u>2114650</u>
Email To: <u>ccribbs@cribbsandassociates.com</u>	Purchase Order No.: <u>PA 15620</u>		Reference: <u>PA 15620</u>	<input checked="" type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER	
Phone: <u>724-954-2310</u>	Project Name: <u>H.O. Service</u>		Pace Project Manager: <u>Leona Pirillo</u>	Site Location STATE: <u>PA</u>	
Fax: <u>724-954-2310</u>	Project Number: <u>Standard</u>		Pace Profile #:		
Requested Due Date/TAT: <u>Standard</u>					

Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water DW Water WT Waste Water WW Product P Solid/Solid SL Oil OL Wipe WP Air AR Tissue TS Other OT	SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE	SAMPLE TYPE (G=GRAB C=COMP) <u>WTG</u>	COLLECTED COMPOSITE START COMPOSITE END/GRAB	SAMPLE TEMP AT COLLECTION DATE TIME	# OF CONTAINERS <u>3</u>	Preservatives Unpreserved H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other	Analysis Test <u>SEE BELOW</u>	Requested Analysis Filtered (Y/N)	Pace Project No./ Lab I.D. <u>001</u>	
1	MW-15				7/31/17	11:35					
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
ADDITIONAL COMMENTS <u>Analyte for PA DEP</u> <u>NEW SHORTLIST for</u> <u>UNLEADED GASOLINE</u>											
RELINQUISHED BY / AFFILIATION <u>Jared Thorne</u> DATE <u>7/31/17</u> TIME <u>1646</u>											
ACCEPTED BY / AFFILIATION <u>Jared Thorne</u> DATE <u>7-31-17</u> TIME <u>1646</u>											
SAMPLE CONDITIONS <u>Y</u> <u>N</u> <u>X</u>											

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on	Custody Sealed Cooler	Samples Inlect (Y/N)
PRINT Name of SAMPLER: <u>Jared Thorne</u>					
SIGNATURE of SAMPLER: <u>Jared Thorne</u>					
DATE Signed (MM/DD/YY): <u>7/31/17</u>					

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name:

Cribb & Ass

Project #

30225797

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other

Tracking #:

Label COL
LIMS Login PMM

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals Intact: ☐ yes ☐ no

Thermometer Used 8 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 5.9 °C Correction Factor: 0.0 °C Final Temp: 5.9 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: COL 7/31/17

Comments:

	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
-Includes date/line/ID Matrix: <u>LOT</u>				
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
-Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Orthophosphate field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.
Organic Samples checked for dechlorination:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.
Filled volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.
All containers have been checked for preservation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
exceptions: <u>VOA</u> coliform, TOC, O&G, Phenolics				
				Initial when completed <u>COL</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	16.
Trip Blank Present:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	17.
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Rad Aqueous Samples Screened > 0.5 mrem/hr	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Initial when completed: Date:

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Site Characterization Report

Seneca Mini Mart

Seneca, Pennsylvania

APPENDIX G

Laboratory Analytical Results – Soil Vapor

October 18, 2016

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

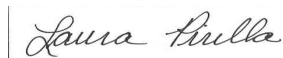
RE: Project: H.O. Seneca
Pace Project No.: 30198312

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on October 06, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: H.O. Seneca

Pace Project No.: 30198312

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

Alaska Certification UST-107

525 N 8th Street, Salina, KS 67401

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #:14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Virginia/VELAP Certification #: Pace

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: H.O. Seneca

Pace Project No.: 30198312

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30198312001	VP-1	TO-15	DR1	10	PASI-M
30198312002	VP-2	TO-15	DR1	10	PASI-M

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: H.O. Seneca

Pace Project No.: 30198312

Method: TO-15

Description: TO15 MSV AIR

Client: Cribbs and Associates

Date: October 18, 2016

General Information:

2 samples were analyzed for TO-15. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: 441418

L3: Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.

- LCS (Lab ID: 2402759)
- Methyl-tert-butyl ether

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: H.O. Seneca
Pace Project No.: 30198312

Sample: VP-1		Lab ID: 30198312001	Collected: 10/04/16 16:15		Received: 10/06/16 08:55		Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
Benzene	0.98	ug/m3	0.65	2.01		10/17/16 00:49	71-43-2	
Ethylbenzene	ND	ug/m3	1.8	2.01		10/17/16 00:49	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/m3	5.0	2.01		10/17/16 00:49	98-82-8	
Methyl-tert-butyl ether	ND	ug/m3	7.4	2.01		10/17/16 00:49	1634-04-4	
Naphthalene	7.2	ug/m3	5.3	2.01		10/17/16 00:49	91-20-3	
Toluene	4.5	ug/m3	1.5	2.01		10/17/16 00:49	108-88-3	
1,2,4-Trimethylbenzene	20.0	ug/m3	5.0	2.01		10/17/16 00:49	95-63-6	
1,3,5-Trimethylbenzene	10.6	ug/m3	2.0	2.01		10/17/16 00:49	108-67-8	
m&p-Xylene	ND	ug/m3	8.9	2.01		10/17/16 00:49	179601-23-1	
o-Xylene	ND	ug/m3	4.4	2.01		10/17/16 00:49	95-47-6	

Sample: VP-2		Lab ID: 30198312002	Collected: 10/04/16 16:20		Received: 10/06/16 08:55		Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
Benzene	0.71	ug/m3	0.55	1.68		10/17/16 01:51	71-43-2	
Ethylbenzene	ND	ug/m3	1.5	1.68		10/17/16 01:51	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/m3	4.2	1.68		10/17/16 01:51	98-82-8	
Methyl-tert-butyl ether	ND	ug/m3	6.2	1.68		10/17/16 01:51	1634-04-4	
Naphthalene	12.8	ug/m3	4.5	1.68		10/17/16 01:51	91-20-3	
Toluene	4.1	ug/m3	1.3	1.68		10/17/16 01:51	108-88-3	
1,2,4-Trimethylbenzene	5.3	ug/m3	4.2	1.68		10/17/16 01:51	95-63-6	
1,3,5-Trimethylbenzene	2.0	ug/m3	1.7	1.68		10/17/16 01:51	108-67-8	
m&p-Xylene	ND	ug/m3	7.4	1.68		10/17/16 01:51	179601-23-1	
o-Xylene	ND	ug/m3	3.7	1.68		10/17/16 01:51	95-47-6	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: H.O. Seneca

Pace Project No.: 30198312

QC Batch:	441418	Analysis Method:	TO-15
QC Batch Method:	TO-15	Analysis Description:	TO15 MSV AIR Low Level
Associated Lab Samples: 30198312001, 30198312002			

METHOD BLANK: 2402758 Matrix: Air

Associated Lab Samples: 30198312001, 30198312002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/m3	ND	2.5	10/16/16 17:13	
1,3,5-Trimethylbenzene	ug/m3	ND	1.0	10/16/16 17:13	
Benzene	ug/m3	ND	0.32	10/16/16 17:13	
Ethylbenzene	ug/m3	ND	0.88	10/16/16 17:13	
Isopropylbenzene (Cumene)	ug/m3	ND	2.5	10/16/16 17:13	
m&p-Xylene	ug/m3	ND	4.4	10/16/16 17:13	
Methyl-tert-butyl ether	ug/m3	ND	3.7	10/16/16 17:13	
Naphthalene	ug/m3	ND	2.7	10/16/16 17:13	
o-Xylene	ug/m3	ND	2.2	10/16/16 17:13	
Toluene	ug/m3	ND	0.77	10/16/16 17:13	

LABORATORY CONTROL SAMPLE: 2402759

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/m3	50	62.7	125	57-143	
1,3,5-Trimethylbenzene	ug/m3	50	61.4	123	54-147	
Benzene	ug/m3	32.5	35.9	110	62-141	
Ethylbenzene	ug/m3	44.2	53.2	120	59-149	
Isopropylbenzene (Cumene)	ug/m3	50	56.5	113	65-150	
m&p-Xylene	ug/m3	88.3	112	126	59-146	
Methyl-tert-butyl ether	ug/m3	91.6	126	138	64-135	CH,L3
Naphthalene	ug/m3	53.3	65.1	122	46-146	
o-Xylene	ug/m3	44.2	56.6	128	54-149	
Toluene	ug/m3	38.3	47.8	125	61-138	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: H.O. Seneca
Pace Project No.: 30198312

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

CH The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

L3 Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: H.O. Seneca

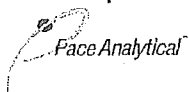
Pace Project No.: 30198312

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30198312001	VP-1	TO-15	441418		
30198312002	VP-2	TO-15	441418		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Pittsburgh



Client Name: Cribbs

Project # 30198312

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 09/18/16

Comments:

	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:	X			4.
Sample Labels match COC:	X			5.
-Includes date/time/ID/Analysis Matrix: <u>Air</u>				
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:		X		
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked.			X	13.
All containers needing preservation are found to be in compliance with EPA recommendation.			X	
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed <u>09/18</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	14.
Trip Blank Present:		X		15.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr			X	Initial when completed: Date:

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)
 *PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

May 23, 2017

Mr. Gary Cribbs
Cribbs and Associates
P.O. Box 44
Delmont, PA 15626

RE: Project: HO:Seneca
Pace Project No.: 30218183

Dear Mr. Cribbs:

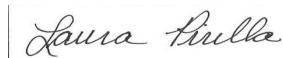
Enclosed are the analytical results for sample(s) received by the laboratory on May 08, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Revision 1. This report replaces the 5-18-17 report. Report revised 5/23/17 to include a revised subcontracted report from Pace MN.

This report was revised on May 22, 2017 per client request to report the short TO-15 compound list.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura M. Pirilla
laura.pirilla@pacelabs.com
(724)850-5616
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: HO:Seneca

Pace Project No.: 30218183

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: UST-078

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas Certification #: 88-0680

California Certification #: MN00064

CNMI Saipan Certification #:MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: MN00064

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon NwTPH Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #:74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DW Certification #: 9952 C

West Virginia WW Certification #: 382

Wisconsin Certification #: 999407970

Wyoming via EPA Region 8 Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: HO:Seneca

Pace Project No.: 30218183

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30218183001	VP-1	TO-15	EMC	10	PASI-M
30218183002	VP-2	TO-15	EMC	10	PASI-M

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: HO:Seneca

Pace Project No.: 30218183

Method: TO-15

Description: TO15 MSV AIR

Client: Cribbs and Associates

Date: May 23, 2017

General Information:

2 samples were analyzed for TO-15. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HO:Seneca
Pace Project No.: 30218183

Sample: VP-1		Lab ID: 30218183001		Collected: 05/03/17 18:30		Received: 05/08/17 09:00		Matrix: Air	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Benzene	0.51	ug/m3	0.50	1.55		05/13/17 01:52	71-43-2		
Ethylbenzene	ND	ug/m3	1.4	1.55		05/13/17 01:52	100-41-4		
Isopropylbenzene (Cumene)	ND	ug/m3	3.9	1.55		05/13/17 01:52	98-82-8		
Methyl-tert-butyl ether	ND	ug/m3	5.7	1.55		05/13/17 01:52	1634-04-4		
Naphthalene	ND	ug/m3	4.1	1.55		05/13/17 01:52	91-20-3		
Toluene	2.7	ug/m3	1.2	1.55		05/13/17 01:52	108-88-3		
1,2,4-Trimethylbenzene	4.0	ug/m3	1.5	1.55		05/13/17 01:52	95-63-6		
1,3,5-Trimethylbenzene	1.8	ug/m3	1.5	1.55		05/13/17 01:52	108-67-8		
m&p-Xylene	3.3	ug/m3	2.7	1.55		05/13/17 01:52	179601-23-1		
o-Xylene	1.6	ug/m3	1.4	1.55		05/13/17 01:52	95-47-6		

Sample: VP-2		Lab ID: 30218183002		Collected: 05/03/17 18:35		Received: 05/08/17 09:00		Matrix: Air	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Benzene	1.1	ug/m3	0.52	1.61			05/13/17 02:23	71-43-2	
Ethylbenzene	ND	ug/m3	1.4	1.61			05/13/17 02:23	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/m3	4.0	1.61			05/13/17 02:23	98-82-8	
Methyl-tert-butyl ether	ND	ug/m3	5.9	1.61			05/13/17 02:23	1634-04-4	
Naphthalene	4.5	ug/m3	4.3	1.61			05/13/17 02:23	91-20-3	
Toluene	5.0	ug/m3	1.2	1.61			05/13/17 02:23	108-88-3	
1,2,4-Trimethylbenzene	4.3	ug/m3	1.6	1.61			05/13/17 02:23	95-63-6	
1,3,5-Trimethylbenzene	2.0	ug/m3	1.6	1.61			05/13/17 02:23	108-67-8	
m&p-Xylene	5.1	ug/m3	2.8	1.61			05/13/17 02:23	179601-23-1	
o-Xylene	2.5	ug/m3	1.4	1.61			05/13/17 02:23	95-47-6	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HO:Seneca
Pace Project No.: 30218183

QC Batch: 473462 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 30218183001, 30218183002

METHOD BLANK: 2582521 Matrix: Air
Associated Lab Samples: 30218183001, 30218183002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/m3	ND	1.0	05/12/17 16:00	
1,3,5-Trimethylbenzene	ug/m3	ND	1.0	05/12/17 16:00	
Benzene	ug/m3	ND	0.32	05/12/17 16:00	
Ethylbenzene	ug/m3	ND	0.88	05/12/17 16:00	
Isopropylbenzene (Cumene)	ug/m3	ND	2.5	05/12/17 16:00	
m&p-Xylene	ug/m3	ND	1.8	05/12/17 16:00	
Methyl-tert-butyl ether	ug/m3	ND	3.7	05/12/17 16:00	
Naphthalene	ug/m3	ND	2.7	05/12/17 16:00	
o-Xylene	ug/m3	ND	0.88	05/12/17 16:00	
Toluene	ug/m3	ND	0.77	05/12/17 16:00	

LABORATORY CONTROL SAMPLE: 2582522

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/m3	51.5	49.0	95	70-136	
1,3,5-Trimethylbenzene	ug/m3	51.5	51.0	99	70-133	
Benzene	ug/m3	34.7	33.9	97	70-130	
Ethylbenzene	ug/m3	47.7	44.0	92	70-134	
Isopropylbenzene (Cumene)	ug/m3	51.5	44.7	87	70-140	
m&p-Xylene	ug/m3	47.7	44.8	94	70-130	
Methyl-tert-butyl ether	ug/m3	38.8	35.0	90	66-148	
Naphthalene	ug/m3	56	40.6	73	53-150	
o-Xylene	ug/m3	47.2	42.5	90	70-130	
Toluene	ug/m3	41.4	37.8	91	70-130	

SAMPLE DUPLICATE: 2585226

Parameter	Units	10387901022 Result	Dup Result	RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/m3	1.8	1.8	1	
1,3,5-Trimethylbenzene	ug/m3	ND	ND		
Benzene	ug/m3	1.7	1.8	5	
Ethylbenzene	ug/m3	ND	ND		
Isopropylbenzene (Cumene)	ug/m3	ND	ND		
m&p-Xylene	ug/m3	ND	ND		
Methyl-tert-butyl ether	ug/m3	ND	ND		
Naphthalene	ug/m3	ND	ND		
o-Xylene	ug/m3	ND	ND		
Toluene	ug/m3	ND	ND		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: HO:Seneca

Pace Project No.: 30218183

SAMPLE DUPLICATE: 2585227

Parameter	Units	10387901023 Result	Dup Result	RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/m3	2.0	2.0	0	
1,3,5-Trimethylbenzene	ug/m3	ND	ND		
Benzene	ug/m3	0.78	0.82	5	
Ethylbenzene	ug/m3	ND	ND		
Isopropylbenzene (Cumene)	ug/m3	ND	ND		
m&p-Xylene	ug/m3	ND	2.2J		
Methyl-tert-butyl ether	ug/m3	ND	ND		
Naphthalene	ug/m3	ND	ND		
o-Xylene	ug/m3	ND	ND		
Toluene	ug/m3	2.0	2.0	2	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: HO:Seneca
Pace Project No.: 30218183

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

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TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HO:Seneca

Pace Project No.: 30218183

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30218183001	VP-1	TO-15	473462		
30218183002	VP-2	TO-15	473462		

REPORT OF LABORATORY ANALYSIS

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www.pacelabs.com

fields must be completed accurately.

Section A Required Client Information: Company: <u>Cribbs and Associates Inc</u> Address: <u>PO Box 44</u> <u>Delmont PA 15826</u> Email To: <u>GCribbs@CribbsandAssociates.com</u> Phone: <u>412-434-3310</u> Fax: _____ Requested Due Date/TAT: <u>5/13/2017</u>		Section B Required Project Information: Report To: <u>Gary Cribbs</u> Copy To: <u>Gary Cribbs</u> Purchase Order No.: _____ Project Name: <u>HQ: Seneca</u> Project Number: _____		Section C Invoice Information: Attention: <u>Gary Cribbs</u> Company Name: <u>Cribbs and Associates, Inc</u> Address: <u>PO Box 44 Delmont PA 15826</u> Pace Quote Reference: _____ Pace Project Manager/Sales Rep. <u>Laura P. Kelly</u> Pace Profile #: _____		Page: <u>1 of 1</u> / Program <input checked="" type="checkbox"/> DUST <input type="checkbox"/> Superfund <input type="checkbox"/> Emissions <input type="checkbox"/> Clean Air Act <input type="checkbox"/> Voluntary Clean Up <input type="checkbox"/> Dry Clean <input type="checkbox"/> RCRA <input type="checkbox"/> Other Location of Sampling by State <u>PA</u> Reporting Units ug/m ³ _____ mg/m ³ _____ PPBV _____ PMWV _____ Other _____ Report Level II. _____ III. _____ IV. _____ Other _____																										
*Section D Required Client Information AIR SAMPLE ID Sample IDs MUST BE UNIQUE <div style="display: flex; justify-content: space-between;"> <div>VP-1</div> <div>VP-2</div> </div>		Valid Media Codes MEDIA <input type="checkbox"/> Tedlar Bag <input type="checkbox"/> 1 Liter Summa Can <input type="checkbox"/> 5 Liter Summa Can <input type="checkbox"/> Low Volume Pump <input type="checkbox"/> High Volume Pump <input type="checkbox"/> Other CODE TB ILC RLC LVP PM10		COLLECTED PID Reading (Client only) <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">MEDIA CODE</th> <th colspan="2">COMPOSITE START END/GAS</th> <th colspan="2">DATE</th> <th colspan="2">TIME</th> </tr> <tr> <th>DATE</th> <th>TIME</th> <th>DATE</th> <th>TIME</th> <th>DATE</th> <th>TIME</th> </tr> </thead> <tbody> <tr> <td>62C</td> <td>5/31/17</td> <td>1030</td> <td>5/31/17</td> <td>1830</td> <td>30</td> <td>-5</td> </tr> <tr> <td>62C</td> <td>5/31/17</td> <td>1035</td> <td>5/31/17</td> <td>1835</td> <td>30</td> <td>-5</td> </tr> </tbody> </table>		MEDIA CODE	COMPOSITE START END/GAS		DATE		TIME		DATE	TIME	DATE	TIME	DATE	TIME	62C	5/31/17	1030	5/31/17	1830	30	-5	62C	5/31/17	1035	5/31/17	1835	30	-5
MEDIA CODE	COMPOSITE START END/GAS		DATE		TIME																											
	DATE	TIME	DATE	TIME	DATE	TIME																										
62C	5/31/17	1030	5/31/17	1830	30	-5																										
62C	5/31/17	1035	5/31/17	1835	30	-5																										
Summa Can Number 0595 0981		Flow Control Number		Method: PM10 TO-3 Fixed Gas (%) TO-3M (Methane) TO-13 (PAH) TO-14 TO-15 TO-15 Short List																												
Pace Lab ID 001 002																																

Comments :

RELINQUISHED BY/AFFILIATION	DATE	TIME	ACCEPTED BY/AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
<u>Jared Thorne Cribbs & Assoc</u>	<u>5/4/17</u>	<u>1930</u>	<u>Jared Thorne</u>	<u>5/8/17</u>	<u>0900</u>	Received on _____ Ice _____ Custody _____ Sealed Cooler _____ Samples Intact Y/N _____
<u>Jared Thorne</u>	<u>5/8/17</u>	<u>0900</u>	<u>Jared Thorne</u>	<u>5/13/2017</u>		Temp in °C _____ Received on _____ Ice _____ Custody _____ Sealed Cooler _____ Samples Intact Y/N _____

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER: <u>Jared Thorne</u>	DATE Signed (MM/DD/YY) <u>5/13/2017</u>
SIGNATURE of SAMPLER: <u>Jared Thorne</u>	

Sample Condition Upon Receipt Pittsburgh

30218183

ATM

Client Name: Cribbs Project # _____Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noThermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: Clark 5-8-17

Comments:

	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:	X			4.
Sample Labels match COC:	X			5.
-Includes date/time/ID Matrix: <u>Air</u>				
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:		X		
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Organic Samples checked for dechlorination:			X	13.
Filtered volume received for Dissolved tests			X	14.
All containers have been checked for preservation.			X	15.
All containers needing preservation are found to be in compliance with EPA recommendation.			X	
exceptions: VOA, coliform, TOC, O&G, Phenolics				
				Initial when completed <u>Clark</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	16.
Trip Blank Present:		X		17.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr			X	Initial when completed: _____ Date: _____

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Site Characterization Report

Seneca Mini Mart

Seneca, Pennsylvania

APPENDIX H

Sensitive Receptor Review

APPENDIX H

PENNSYLVANIA GROUNDWATER INFORMATION SYSTEM

Harper Oil Company/Heath Oil, Inc., Seneca Mini Mart
Seneca, Venango Co., Pennsylvania

Lat: 41.385181°
Long: -79.702821°
Radius 1.0 Mile

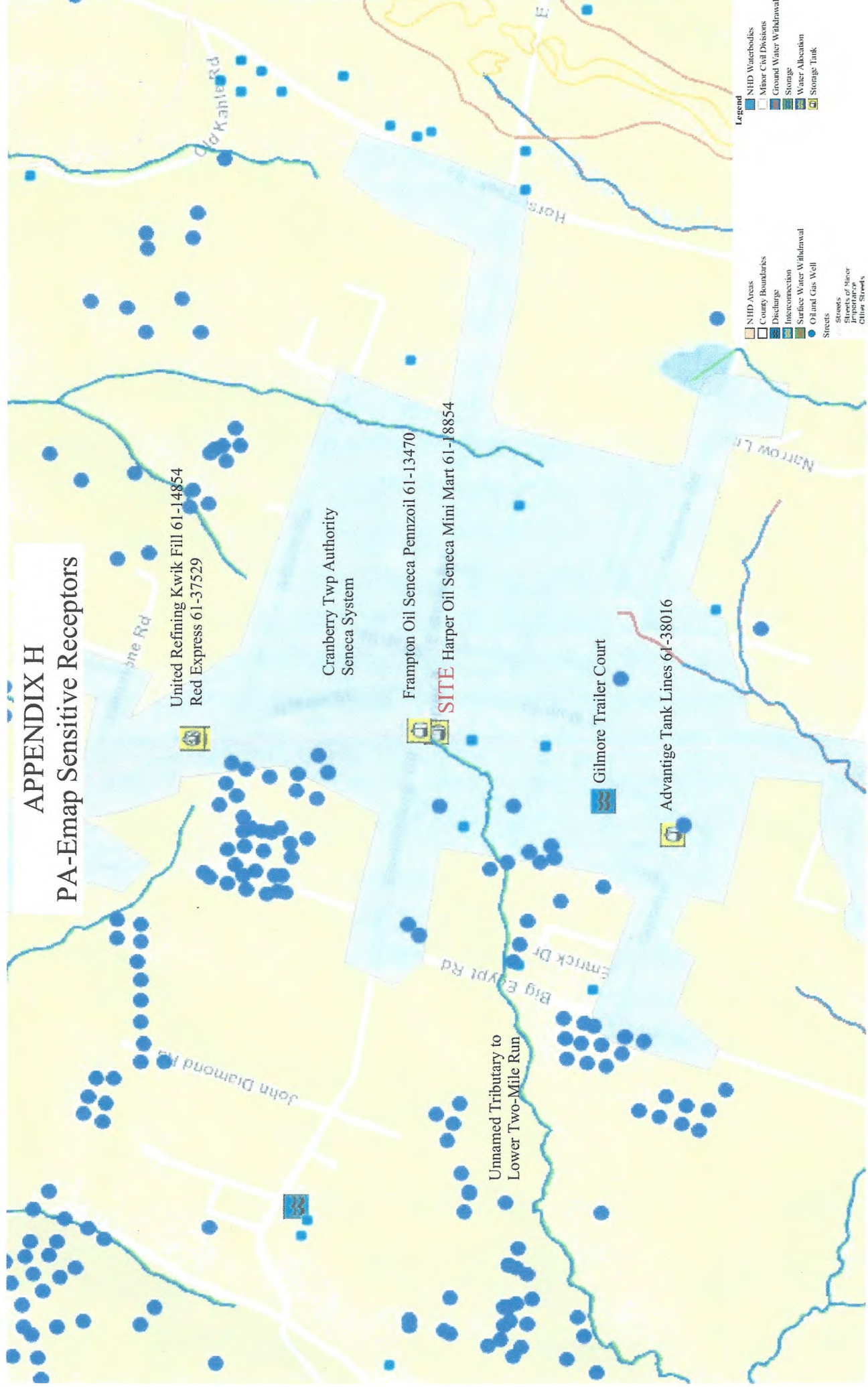
PA Well ID	Date Drilled	Type of Activity	Well Address	Well Zip Code	County	Quad Name	Municipality	Latitude DD	Longitude DD	Local Well ID	Driller	Original Owner	Well Depth (ft)	Depth to Bedrock (ft)	Bedrock Not Reached	Yield Measurement Method	Well Yield (gpm)	Static Water Level (ft)	Water Level After Yield Test (ft)	Length of Test (min)	Well Use	Water Use	Distance from Site	Direction
646611	10/17/2016	NEW WELL		16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38544	-79.70263	MW-7	CRIBBS & ASSOCIATES INC.	Heath Oil Inc.	10.5		True						MONITORING	OTHER	On Site	
646609	10/17/2016	NEW WELL	3364 State Route 257	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38476	-79.70299	MW-11	CRIBBS & ASSOCIATES INC.	Heath Oil Inc.	10		True						MONITORING	OTHER	On Site	
646590	10/17/2016	NEW WELL	106 E State Rd	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38547	-79.7029	Mw-10	CRIBBS & ASSOCIATES INC.	Heath Oil Inc.	10		True						MONITORING	OTHER	On Site	
646571	10/18/2016	NEW WELL	3364 State Route 257	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.3849	-79.70289	MW-9	CRIBBS & ASSOCIATES INC.	Heath Oil Inc.	12.5		True						MONITORING	OTHER	On Site	
646570	11/1/2016	NEW WELL	105 E State Rd	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38511	-79.70259	MW-8	CRIBBS & ASSOCIATES INC.	Heath Oil Inc.	16		True						MONITORING	OTHER	On Site	
646557	10/17/2016	NEW WELL	3364 State Route 257	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38499	-79.70296	MW-6	CRIBBS & ASSOCIATES INC.	Heath Oil Inc.	10		True						MONITORING	OTHER	On Site	
643202	7/8/2016	NEW WELL	3390 State Route 257	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38518	-79.70282	MW-5	CRIBBS & ASSOCIATES INC.	Heath Oil Company	10		True			7			MONITORING	OTHER	On Site	
643159	7/8/2016	NEW WELL	3390 State Route 257	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38538	-79.70291	MW-4	CRIBBS & ASSOCIATES INC.	Heath Oil Company	8		True						MONITORING	OTHER	On Site	
643158	7/8/2016	NEW WELL	3390 State Route 257	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38523	-79.70292	MW-3	CRIBBS & ASSOCIATES INC.	Heath Oil Company	8		True						MONITORING	OTHER	On Site	
643157	7/8/2016	NEW WELL	3390 State Route 257	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38523	-79.70294	MW-2	CRIBBS & ASSOCIATES INC.	Heath Oil Company	8		True						MONITORING	OTHER	On Site	
643156	7/8/2016	NEW WELL	3390 State Route 257	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.3851	-79.70294	MW-1	CRIBBS & ASSOCIATES INC.	Heath Oil Company	8		True						MONITORING	OTHER	On Site	
145310	3/1/1979	NEW WELL	Big Egypt Rd Cranberry Pa	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38389	-79.71583	X 0934	HARRY BROS INC	WHITLING	104	0	False	BAILER	30	74	84	60	WITHDRAWAL	DOMESTIC	3,550	WSW
145266	12/19/1979	NEW WELL	Big Egypt Rd Cranberry Pa	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38083	-79.71722	X 0729	KARLS COMPLETE WATER SYS CO	BOYCE	105	7	False	UNKNOWN					WITHDRAWAL	DOMESTIC	4,100	SW
145265	8/22/1974	NEW WELL	3726 State Route 257 Cranberry Pa	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38583	-79.70333	X 0728	KARLS COMPLETE WATER SYS CO	TOWNSHIP BUILDING	30	9	False	UNKNOWN					WITHDRAWAL	INDUSTRIAL	200	NW
145242	2/6/1973	NEW WELL	E State Rd Cranberry Pa	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38389	-79.69028	X 0347	HARRY BROS INC	VANDERMARK JR	160	2	False	BAILER	10	73	100	120	WITHDRAWAL	DOMESTIC	3,400	E
145240	3/8/1976	NEW WELL	Bredensburg Rd Cranberry Pa	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.38511	-79.70806	X 0345	HARRY BROS INC	GRAHAM	236	0	False	BAILER	18	116	166	60	WITHDRAWAL	DOMESTIC	1,400	W
145206	12/14/1966	NEW WELL	R. D. 1 Meadow Road Seneca	16346	VENANGO	OIL CITY	CRANBERRY TWP.	41.37583	-79.69611	X 0060	L M MELAT	REX	56.5	16	False	BAILER	4	18	18		WITHDRAWAL	DOMESTIC	3,600	SE
145111	9/1/1981	NEW WELL			VENANGO	OIL CITY	CRANBERRY TWP.	41.38278	-79.70361	1218N	MOODY AND ASSOCIATES INC	CRANBERRY TWP	357	8		ORIFICE	100	50	80	48	TEST	PUBLIC SUPPLY	700	S
254034					VENANGO	OIL CITY	CRANBERRY TWP.	41.3825	-79.71139			CRANBERRY VENANGO CO GENL AUTH	357			NOT KNOWN					WITHDRAWAL	PUBLIC SUPPLY	2,300	SW

APPENDIX H
PENNSYLVANIA GROUNDWATER INFORMATION SYSTEM
Harper Oil Co.,⁺ Heath Oil Inc., Seneca Mini Mart
Seneca, Venango County, Pennsylvania
Lat: 41.385181° Long: -79.702821° Radius 1.0 Mile



Google earth

APPENDIX H PA-Emap Sensitive Receptors





APPENDIX H
WETLAND MAP

Wetland Types	
	Estuarine and Marine Deepwater
	Estuarine and Marine Wetland
	Freshwater Emergent Wetland
	Freshwater Forested/Shrub Wetland
	Freshwater Pond
	Lake
	Other
	Riverine

Status Map	
	Digital Data
	No Data

Google earth

1993

lat. 41.364354° lon. -79.697916° elev. 1504 ft

16346

Eye alt. 19870 ft

Site Characterization Report

Seneca Mini Mart

Seneca, Pennsylvania

APPENDIX I

PNDI Environmental Review

1. PROJECT INFORMATION

Project Name: **HO Seneca Mini Mart**

Date of Review: **4/12/2017 01:22:53 PM**

Project Category: **Hazardous Waste Clean-up, Site Remediation, and Reclamation, Spill (e.g., oil, chemical)**

Project Area: **0.78 acres**

County(s): **Venango**

Township/Municipality(s): **CRANBERRY**

ZIP Code: **16346**

Quadrangle Name(s): **OIL CITY**

Watersheds HUC 8: **Middle Allegheny-Tionesta**

Watersheds HUC 12: **Lower Twomile Run-Allegheny River**

Decimal Degrees: **41.385068, -79.702750**

Degrees Minutes Seconds: **41° 23' 6.2460" N, 79° 42' 9.9008" W**



2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. This response does not reflect potential agency concerns regarding impacts to other ecological resources, such as wetlands.

HO Seneca Mini Mart

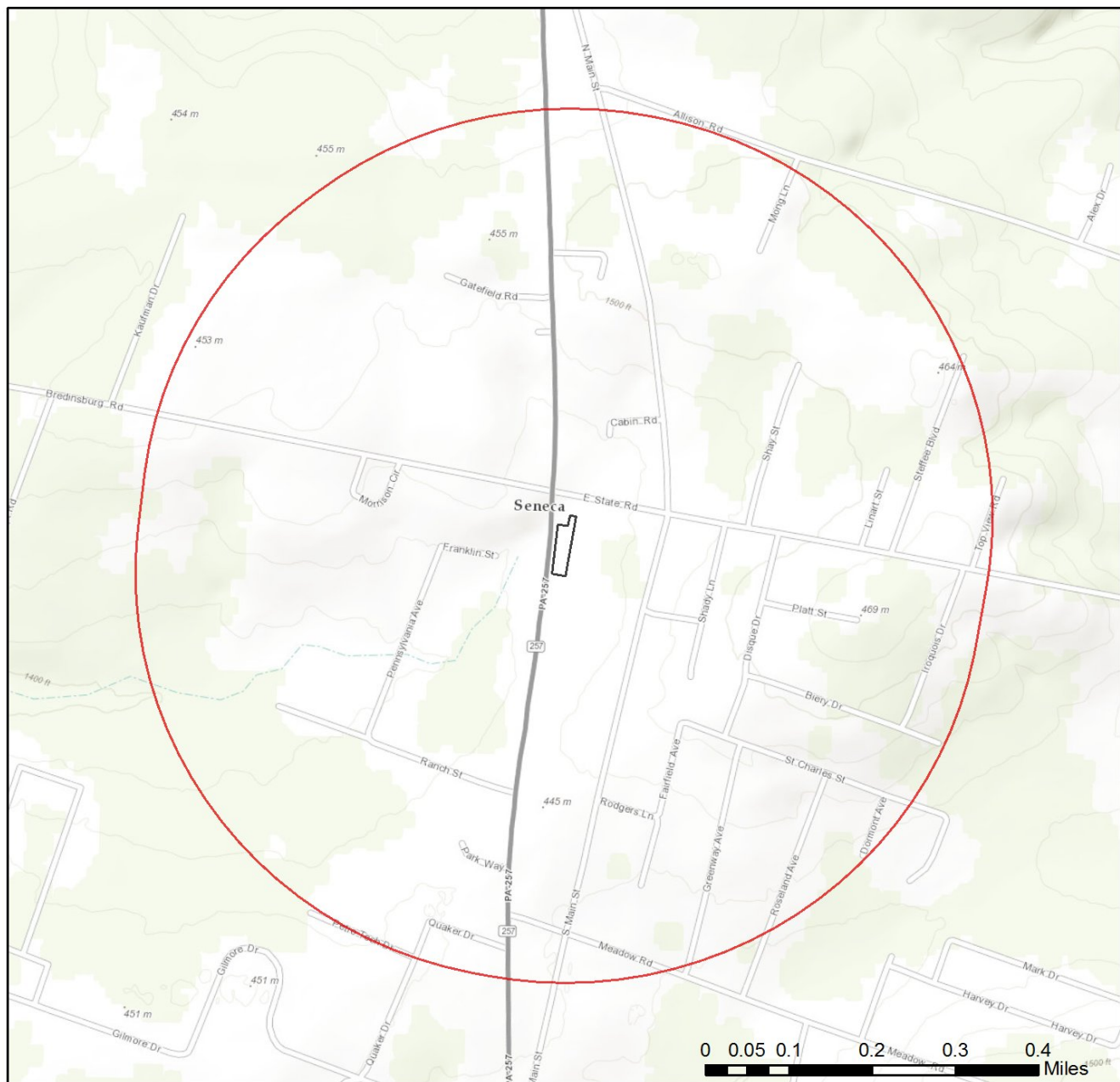


-  Project Boundary
-  Buffered Project Boundary



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user

HO Seneca Mini Mart



- Project Boundary
- Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service

RESPONSE:

No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at <https://conservationexplorer.dcnr.pa.gov/content/resources>.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service

Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission

Division of Environmental Services
450 Robinson Lane, Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: Robert R. Botterman
Company/Business Name: Cribbs & Associates, Inc.
Address: P.O. Box 44
City, State, Zip: Delmont, PA 15626
Phone: (412) 780-3094 Fax: ()
Email: bbotterman@cribbsandassociates.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.



applicant/project proponent signature

April 13, 2017

date

Site Characterization Report

Seneca Mini Mart

Seneca, Pennsylvania

APPENDIX J

Fate and Transport Models (Quick Domenico)

Appendix J
Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
Seneca, Pennsylvania

Project			Seneca Mini Mart
Contaminant and Well ID			Benzene, MW-3
Date	7/26/2017	Prepared By	RRB
Parameter	Definition	Value	Reason
Source Concentration (mg/L)	Concentration of contaminant of concern in groundwater.	17.8	Highest concentration of Benzene observed in MW-3 during SCR sampling events.
Ax (ft)	Longitudinal dispersivity in the x direction	107	Distance from monitoring well to the unnamed tributary in the direction of groundwater flow.
Ay (ft)	Transverse dispersivity in the y direction	10.7	$Ay = Ax/10$
Az (ft)	Vertical dispersivity in the z direction	1.07	$Az = Ax/100$
Lambda	First order decay constant	0.000959	See Appendix A , Table 5 of the Act 2 Regulations
Source Width (ft)	Width of contaminated soil.	70	Width of contaminated soils under dispenser islands perpendicular to groundwater flow direction.
Source Thickness (ft)	Thickness of contaminated soil.	6	Thickness of contaminated soils under dispenser islands.
Time (Days)	Time since release in days.	See sheet	Time since release in days, presented in five year increments (5, 10, 15, 20, 25 and 30 years).
Hydraulic Cond. (ft/day)	Hydraulic Conductivity	1.104	Shallow hydraulic conductivity equals the geometric mean of the slug tests (Rising Head and Falling Head) conducted on selected monitoring wells (MW-1, MW-2, and MW-4) at the Site.
Hydraulic Gradient (ft/ft)	Hydraulic Gradient	0.079	Maximum gradient measured between high groundwater elevation MW-3 and MW-12 June 12, 2017.
Effective Porosity (decimal fraction)	Estimated Effective Porosity θ	0.35	Estimated range of silt from Groundwater (Freeze & Cherry)
Soil Bulk Density (g/cm ³)	Soil Bulk Density	1.7225	2.65 - (2.65 X Effective porosity)
KOC	Organic Carbon Partition Coefficient	58	See Appendix A , Table 5 of the Act 2 Regulations
Frac. Org. Carb	Fraction Organic Carbon	0.005	Estimated at 0.005

Appendix J

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL									
Project:		Seneca Mini Mart		Benzene, MW-3		Benzene, MW-3			
Date:		7/26/2017		Prepared by: RRB		Contaminant: Benzene, MW-3			
SOURCE		Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	THICKNESS	Time (days)
CONC		(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(days)
(MG/L)				>=.001					
17.8		1.07E+02	1.07E+01	1.07E+00	0.000959	70	6	1825	
Hydraulic		Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-		
Cond		Gradient	(dec. frac.)	Density	(g/cm ³)	Org. Carb.	ation		
(ft/day)		(ft/ft)				(R)	(ft/day)		
1.10E+00		0.079	0.35	1.7225	58	5.00E-03	2.427214286	0.10266443	
<p>NEW QUICK_DOMENICO.XLS</p> <p>SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"</p> <p>P.A. Domenico (1987)</p> <p>Modified to Include Retardation</p>									
Point Concentration		x(ft)		y(ft)		z(ft)			
107		10.7		10.7		1.07			
Conc. At		x(ft)		y(ft)		z(ft)			
at		107		10.7		1.07			
		1825 days =							
						1.455		mg/l	
AREAL CALCULATION		MODEL DOMAIN		Length (ft)		Width (ft)			
250		0.000		0.000		0.001		240	
125		0.056		0.095		0.069		0.001	
0		2.273		0.728		0.283		0.001	
-125		0.056		0.095		0.069		0.001	
-250		0.000		0.000		0.001		0.001	
Field Data:		Centerline C Concentration		17.8		0.0025		85	
Distance from Source		0		0		0		0	
Centerline Plot (linear)		Centerline Plot (log)		560		720		800	
100.000		10.000		0.000		0.000		0.000	
1.000		0.100		0.003		0.001		0.000	
0.100		0.010		0.006		0.002		0.000	
0.010		0.001		0.003		0.001		0.000	
0.001		0.000		0.000		0.000		0.000	
0.000		0.000		0.000		0.000		0.000	
distance		distance		0		500		1000	
Model Output		Model Output		Field Data		Field Data		Field Data	

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL											
Project: Seneca Mini Mart		RRB		Benzene, MW-3							
Date: 7/26/2017		Prepared by: RRB		Benzene, MW-3							
		Contaminant:									
SOURCE		Ax		Ay		LAMBDA		SOURCE		SOURCE	
CONC		(ft)		(ft)		(ft)		WIDTH		THICKNESS	
(MG/L)				>= .001		day-1		(ft)		(ft)	
17.8		1.07E+02		1.07E+01		1.07E+00		0.000959		70	
										6	
										5475	
Hydraulic		Hydraulic				Soil Bulk		Frac.		Retard-	
Cond		Gradient		Porosity		Density		Org. Carb.		ation	
(ft/day)		(ft/ft)		(dec. frac.)		(g/cm ³)		(R)		(R)	
1.10E+00		0.079		0.35		1.7225		58		5.00E-03	
								2.427214286		0.10266443	
Point Concentration											
x(ft)		y(ft)		z(ft)							
107		10.7		1.07							
Conc. At		x(ft)		y(ft)		z(ft)					
at		107		10.7		0					
		5475		days =		1.547					
						mg/l					
AREAL CALCULATION											
MODEL		DOMAIN		800							
Length (ft)		Width (ft)		250							
250		80		160		240					
125		0.000		0.000		0.001		0.002		0.003	
0		0.058		0.106		0.085		0.057		0.035	
		2.380		0.807		0.347		0.166		0.084	
-125		0.058		0.106		0.085		0.057		0.035	
-250		0.000		0.000		0.001		0.002		0.003	
								17.8		0.0025	
								0		85	
Field Data:		Centerline C Concentration									
		Distance from Source									

Appendix J
Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
Seneca, Pennsylvania

Project			Seneca Mini Mart
Contaminant and Well ID			Benzene, MW-3
Date	9/6/2017	Prepared By	RRB
Parameter	Definition	Value	Reason
Source Concentration (mg/L)	Concentration of contaminant of concern in groundwater.	17.8	Highest concentration of Benzene observed in MW-3 during SCR sampling events.
Ax (ft)	Longitudinal dispersivity in the x direction	107	Distance from monitoring well to the unnamed tributary in the direction of groundwater flow.
Ay (ft)	Transverse dispersivity in the y direction	10.7	$Ay = Ax/10$
Az (ft)	Vertical dispersivity in the z direction	1.07	$Az = Ax/100$
Lambda	First order decay constant	0.000959	See Appendix A , Table 5 of the Act 2 Regulations
Source Width (ft)	Width of contaminated soil.	70	Width of contaminated soils under dispenser islands perpendicular to groundwater flow direction.
Source Thickness (ft)	Thickness of contaminated soil.	6	Thickness of contaminated soils under dispenser islands.
Time (Days)	Time since release in days.	See sheet	Time since release in days, presented in five year increments (1, 2, 3 ,4, 5, 10, 20, and 30 years).
Hydraulic Cond. (ft/day)	Hydraulic Conductivity	0.04677	Shallow hydraulic conductivity equal to the Falling Head measured at monitoring well MW-11 at the Site to explain delay in results at off site wells.
Hydraulic Gradient (ft/ft)	Hydraulic Gradient	0.079	Maximum gradient measured between high groundwater elevation MW-3 and MW-12 June 12, 2017.
Effective Porosity (decimal fraction)	Estimated Effective Porosity θ	0.35	Estimated range of silt from Groundwater (Freeze & Cherry)
Soil Bulk Density (g/cm ³)	Soil Bulk Density	1.7225	2.65 - (2.65 X Effective porosity)
KOC	Organic Carbon Partition Coefficient	58	See Appendix A , Table 5 of the Act 2 Regulations
Frac. Org. Carb	Fraction Organic Carbon	0.005	Estimated at 0.005

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

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Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project:		Seneca Mini Mart												
Date:	9/6/2017		Prepared by:		RRB									
		Contaminant:		Benzene, MW-3										
				Benzene, MW-3										
				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	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)					
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)					
(MG/L)	17.8	1.07E+02	1.07E+01	1.07E+00	0.000959	70	6	1460						
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-								
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation								
(ft/day)	(ft/ft)		(g/cm ³)		(R)	(ft/day)								
4.68E-02	0.079	0.35	1.7225	58	5.00E-03	2.427214286	0.004349289							
Point Concentration														
x(ft)	y(ft)	z(ft)												
107	10.7	1.07												
	x(ft)	y(ft)	z(ft)											
Conc. At	107	10.7												
at	1460	days =												
			0.004											
			mg/l											
AREAL CALCULATION														
MODEL DOMAIN														
Length (ft)	180													
Width (ft)	125													
	18	54	72	90	108	126	144	162	180					
125	0.000	0.001	0.002	0.001	0.001	0.000	0.000	0.000	0.000					
62.5	0.400	0.250	0.100	0.032	0.008	0.002	0.000	0.000	0.000					
0	4.591	1.233	0.335	0.085	0.019	0.004	0.000	0.000	0.000					
-62.5	0.400	0.250	0.100	0.032	0.008	0.002	0.000	0.000	0.000					
-125	0.000	0.001	0.002	0.001	0.001	0.000	0.000	0.000	0.000					
Field Data: Centerline C Concentration														
Distance from Source														
			17.8	0.0025	0	0	0	0	0					
			0	85	0	0	0	0	0					

Centerline Plot (linear)

Centerline Plot (log)

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL									
Project:		Seneca Mini Mart		Benzene, MW-3		Benzene, MW-3		NEW QUICK_DOMENICO.XLS	
Date:		9/6/2017		Prepared by: RRB		Contaminant: Benzene, MW-3		SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation	
SOURCE		Ax (ft)	Ay (ft)	Az (ft)	LAMBDA day ⁻¹	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)	
CONC (MG/L)		17.8	1.07E+02	1.07E+01	1.07E+00	0.000959	70	6	1825
Hydraulic		Hydraulic		Soil Bulk Density (g/cm ³)		Frac. Org. Carb. (R)		Retardation (=K [*] i/n [*] R) (ft/day)	
Cond (ft/day)		4.68E-02	0.079	0.35	1.7225	58	5.00E-03	2.427214286	0.004349289
Point Concentration		x(ft)	y(ft)	z(ft)					
		107	10.7	1.07					
Conc. At		x(ft)	y(ft)	z(ft)					
at		107	10.7	1.07					
		1825 days =	0.009 mg/l						
AREAL CALCULATION									
MODEL DOMAIN									
Length (ft)		180							
Width (ft)		125							
		125	0.000	0.001	0.002	0.002	54	72	90
		62.5	0.419	0.277	0.122	0.045	0.002	0.001	0.001
		0	4.809	1.368	0.410	0.120	0.033	0.008	0.004
		-62.5	0.419	0.277	0.122	0.045	0.002	0.001	0.001
		-125	0.000	0.001	0.002	0.002	0.001	0.001	0.001
Field Data: Centerline C Concentration									
Distance from Source									
		125	0.000	0.001	0.002	0.002	54	72	90
		62.5	0.419	0.277	0.122	0.045	0.002	0.001	0.001
		0	4.809	1.368	0.410	0.120	0.033	0.008	0.004
		-62.5	0.419	0.277	0.122	0.045	0.002	0.001	0.001
		-125	0.000	0.001	0.002	0.002	0.001	0.001	0.001
Centerline Plot (linear)									
Centerline Plot (log)									

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart
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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL																																						
Project:		Seneca Mini Mart																																				
Date:	9/6/2017	Prepared by:	RRB Benzene, MW-3																																			
Contaminant:		Benzene, MW-3																																				
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)																													
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)																													
(MG/L)	17.8	1.07E+02	1.07E+01	1.07E+00	0.000959	70	6	7300																														
Hydraulic	Hydraulic	Porosity	Soil Bulk	Density	KOC	Retard-	ation	(=K*/h*R)																														
(ft/day)	(ft/ft)	(dec. frac.)	(g/cm ³)	(g/cm ³)	(R)	(R)	(ft/day)																															
4.68E-02	0.079	0.35	1.7225	58	5.00E-03	2.427214286	0.004349289																															
<div style="display: flex; justify-content: space-between;"> <div> <p>NEW QUICK_DOMENICO.XLS</p> <p>SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"</p> <p>P. A. Domenico (1987)</p> <p>Modified to Include Retardation</p> </div> <div> <p>Centerline Plot (log)</p> </div> </div>																																						
<div style="display: flex; justify-content: space-between;"> <div> <p>Centerline Plot (linear)</p> </div> </div>																																						
<p>Point Concentration</p> <table border="1"> <thead> <tr> <th>x(ft)</th> <th>y(ft)</th> <th>z(ft)</th> </tr> </thead> <tbody> <tr> <td>107</td> <td>10.7</td> <td>1.07</td> </tr> </tbody> </table> <p>Conc. At 107 7300 days = 10.7 z(ft)</p> <p>at 0.036 mg/l</p>															x(ft)	y(ft)	z(ft)	107	10.7	1.07																		
x(ft)	y(ft)	z(ft)																																				
107	10.7	1.07																																				
<p>AREAL CALCULATION</p> <table border="1"> <thead> <tr> <th>MODEL</th> <th>Length (ft)</th> <th>Width (ft)</th> <th>DOMAIN</th> </tr> </thead> <tbody> <tr> <td>125</td> <td>0.000</td> <td>0.001</td> <td>180</td> </tr> <tr> <td>62.5</td> <td>0.452</td> <td>0.329</td> <td>125</td> </tr> <tr> <td>0</td> <td>5.194</td> <td>1.622</td> <td></td> </tr> <tr> <td>-62.5</td> <td>0.452</td> <td>0.329</td> <td></td> </tr> <tr> <td>-125</td> <td>0.000</td> <td>0.001</td> <td></td> </tr> </tbody> </table>															MODEL	Length (ft)	Width (ft)	DOMAIN	125	0.000	0.001	180	62.5	0.452	0.329	125	0	5.194	1.622		-62.5	0.452	0.329		-125	0.000	0.001	
MODEL	Length (ft)	Width (ft)	DOMAIN																																			
125	0.000	0.001	180																																			
62.5	0.452	0.329	125																																			
0	5.194	1.622																																				
-62.5	0.452	0.329																																				
-125	0.000	0.001																																				
<p>Field Data: Centerline C Concentration</p> <table border="1"> <thead> <tr> <th>Distance from Source</th> <th>Concentration</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>17.8</td> </tr> <tr> <td>85</td> <td>0.0025</td> </tr> <tr> <td>90</td> <td>0.003</td> </tr> <tr> <td>108</td> <td>0.002</td> </tr> <tr> <td>126</td> <td>0.001</td> </tr> <tr> <td>144</td> <td>0.001</td> </tr> <tr> <td>162</td> <td>0.000</td> </tr> <tr> <td>180</td> <td>0.000</td> </tr> </tbody> </table>															Distance from Source	Concentration	0	17.8	85	0.0025	90	0.003	108	0.002	126	0.001	144	0.001	162	0.000	180	0.000						
Distance from Source	Concentration																																					
0	17.8																																					
85	0.0025																																					
90	0.003																																					
108	0.002																																					
126	0.001																																					
144	0.001																																					
162	0.000																																					
180	0.000																																					

Appendix J
Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
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Project			Seneca Mini Mart
Contaminant and Well ID			Ethylbenzene, MW-3
Date	7/26/2016	Prepared By	RRB
Parameter	Definition	Value	Reason
Source Concentration (mg/L)	Concentration of contaminant of concern in groundwater.	4.41	Highest concentration of Ethylbenzene observed in MW-3 during SCR sampling events.
Ax (ft)	Longitudinal dispersivity in the x direction	107	Distance from monitoring well to the unnamed tributary in the direction of groundwater flow.
Ay (ft)	Transverse dispersivity in the y direction	10.7	$Ay = Ax/10$
Az (ft)	Vertical dispersivity in the z direction	1.07	$Az = Ax/100$
Lambda	First order decay constant	0.003041	See Appendix A , Table 5 of the Act 2 Regulations
Source Width (ft)	Width of contaminated soil.	70	Width of contaminated soils under dispenser islands perpendicular to groundwater flow direction.
Source Thickness (ft)	Thickness of contaminated soil.	6	Thickness of contaminated soils in UST basin
Time (Days)	Time since release in days.	See sheet	Time since release in days, presented in five year increments (5, 10, 15, 20, 25 and 30 years).
Hydraulic Cond. (ft/day)	Hydraulic Conductivity	1.104	Shallow hydraulic conductivity equals the geometric mean of the slug tests (Rising Head and Falling Head) conducted on selected monitoring wells (MW-1, MW-2, and MW-4) at the Site.
Hydraulic Gradient (ft/ft)	Hydraulic Gradient	0.079	Maximum gradient measured between high groundwater elevation MW-3 and MW-12 June 12, 2017.
Effective Porosity (decimal fraction)	Estimated Effective Porosity θ	0.35	Estimated range of silt from Groundwater (Freeze & Cherry)
Soil Bulk Density (g/cm ³)	Soil Bulk Density	1.7225	2.65 - (2.65 X Effective porosity)
KOC	Organic Carbon Partition Coefficient	220	See Appendix A , Table 5 of the Act 2 Regulations
Frac. Org. Carb	Fraction Organic Carbon	0.005	Estimated at 0.005

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Quick Domenico Fate and Transport Modeling

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project: Seneca Mini Mart														
Date:	7/26/2016		Prepared by: RRB		Ethylbenzene, MW-3									
			Contaminant:		Ethylbenzene, MW-3									
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)					
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)					
(MG/L)			>=.001											
4.41	1.07E+02	1.07E+01	1.07E+00	0.003041	70	6	1825							
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-	V							
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation	(=K'i/n*R)							
(ft/day)	(ft/ft)		(g/cm ³)			(R)	(ft/day)							
1.10E+00	0.079	0.35	1.7225	220	5.00E-03	6.413571429	0.038853324							
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)														
Point Concentration														
x(ft)	y(ft)	z(ft)												
107	10.7	1.07												
			x(ft)	y(ft)	z(ft)									
Conc. At	107	10.7												
at	1825	days =												
			0.062											
			mg/l											
AREAL CALCULATION														
MODEL DOMAIN														
Length (ft)	100													
Width (ft)	100													
100	0.000	0.001	0.006	0.011	0.014	0.016	0.015	0.013	0.011					
50	0.425	0.415	0.334	0.257	0.196	0.148	0.112	0.085	0.049					
0	2.739	1.613	1.004	0.654	0.440	0.303	0.212	0.151	0.079					
-50	0.425	0.415	0.334	0.257	0.196	0.148	0.112	0.085	0.049					
-100	0.000	0.001	0.006	0.011	0.014	0.016	0.015	0.013	0.011					
Field Data: Centerline C Concentration														
Distance from Source														
0														
85														

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project:		Seneca Mini Mart												
Date:	7/26/2016	Prepared by:	Ethylbenzene, MW-3											
Contaminant:		Ethylbenzene, MW-3												
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)					
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)					
(MG/L)			>=.001											
4.41	1.07E+02	1.07E+01	1.07E+00	0.003041	70	6	3650							
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-	V							
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation	(=K'i/n'R)							
(ft/day)	(ft/ft)		(g/cm ³)			(R)	(ft/day)							
1.10E+00	0.079	0.35	1.7225	220	5.00E-03	6.413571429	0.038853324							
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														
Point Concentration														
x(ft)	y(ft)	z(ft)												
107	10.7	1.07												
Conc. At		x(ft)	y(ft)	z(ft)										
at		107	10.7	1.07										
		3650 days =												
		0.062												
		mg/l												
AREAL CALCULATION														
MODEL DOMAIN														
Length (ft)		100												
Width (ft)		100												
100	0.000	0.001	0.006	0.011	0.014	0.016	0.016	0.013	0.011					
50	0.425	0.416	0.334	0.258	0.196	0.149	0.112	0.085	0.049					
0	2.740	1.614	1.005	0.655	0.441	0.303	0.213	0.151	0.079					
-50	0.425	0.416	0.334	0.258	0.196	0.149	0.112	0.085	0.049					
-100	0.000	0.001	0.006	0.011	0.014	0.016	0.016	0.013	0.011					
Field Data:														
Centerline C Concentration														
Distance from Source														
		3.13	0.0025	0	0	0	0	0	0					
		0	85	0	0	0	0	0	0					

Centerline Plot (linear)

Centerline Plot (log)

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project:		Seneca Mini Mart												
Date:	7/26/2016	Prepared by:	RRB Ethylbenzene, MW-3											
		Contaminant:	Ethylbenzene, MW-3											
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)					
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)					
(MG/L)			>=.001											
4.41	1.07E+02	1.07E+01	1.07E+00	0.003041	70	6	7300							
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-	V							
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation	(=K'i/n*R)							
(ft/day)	(ft/ft)		(g/cm ³)			(R)	(ft/day)							
1.10E+00	0.079	0.35	1.7225	220	5.00E-03	6.413571429	0.038853324							
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														
Point Concentration														
x(ft)	y(ft)	z(ft)												
107	10.7	1.07												
Conc. At		x(ft)	y(ft)	z(ft)										
at		107	10.7	1.07										
		7300 days =												
		0.062												
		mg/l												
AREAL CALCULATION														
MODEL DOMAIN														
Length (ft)		100												
Width (ft)		100												
100	0.000	0.001	0.006	0.011	0.014	0.016	0.016	0.013	0.011					
50	0.425	0.416	0.334	0.258	0.196	0.149	0.112	0.085	0.049					
0	2.740	1.614	1.005	0.655	0.441	0.303	0.213	0.151	0.079					
-50	0.425	0.416	0.334	0.258	0.196	0.149	0.112	0.085	0.049					
-100	0.000	0.001	0.006	0.011	0.014	0.016	0.016	0.014	0.011					
Field Data:														
Centerline C Concentration														
Distance from Source														
		3.13	0.0025	0	0	0	0	0	0					
		0	85	0	0	0	0	0	0					

Centerline Plot (linear)

Centerline Plot (log)

Appendix J

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project:		Seneca Mini Mart												
Date:	7/26/2016		Prepared by:		RRB									
Contaminant:			Ethylbenzene, MW-3											
SOURCE			Ax		Ay		Az		LAMBDA		SOURCE		SOURCE	
CONC			(ft)		(ft)		(ft)		day-1		WIDTH		THICKNESS	
(MG/L)			>=.001								(ft)		(ft)	
4.41			1.07E+02		1.07E+01		1.07E+00		0.003041		70		6	
9125														
Hydraulic			Hydraulic		Porosity		Soil Bulk		KOC		Frac.		Retard-	
Cond			Gradient		(dec. frac.)		Density		(g/cm ³)		Org. Carb.		ation	
(ft/day)			(ft/ft)				(g/cm ³)				(R)		(ft/day)	
1.10E+00			0.079		0.35		1.7225		220		5.00E-03		6.413571429	
0.038853324														
<p>NEW QUICK_DOMENICO.XLS</p> <p>SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"</p> <p>P.A. Domenico (1987)</p> <p>Modified to Include Retardation</p>														
Point Concentration			x(ft)		y(ft)		z(ft)							
107			10.7		10.7		1.07							
Conc. At			x(ft)		y(ft)		z(ft)							
at			107		10.7		0							
9125 days =			107		10.7		0							
0.062			107		10.7		0							
mg/l			107		10.7		0							
AREAL CALCULATION			x(ft)		y(ft)		z(ft)							
MODEL DOMAIN			x(ft)		y(ft)		z(ft)							
Length (ft)			100		100		100							
Width (ft)			100		100		100							
100			100		100		100							
50			50		50		50							
0			0		0		0							
-50			-50		-50		-50							
-100			-100		-100		-100							
Centerline C Concentration			x(ft)		y(ft)		z(ft)							
Distance from Source			x(ft)		y(ft)		z(ft)							
100			100		100		100							
50			50		50		50							
0			0		0		0							
-50			-50		-50		-50							
-100			-100		-100		-100							
Centerline Plot (linear)			x(ft)		y(ft)		z(ft)							
100			100		100		100							
50			50		50		50							
0			0		0		0							
-50			-50		-50		-50							
-100			-100		-100		-100							
Centerline Plot (log)			x(ft)		y(ft)		z(ft)							
100			100		100		100							
50			50		50		50							
0			0		0		0							
-50			-50		-50		-50							
-100			-100		-100		-100							

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL																			
Project: Seneca Mini Mart			RRB Ethylbenzene, MW-3			Ethylbenzene, MW-3			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										
Date: 7/26/2016			Prepared by: Contaminant:																
SOURCE CONC (MG/L)		Ax (ft)	Ay (ft)	Az (ft)	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)											
4.41		1.07E+02	1.07E+01	1.07E+00	0.003041	70	6	10950											
Hydraulic Cond (ft/day)		Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	Frac. Org. Carb. (R)	Retard- ation (=K*/n*R) (R)	V												
1.10E+00		0.079	0.35	1.7225	220	5.00E-03	6.413571429	0.038853324											
Point Concentration																			
x(ft)		y(ft)		z(ft)															
107		10.7		1.07															
Conc. At		x(ft)		y(ft)		z(ft)													
at		10950 days =		0.062		mg/l													
AREAL MODEL		CALCULATION DOMAIN																	
Length (ft)		100																	
Width (ft)		100																	
10		20		30		40		50		60		70		80		90		100	
100		0.000		0.006		0.011		0.014		0.016		0.016		0.014		0.013		0.011	
50		0.425		0.416		0.334		0.258		0.196		0.149		0.085		0.064		0.049	
0		2.740		1.614		1.005		0.655		0.441		0.303		0.151		0.109		0.079	
-50		0.425		0.416		0.334		0.258		0.196		0.149		0.085		0.064		0.049	
-100		0.000		0.001		0.006		0.011		0.014		0.016		0.014		0.013		0.011	
Field Data:		Centerline C Concentration		3.13		0.0025		0		0		0		0		0		0	
Distance from Source		Distance from Source		0		85		0		0		0		0		0		0	

Appendix J
Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
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Project			Seneca Mini Mart
Contaminant and Well ID			Toluene, MW-3
Date	7/26/2017	Prepared By	RRB
Parameter	Definition	Value	Reason
Source Concentration (mg/L)	Concentration of contaminant of concern in groundwater.	10.5	Highest concentration of Toluene observed in MW-3 during SCR sampling events.
Ax (ft)	Longitudinal dispersivity in the x direction	107	Distance from monitoring well to the unnamed tributary in the direction of groundwater flow.
Ay (ft)	Transverse dispersivity in the y direction	10.7	$Ay = Ax/10$
Az (ft)	Vertical dispersivity in the z direction	1.07	$Az = Ax/100$
Lambda	First order decay constant	0.02468	See Appendix A , Table 5 of the Act 2 Regulations
Source Width (ft)	Width of contaminated soil.	70	Width of contaminated soils under dispenser islands perpendicular to groundwater flow direction.
Source Thickness (ft)	Thickness of contaminated soil.	6	Thickness of contaminated soils under dispenser islands.
Time (Days)	Time since release in days.	See sheet	Time since release in days, presented in five year increments (5, 10, 15, 20, 25 and 30 years).
Hydraulic Cond. (ft/day)	Hydraulic Conductivity	1.104	Shallow hydraulic conductivity equals the geometric mean of the slug tests (Rising Head and Falling Head) conducted on selected monitoring wells (MW-1, MW-2, and MW-4) at the Site.
Hydraulic Gradient (ft/ft)	Hydraulic Gradient	0.079	Maximum gradient measured between high groundwater elevation MW-3 and MW-12 June 12, 2017.
Effective Porosity (decimal fraction)	Estimated Effective Porosity θ	0.35	Estimated range of silt from Groundwater (Freeze & Cherry)
Soil Bulk Density (g/cm ³)	Soil Bulk Density	1.7225	2.65 - (2.65 X Effective porosity)
KOC	Organic Carbon Partition Coefficient	130	See Appendix A , Table 5 of the Act 2 Regulations
Frac. Org. Carb	Fraction Organic Carbon	0.005	Estimated at 0.005

Appendix J

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL															
Project: Seneca Mini Mart															
Date: 7/26/2017 Prepared by: RRB															
Contaminant: Toluene, MW-3															
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	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)						
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)						
(MG/L)	10.5	1.07E+02	1.07E+01	1.07E+00	0.02468	70	6	1825							
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-	ation	V	(=K'i/n*R)						
Cond	Gradient	(dec. frac.)	Density	(g/cm ³)					(ft/day)						
(ft/day)	1.10E+00	0.079	0.35	1.7225	130	5.00E-03	4.198928571	0.059345751							
Centerline Plot (linear)															
Centerline Plot (log)															
Point Concentration															
x(ft)	y(ft)	z(ft)													
107	10.7	1.07													
Conc. At	x(ft)	y(ft)	z(ft)												
at	107	10.7	0												
	1825	days =	0.003												
			mg/l												
AREAL CALCULATION															
MODEL DOMAIN															
Length (ft)	80														
Width (ft)	100														
100	0.000	0.001	0.003	0.006	0.007	0.006	0.006	0.006	0.005	0.004	0.003	0.002	0.002	0.002	
50	0.698	0.597	0.394	0.246	0.151	0.092	0.092	0.056	0.034	0.020	0.012	0.012	0.012		
0	5.508	2.691	1.362	0.713	0.383	0.210	0.092	0.117	0.066	0.038	0.022	0.022	0.022		
-50	0.698	0.597	0.394	0.246	0.151	0.092	0.056	0.034	0.020	0.012	0.012	0.012	0.012		
-100	0.000	0.001	0.003	0.006	0.007	0.006	0.005	0.004	0.003	0.002	0.002	0.002	0.002		
Field Data: Centerline C Concentration															
Distance from Source															

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Quick Domenico Fate and Transport Modeling

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project:		Seneca Mini Mart												
Date:	7/26/2017		Prepared by:		RRB									
		Contaminant:		Toluene, MW-3										
				Toluene, MW-3										
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)					
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)					
(MG/L)														
10.5	1.07E+02	1.07E+01	1.07E+00	0.02468	70	6	5475							
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-	V							
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation	(=K'i/n*R)							
(ft/day)	(ft/ft)		(g/cm ³)			(R)	(ft/day)							
1.10E+00	0.079	0.35	1.7225	130	5.00E-03	4.198928571	0.059345751							
<div style="display: flex; justify-content: space-between;"> <div> <p>NEW QUICK_DOMENICO.XLS</p> <p>SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"</p> <p>P.A. Domenico (1987)</p> <p>Modified to Include Retardation</p> </div> </div>														
<div style="display: flex; justify-content: space-around;"> <div> <p>Centerline Plot (linear)</p> </div> <div> <p>Centerline Plot (log)</p> </div> </div>														
Point Concentration														
x(ft)	y(ft)	z(ft)												
107	10.7	1.07												
		x(ft)	y(ft)	z(ft)										
Conc. At	107	10.7												
at	5475	days =												
			0.003											
			mg/l											
<div style="display: flex; justify-content: space-between;"> <div> <p>AREAL CALCULATION</p> <p>MODEL DOMAIN</p> <p>Length (ft) 80</p> <p>Width (ft) 100</p> </div> </div>														
100	0.000	0.001	0.003	0.006	0.007	0.006	0.006	0.005	0.004	0.003	0.002	0.002	0.002	0.002
50	0.698	0.597	0.394	0.246	0.151	0.092	0.056	0.034	0.020	0.012	0.008	0.005	0.003	
0	5.508	2.691	1.362	0.713	0.383	0.210	0.117	0.066	0.038	0.022	0.012	0.007	0.004	
-50	0.698	0.597	0.394	0.246	0.151	0.092	0.056	0.034	0.020	0.012	0.008	0.005	0.003	
-100	0.000	0.001	0.003	0.006	0.007	0.006	0.005	0.004	0.003	0.002	0.002	0.002	0.002	
<div style="display: flex; justify-content: space-between;"> <div> <p>Field Data:</p> <p>Centerline C Concentration</p> <p>Distance from Source</p> </div> </div>														
				10.5	0.0025	0	0	0	0	0	0	0	0	0
				0	85	0	0	0	0	0	0	0	0	0

Quick Domenico Fate and Transport Modeling

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL												
Project: Seneca Mini Mart		RRB			Toluene, MW-3							
Date: 7/26/2017		Prepared by: RRB			Toluene, MW-3							
		Contaminant:										
SOURCE		Ax	Ay	Az	LAMBDA	SOURCE WIDTH	SOURCE THICKNESS	Time (days)				
CONC		(ft)	(ft)	(ft)		(ft)	(ft)	(days)				
(MG/L)				>= .001	day-1							
10.5		1.07E+02	1.07E+01	1.07E+00	0.02468	70	6	9125				
Hydraulic												
Cond		Gradient	Porosity	Soil Bulk				Retard-				
(ft/day)		(ft/ft)	(dec. frac.)	Density	KOC	Org. Carb.	ation	(=K*/ln*R)				
1.10E+00		0.079	0.35	1.7225	130	5.00E-03	4.198928571	0.059345751				
Point Concentration												
x(ft)	y(ft)	z(ft)										
107	10.7	1.07										
Conc. At	x(ft)	y(ft)	z(ft)									
at	107	10.7	0									
	9125	days =			0.003							
					mg/l							
AREAL		CALCULATION										
MODEL		DOMAIN										
Length (ft)		80										
Width (ft)		100										
		8	24	32	40	48	56	64	72	80		
100	0.000	0.001	0.003	0.006	0.007	0.006	0.005	0.004	0.003	0.002		
50	0.698	0.597	0.394	0.246	0.151	0.092	0.056	0.034	0.020	0.012		
0	5.508	2.691	1.362	0.713	0.383	0.210	0.117	0.066	0.038	0.022		
-50	0.698	0.597	0.394	0.246	0.151	0.092	0.056	0.034	0.020	0.012		
-100	0.000	0.001	0.003	0.006	0.007	0.006	0.005	0.004	0.003	0.002		
Field Data:		Centerline C Concentration										
		Distance from Source										

Appendix J
Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
Seneca, Pennsylvania

Project			Seneca Mini Mart
Contaminant and Well ID			Total Xylenes, MW-3
Date	7/26/2017	Prepared By	RRB
Parameter	Definition	Value	Reason
Source Concentration (mg/L)	Concentration of contaminant of concern in groundwater.	23.9	Highest concentration of Total Xylenes observed in MW-3 during SCR sampling events.
Ax (ft)	Longitudinal dispersivity in the x direction	107	Distance from monitoring well to the unnamed tributary in the direction of groundwater flow.
Ay (ft)	Transverse dispersivity in the y direction	10.7	$Ay = Ax/10$
Az (ft)	Vertical dispersivity in the z direction	1.07	$Az = Ax/100$
Lambda	First order decay constant	0.001781	See Appendix A , Table 5 of the Act 2 Regulations
Source Width (ft)	Width of contaminated soil.	70	Width of contaminated soils under dispenser islands perpendicular to groundwater flow
Source Thickness (ft)	Thickness of contaminated soil.	6	Thickness of contaminated soils under dispenser islands.
Time (Days)	Time since release in days.	See sheet	Time since release in days, presented in five year increments (5, 10, 15, 20, 25 and 30 years).
Hydraulic Cond. (ft/day)	Hydraulic Conductivity	1.104	Shallow hydraulic conductivity equals the geometric mean of the slug tests (Rising Head and Falling Head) conducted on selected monitoring wells (MW-1, MW-2, and MW-4) at the Site.
Hydraulic Gradient (ft/ft)	Hydraulic Gradient	0.079	Maximum gradient measured between high groundwater elevation MW-3 and MW-12 June 12, 2017.
Effective Porosity (decimal fraction)	Estimated Effective Porosity θ	0.35	Estimated range of silt from Groundwater (Freeze & Cherry)
Soil Bulk Density (g/cm ³)	Soil Bulk Density	1.7225	2.65 - (2.65 X Effective porosity)
KOC	Organic Carbon Partition Coefficient	350	See Appendix A , Table 5 of the Act 2 Regulations
Frac. Org. Carb	Fraction Organic Carbon	0.005	Estimated at 0.005

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL									
Project:		Seneca Mini Mart							
Date:	7/26/2017	Prepared by:	RRB	Xylene, MW-3					
		Contaminant:	Total Xylenes, MW-3						
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	THICKNESS	Time (days)	
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(days)	
(MG/L)	23.9	1.07E+02	1.07E+01	1.07E+00	0.001781	70	6	3650	
Hydraulic	Hydraulic	Porosity	Soil Bulk		Frac.	Retard-			
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation			
(ft/day)	(ft/ft)		(g/cm ³)		(R)	(ft/day)			
1.10E+00	0.079	0.35	1.7225	350	5.00E-03	9.6125	0.025923388		
<div style="display: flex; justify-content: space-between;"> <div> <p>NEW QUICK_DOMENICO.XLS</p> <p>SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"</p> <p>P.A. Domenico (1987)</p> <p>Modified to Include Retardation</p> </div> </div>									
Point Concentration		z(ft)							
x(ft)	y(ft)	107	10.7	1.07					
		x(ft)	y(ft)	z(ft)					
Conc. At	at	107	10.7	0					
		3650 days =		0.403					
				mg/l					
AREAL CALCULATION									
MODEL DOMAIN									
Length (ft)	Width (ft)	180	75						
75	0	18	36	54	72	90	108	126	144
37.5	0	0.224	0.420	0.384	0.293	0.209	0.143	0.097	0.065
-37.5	0	4.840	2.583	1.464	0.855	0.511	0.310	0.190	0.118
-75	0	9.972	4.454	2.245	1.214	0.686	0.399	0.238	0.144
		4.840	2.583	1.464	0.855	0.511	0.310	0.190	0.118
		0.224	0.420	0.384	0.293	0.209	0.143	0.097	0.065
Field Data: Centerline C Concentration									
Distance from Source									
		180	162	144	126	108	90	72	54
		0.028	0.043	0.065	0.097	0.143	0.209	0.293	0.384
		0.046	0.074	0.118	0.190	0.310	0.511	0.855	1.214
		0.055	0.088	0.144	0.238	0.399	0.686	1.214	2.245
		0.046	0.074	0.118	0.190	0.310	0.511	0.855	1.464
		0.028	0.043	0.065	0.097	0.143	0.209	0.293	0.384
		0	0	0	0	0.0025	0.0025	0.0025	0.0025
		0	0	0	0	0	0	0	0

Centerline Plot (linear)

Centerline Plot (log)

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL									
Project: Seneca Mini Mart		RRB Xylene, MW-3							
Date:	7/26/2017	Prepared by:		Total Xylenes, MW-3					
		Contaminant:							
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA day ⁻¹	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)		
23.9	1.07E+02	1.07E+01	1.07E+00	0.001781	70	6	5475		
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm ³)	KOC	Frac. Org. Carb.	Retardation (R)	V (=K*/ln*R) (ft/day)		
1.10E+00	0.079	0.35	1.7225	350	5.00E-03	9.6125	0.025923388		
Point Concentration									
x(ft)	y(ft)	z(ft)							
107	10.7	1.07							
Conc. At	x(ft)	y(ft)	z(ft)						
at	107	10.7	0						
	5475 days =	0.403 mg/l							
AREAL CALCULATION									
MODEL Length (ft)	DOMAIN Width (ft)								
75	0.224	36	54						
37.5	4.841	2.583	1.464	0.293	0.209	0.144	0.097	126	180
0	9.974	4.455	2.246	0.856	0.511	0.310	0.190	0.065	0.028
-37.5	4.841	2.583	1.464	1.215	0.687	0.400	0.238	0.118	0.047
-75	0.224	0.420	0.384	0.856	0.511	0.310	0.190	0.065	0.028
Centerline C Concentration									
Distance from Source									

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL										
Project:		Seneca Mini Mart								
Date:	7/26/2017	Prepared by:	RRB	Xylene, MW-3						
		Contaminant:	Total Xylenes, MW-3							
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	THICKNESS	Time (days)		
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(days)		
(MG/L)	23.9	1.07E+02	1.07E+01	1.07E+00	0.001781	70	6	9125		
Hydraulic	Hydraulic	Porosity	Soil Bulk		Frac.	Retard-				
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation				
(ft/day)	(ft/ft)		(g/cm ³)		(R)	(=K'i/n*R)				
1.10E+00	0.079	0.35	1.7225	350	5.00E-03	9.6125	0.025923388			
<div style="display: flex; justify-content: space-between;"> <div> <p>NEW QUICK_DOMENICO.XLS</p> <p>SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"</p> <p>P.A. Domenico (1987)</p> <p>Modified to Include Retardation</p> </div> <div> <p>Centerline Plot (log)</p> </div> </div>										
<div style="display: flex; justify-content: space-between;"> <div> <p>Centerline Plot (linear)</p> </div> </div>										
Point Concentration		z(ft)								
x(ft)	y(ft)	z(ft)								
107	10.7	1.07								
Conc. At		x(ft)	y(ft)	z(ft)						
at		107	10.7	1.07						
		9125 days =								
		0.403								
		mg/l								
AREAL CALCULATION										
MODEL DOMAIN										
Length (ft)		180								
Width (ft)		75								
		18	54	72	90	108	126	144	162	180
75	0.224	0.420	0.384	0.293	0.209	0.144	0.097	0.065	0.043	0.028
37.5	4.841	2.583	1.464	0.856	0.511	0.310	0.190	0.118	0.074	0.047
0	9.974	4.456	2.246	1.215	0.687	0.400	0.238	0.144	0.089	0.055
-37.5	4.841	2.583	1.464	0.856	0.511	0.310	0.190	0.118	0.074	0.047
-75	0.224	0.420	0.384	0.293	0.209	0.144	0.097	0.065	0.043	0.028
Field Data: Centerline C Concentration										
Distance from Source		23.9	0.0025	0	0	0	0	0	0	0
		0	85	0	0	0	0	0	0	0

Appendix J

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL									
Project:		Seneca Mini Mart		Prepared by: RRB		Xylene, MW-3			
Date:		7/26/2017		Contaminant:		Total Xylenes, MW-3			
SOURCE		Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	THICKNESS	Time (days)
CONC		(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(days)
(MG/L)		23.9	1.07E+02	1.07E+01	1.07E+00	0.001781	70	6	10950
Hydraulic		Hydraulic	Porosity	Soil Bulk		Frac.	Retard-		
Cond		Gradient	(dec. frac.)	Density	KOC	Org. Carb.	ation		
(ft/day)		(ft/ft)		(g/cm ³)		(R)	(=K [*] i/n [*] R)		
1.10E+00		0.079	0.35	1.7225	350	5.00E-03	9.6125	0.025923388	
<div style="border: 1px solid black; padding: 5px;"> <p>NEW QUICK_DOMENICO.XLS</p> <p>SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"</p> <p>P.A. Domenico (1987)</p> <p>Modified to Include Retardation</p> </div>									
Point Concentration		x(ft)	y(ft)	z(ft)					
107		10.7	10.7	1.07					
Conc. At		x(ft)	y(ft)	z(ft)					
at		10950	days =						
				0.403					
				mg/l					
AREAL CALCULATION									
MODEL DOMAIN									
Length (ft)		180							
Width (ft)		75							
75		0.224	0.420	0.384	54	72	90	108	126
37.5		4.841	2.583	1.464	0.293	0.209	0.144	0.097	0.065
0		9.974	4.456	2.246	0.856	0.511	0.310	0.190	0.118
-37.5		4.841	2.583	1.464	0.293	0.209	0.144	0.097	0.065
-75		0.224	0.420	0.384	23.9	0.0025	0	0	0
Field Data:									
Centerline C Concentration									
Distance from Source									
		0	85	0	0	0	0	0	0
		144	162	180	0.043	0.074	0.089	0.074	0.028
		0.065	0.118	0.238	0.190	0.118	0.065	0.043	0.028
		0.074	0.089	0.074	0.065	0.043	0.028	0	0
		0	0	0	0	0	0	0	0

Centerline Plot (linear)

Centerline Plot (log)

Appendix J
Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
Seneca, Pennsylvania

Project			Seneca Mini Mart
Contaminant and Well ID			MTBE, MW-8
Date	7/26/2017	Prepared By	RRB
Parameter	Definition	Value	Reason
Source Concentration (mg/L)	Concentration of contaminant of concern in groundwater.	0.52	Highest concentration of MTBE observed in MW-8 during SCR sampling events.
Ax (ft)	Longitudinal dispersivity in the x direction	23	Distance from monitoring well to the property boundary in the direction of groundwater flow.
Ay (ft)	Transverse dispersivity in the y direction	2.3	Ay=Ax/10
Az (ft)	Vertical dispersivity in the z direction	0.23	Az=Ax/100
Lambda	First order decay constant	0.00189	See Appendix A , Table 5 of the Act 2 Regulations
Source Width (ft)	Width of contaminated soil.	70	Width of contaminated soils under dispenser islands perpendicular to groundwater flow direction.
Source Thickness (ft)	Thickness of contaminated soil.	6	Thickness of contaminated soils under dispenser islands.
Time (Days)	Time since release in days.	See sheet	Time since release in days, presented in five year increments (5, 10, 15, 20, 25 and 30 years).
Hydraulic Cond. (ft.day)	Hydraulic Conductivity	1.104	Shallow hydraulic conductivity equals the geometric mean of the slug tests (Rising Head and Falling Head) conducted on selected monitoring wells (MW-1, MW-2, and MW-4) at the Site.
Hydraulic Gradient (ft/ft)	Hydraulic Gradient	0.016	Maximum gradient measured between high groundwater elevation MW-3 and MW-8 June 12, 2017.
Effective Porosity (decimal fraction)	Estimated Effective Porosity θ	0.35	Estimated range of silt from Groundwater (Freeze & Cherry)
Soil Bulk Density (g/cm ³)	Soil Bulk Density	1.7225	2.65 - (2.65 X Effective porosity)
KOC	Organic Carbon Partition Coefficient	12	See Appendix A , Table 5 of the Act 2 Regulations
Frac. Org. Carb	Fraction Organic Carbon	0.005	Estimated at 0.005

Appendix J

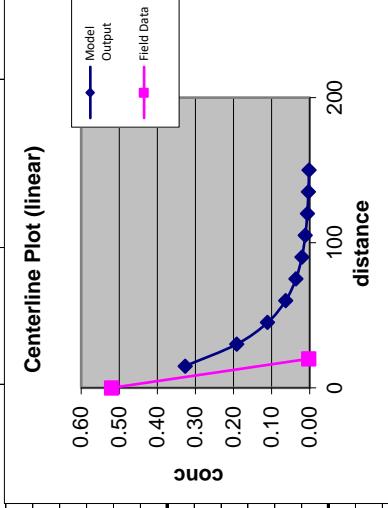
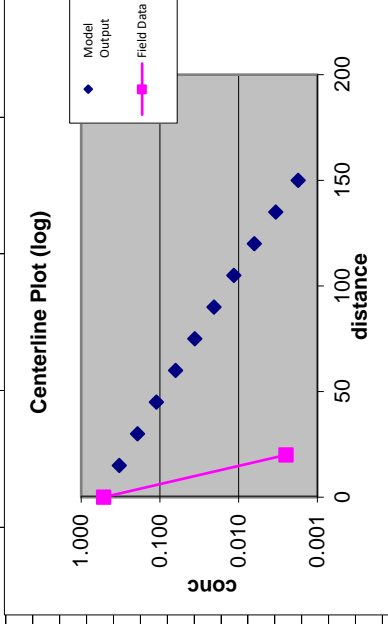
Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL																
Project: Seneca Mini Mart		Prepared by: RRB														
Date: 7/26/2017		Contaminant: MTBE, MW-8														



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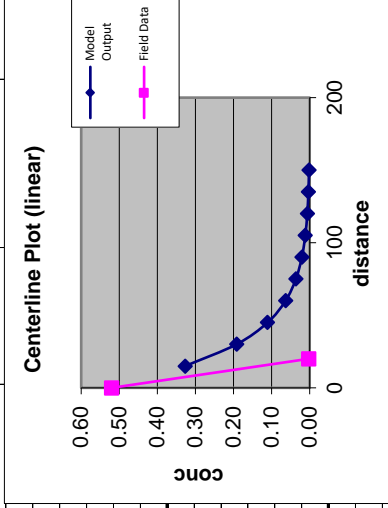
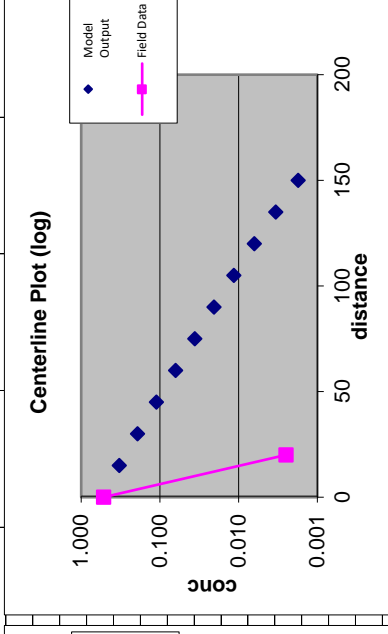
Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL														
Project:		Seneca Mini Mart												
Date:		7/26/2017 Prepared by: RRB												
		9/2/2016 MTBE, MW-8												
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)	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						
	0.52	2.30E+01	2.30E+00	2.30E-01	0.00189	70	6								3650
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 (=K ² /n*R) (ft/day)							
1.10E+00	0.016	0.35	1.7225	12	5.00E-03	1.295285714	0.038963273							
Point Concentration														
x(ft)	y(ft)	z(ft)												
23	2.3	0.23												
Conc. At		x(ft)	y(ft)	z(ft)										
at		23	3650 days =	2.3	0									
				0.249 mg/l										
AREAL CALCULATION														
MODEL DOMAIN														
Length (ft)		150												
Width (ft)		60												
		15	30	45	60	75	90	105	120	135	150			
60	0.000	0.003	0.005	0.004	0.004	0.004	0.003	0.002	0.001	0.001	0.001			
30	0.239	0.129	0.073	0.042	0.025	0.015	0.015	0.009	0.005	0.003	0.002			
0	0.329	0.194	0.112	0.065	0.038	0.023	0.015	0.009	0.005	0.003	0.002			
-30	0.239	0.129	0.073	0.042	0.025	0.015	0.015	0.009	0.005	0.003	0.002			
-60	0.000	0.003	0.005	0.004	0.004	0.003	0.003	0.002	0.001	0.001	0.001			
Field Data:		Centerline C Concentration												
		Distance from Source												



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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL														
Project:		Seneca Mini Mart												
Date:		7/26/2017 Prepared by: RRB												
		9/2/2016 MTBE, MW-8												
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	THICKNESS	Time (days)	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					
CONC	(ft)	(ft)	(ft)	day-1	WIDTH	(ft)	(ft)	(days)						
(MG/L)														
0.52	2.30E+01	2.30E+00	2.30E-01	0.00189	70	6	5475							
Hydraulic														
Cond	Hydraulic		Soil Bulk		Frac.	Retard-	V							
(ft/day)	Gradient	Porosity	Density	KOC	Org. Carb.	ation	(=K*1/n*R)							
	(ft/ft)	(dec. frac.)	(g/cm ³)			(R)	(ft/day)							
1.10E+00	0.016	0.35	1.7225	12	5.00E-03	1.295285714	0.038963273							
Point Concentration														
x(ft)	y(ft)	z(ft)												
23	2.3	0.23												
	x(ft)	y(ft)	z(ft)											
Conc. At	23	2.3	0											
at	5475 days =	0.249												
		mg/l												
AREAL MODEL		CALCULATION DOMAIN												
	Length (ft)	150												
	Width (ft)	60												
	15	30	45	60	75	90	105	120	135	150				
60	0.000	0.003	0.005	0.004	0.004	0.003	0.002	0.001	0.001	0.001				
30	0.239	0.129	0.073	0.042	0.025	0.015	0.009	0.005	0.003	0.002				
0	0.329	0.194	0.112	0.065	0.038	0.023	0.013	0.008	0.005	0.003				
-30	0.239	0.129	0.073	0.042	0.025	0.015	0.009	0.005	0.003	0.002				
-60	0.000	0.003	0.005	0.004	0.004	0.003	0.002	0.001	0.001	0.001				
Field Data:	Centerline C Concentration													
	Distance from Source													
				0	20	0	0	0	0	0				

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL														
Project: Seneca Mini Mart														
Date: 7/26/2017	Prepared by: RRB													
	9/2/2016	MTBE, MW-8												
NEW QUICK_DOMENICO.XLS														
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"														
P.A. Domenico (1987)														
Modified to Include Retardation														
SOURCE	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA	SOURCE	SOURCE	THICKNESS	Time (days)						
CONC (MG/L)				day-1	(ft)		(ft)							
0.52	2.30E+01	2.30E+00	2.30E-01	0.00189	70	6	7300							
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm ³)	KOC	Frac. Org. Carb. (R)	Retardation (=K ² /ln*R) (ft/day)	V							
1.10E+00	0.016	0.35	1.7225	12	5.00E-03	1.295285714	0.038963273							
Point Concentration														
x(ft)	y(ft)	z(ft)												
23	2.3	0.23												
	x(ft)	y(ft)												
Conc. At	23	2.3												
at	7300 days =	0												
		0.249												
		mg/l												
AREAL CALCULATION														
MODEL DOMAIN														
	Length (ft)	150												
	Width (ft)	60												
		15	30	45	60	75	90	105	120	135	150			
60	0.000	0.003	0.005	0.004	0.004	0.004	0.003	0.002	0.001	0.001	0.001			
30	0.239	0.129	0.073	0.042	0.025	0.015	0.008	0.005	0.003	0.002	0.001			
0	0.329	0.194	0.112	0.065	0.038	0.023	0.015	0.009	0.005	0.003	0.002			
-30	0.239	0.129	0.073	0.042	0.025	0.015	0.008	0.005	0.003	0.002	0.001			
-60	0.000	0.003	0.005	0.004	0.004	0.003	0.003	0.002	0.001	0.001	0.001			
Field Data: Centerline C Concentration														
Distance from Source														
				0	0.0025	0	0	0	0	0	0			
				0	0	0	0	0	0	0	0			

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL														
Project:		Seneca Mini Mart												
Date:		7/26/2017 Prepared by: RRB												
		9/2/2016 MTBE, MW-8												
</														

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Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
Seneca, Pennsylvania

Project			Seneca Mini Mart
Contaminant and Well ID			MTBE, MW-8
Date	9/7/2017	Prepared By	RRB
Parameter	Definition	Value	Reason
Source Concentration (mg/L)	Concentration of contaminant of concern in groundwater.	0.52	Highest concentration of MTBE observed in MW-8 during SCR sampling events.
Ax (ft)	Longitudinal dispersivity in the x direction	23	Distance from monitoring well to the property boundary in the direction of groundwater flow.
Ay (ft)	Transverse dispersivity in the y direction	2.3	$Ay = Ax/10$
Az (ft)	Vertical dispersivity in the z direction	0.23	$Az = Ax/100$
Lambda	First order decay constant	0.00189	See Appendix A , Table 5 of the Act 2 Regulations
Source Width (ft)	Width of contaminated soil.	70	Width of contaminated soils under dispenser islands perpendicular to groundwater flow direction.
Source Thickness (ft)	Thickness of contaminated soil.	6	Thickness of contaminated soils under dispenser islands.
Time (Days)	Time since release in days.	See sheet	Time since release in days, presented in five year increments (1, 2, 3 ,4, 5, 10, 20, and 30 years).
Hydraulic Cond. (ft.day)	Hydraulic Conductivity	0.04677	Shallow hydraulic conductivity equal to the Falling Head measured at monitoring well MW-11 at the Site to explain delay in results at off site wells.
Hydraulic Gradient (ft/ft)	Hydraulic Gradient	0.016	Maximum gradient measured between high groundwater elevation MW-3 and MW-8 June 12, 2017.
Effective Porosity (decimal fraction)	Estimated Effective Porosity θ	0.35	Estimated range of silt from Groundwater (Freeze & Cherry)
Soil Bulk Density (g/cm ³)	Soil Bulk Density	1.7225	2.65 - (2.65 X Effective porosity)
KOC	Organic Carbon Partition Coefficient	12	See Appendix A , Table 5 of the Act 2 Regulations
Frac. Org. Carb	Fraction Organic Carbon	0.005	Estimated at 0.005

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL															
Project:		Seneca Mini Mart													
Date:		9/7/2017													
Prepared by:		RRB													
Contaminant:		MTBE, MW-8													
SOURCE		Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)					
CONC		(ft)	(ft)	(ft)	day-1	WIDTH	(ft)	(ft)	(ft)	(days)					
(MG/L)		0.52	2.30E+01	2.30E+00	2.30E-01	0.00189	70	6	365						
Hydraulic															
Cond															
(ft/day)		4.68E-02	0.016	0.35	1.7225	12	5.00E-03	1.295285714	0.001650645						
Soil Bulk															
Density															
(g/cm ³)															
KOC															
Retardation															
(R)															
(ft/day)															
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 (log)															
Centerline Plot (linear)															
Point Concentration															
x(ft)		y(ft)	z(ft)												
23		2.3	0.23												
Conc. At		x(ft)	y(ft)	z(ft)											
at		23	2.3	0											
365 days =		0.000													
mg/l															
AREAL CALCULATION															
MODEL DOMAIN															
Length (ft)		35													
Width (ft)		45													
45		3.5	7	10.5	14	17.5	21	24.5	28	31.5	35				
22.5		0.001	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
0		0.178	0.055	0.012	0.002	0.000	0.000	0.000	0.000	0.000	0.000				
-22.5		0.178	0.055	0.012	0.002	0.000	0.000	0.000	0.000	0.000	0.000				
-45		0.001	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Field Data:		Centerline C Concentration													
Distance from Source		0													

Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
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MTBE_520 MW-8 to PL CALB QD.xls
9/8/2017

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project:		Seneca Mini Mart												
Date:		9/7/2017 Prepared by: RRB												
		Contaminant: MTBE, MW-8												
SOURCE		Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)				
CONC		(ft)	(ft)	(ft)	day-1	WIDTH	(ft)	(ft)	(ft)	(days)				
(MG/L)		0.52	2.30E+01	2.30E+00	2.30E-01	0.00189	70	6	1095					
Hydraulic														
Cond		Hydraulic	Porosity	Soil Bulk	Density	KOC	Frac.	Retard-						
(ft/day)		4.68E-02	0.016	0.35	1.7225	12	5.00E-03	1.295285714	0.001650645					
Point Concentration														
x(ft)	y(ft)	z(ft)												
23	2.3	0.23												
Conc. At	x(ft)	y(ft)	z(ft)											
at	23	2.3	0											
	1095	days =	0.001											
			mg/l											
AREAL CALCULATION														
MODEL DOMAIN														
Length (ft)		35												
Width (ft)		45												
		3.5	7	10.5	14	17.5	21	24.5	28	31.5	35			
45	0.002	0.004	0.004	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000			
22.5	0.243	0.112	0.048	0.020	0.007	0.003	0.003	0.001	0.001	0.000	0.000			
0	0.244	0.113	0.050	0.021	0.008	0.003	0.003	0.001	0.001	0.000	0.000			
-22.5	0.243	0.112	0.048	0.020	0.007	0.003	0.003	0.001	0.001	0.000	0.000			
-45	0.002	0.004	0.004	0.002	0.001	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.XLS

SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"

P.A. Domenico (1987)

Modified to Include Retardation

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

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Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project:		Seneca Mini Mart												
Date:		9/7/2017 Prepared by: RRB												
		Contaminant: MTBE, MW-8												
SOURCE		Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)				
CONC		(ft)	(ft)	(ft)	day-1	WIDTH	(ft)							
(MG/L)				>=.001										
0.52		2.30E+01	2.30E+00	2.30E-01	0.00189	70	6	1460						
Hydraulic														
Cond		Hydraulic	Porosity	Soil Bulk	Density	Frac.	Retard-							
(ft/day)		Gradient	(dec. frac.)	(g/cm ³)	KOC	Org. Carb.	ation							
4.68E-02		0.016	0.35	1.7225	12	5.00E-03	1.295285714	0.001650645						
<div style="display: flex; justify-content: space-between;"> <div> <p>NEW QUICK_DOMENICO.XLS</p> <p>SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"</p> <p>P.A. Domenico (1987)</p> <p>Modified to Include Retardation</p> </div> <div> <p>Centerline Plot (log)</p> </div> </div>														
<div style="display: flex; justify-content: space-between;"> <div> <p>Centerline Plot (linear)</p> </div> </div>														
Point Concentration														
x(ft)	y(ft)	z(ft)												
23	2.3	0.23												
Conc. At		x(ft)	y(ft)	z(ft)										
at		23	2.3	0										
		1460 days =												
		0.003												
		mg/l												
AREAL CALCULATION														
MODEL DOMAIN														
Length (ft)		35												
Width (ft)		45												
45		3.5	7	10.5	14	17.5	21	24.5	28	31.5	35			
22.5		0.002	0.005	0.004	0.003	0.001	0.001	0.001	0.000	0.000	0.000			
0		0.250	0.119	0.054	0.024	0.010	0.004	0.002	0.002	0.001	0.000			
		0.251	0.120	0.056	0.025	0.011	0.005	0.002	0.002	0.001	0.000			
-22.5		0.250	0.119	0.054	0.024	0.010	0.004	0.002	0.002	0.001	0.000			
-45		0.002	0.005	0.004	0.003	0.001	0.001	0.000	0.000	0.000	0.000			
Field Data:		Centerline C Concentration												
		Distance from Source												

Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
Seneca, Pennsylvania

MTBE_520 MW-8 to PL CALB QD.xls
9/8/2017

Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
Seneca, Pennsylvania

MTBE_520 MW-8 to PL CALB QD.xls
9/8/2017

Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL					
<div>Project: Seneca Mini Mart Date: 9/7/2017 Prepared by: RRB Contaminant: MTBE, MW-8</div> <div>SOURCE Ax Ay Az LAMBDA SOURCE SOURCE THICKNESS Time (days) CONC (ft) (ft) (ft) day⁻¹ (ft) (ft) (ft/day)</div> <div>(MG/L) 0.52 2.30E+01 2.30E+00 2.30E-01 0.00189 70 6 7300</div> <div>Hydraulic Hydraulic Cond Gradient Porosity Soil Bulk Density Retardation (=K*/n*R) (ft/day) (ft/ft) (ft/ft) (dec. frac.) (g/cm³) (R)</div> <div>4.68E-02 0.016 0.35 1.7225 12 5.00E-03 1.295285714 0.001650645</div> <div><div>Point Concentration <div>x(ft)y(ft)z(ft)</div><div>232.30.23</div><div><div>x(ft)y(ft)z(ft)</div><div>Conc. At 23 y(ft) z(ft)</div><div>at 7300 days = 0.0005 mg/l</div></div></div><div><div>AREAL CALCULATION MODEL DOMAIN</div><div>Length (ft) Width (ft)</div><div>45 3.5 0.002 0.005 0.124 0.059 0.126 0.062 0.059 0.005</div><div>22.5 0.256 0.256 0.124 -45 0.002 0.005</div><div>Field Data: Centerline C Concentration Distance from Source</div></div><div><div>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</div><div><div>Centerline Plot (linear) conc distance</div><div>Centerline Plot (log) conc distance</div></div></div></div>					

Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
Seneca, Pennsylvania

MTBE_520 MW-8 to PL CALB QD.xls
9/8/2017

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Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
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Project			Seneca Mini Mart
Contaminant and Well ID			MTBE, MW-5
Date	7/26/2017	Prepared By	RRB
Parameter	Definition	Value	Reason
Source Concentration (mg/L)	Concentration of contaminant of concern in groundwater.	0.0755	Highest concentration of MTBE observed in MW-5 during SCR sampling events.
Ax (ft)	Longitudinal dispersivity in the x direction	85	Distance from monitoring well to the unnamed tributary in the direction of groundwater flow.
Ay (ft)	Transverse dispersivity in the y direction	8.5	$Ay = Ax/10$
Az (ft)	Vertical dispersivity in the z direction	0.85	$Az = Ax/100$
Lambda	First order decay constant	0.00189	See Appendix A , Table 5 of the Act 2 Regulations
Source Width (ft)	Width of contaminated soil.	70	Width of contaminated soils under dispenser islands perpendicular to groundwater flow direction.
Source Thickness (ft)	Thickness of contaminated soil.	6	Thickness of contaminated soils under dispenser islands.
Time (Days)	Time since release in days.	See sheet	Time since release in days, presented in five year increments (5, 10, 15, 20, 25 and 30 years).
Hydraulic Cond. (ft.day)	Hydraulic Conductivity	1.104	Shallow hydraulic conductivity equals the geometric mean of the slug tests (Rising Head and Falling Head) conducted on selected monitoring wells (MW-1, MW-2, and MW-4) at the Site.
Hydraulic Gradient (ft/ft)	Hydraulic Gradient	0.079	Maximum gradient measured between high groundwater elevation MW-3 and MW-12 June 12, 2017.
Effective Porosity (decimal fraction)	Estimated Effective Porosity θ	0.35	Estimated range of silt from Groundwater (Freeze & Cherry)
Soil Bulk Density (g/cm ³)	Soil Bulk Density	1.7225	2.65 - (2.65 X Effective porosity)
KOC	Organic Carbon Partition Coefficient	12	See Appendix A , Table 5 of the Act 2 Regulations
Frac. Org. Carb	Fraction Organic Carbon	0.005	Estimated at 0.005

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL															
Project:		Seneca Mini Mart													
Date:		7/26/2017 Prepared by: RRB													
		9/2/2016 MTBE, MW-5													
SOURCE CONC (MG/L)		Ax (ft)		Ay (ft)		Az (ft)		LAMBDA day-1		SOURCE WIDTH (ft)		SOURCE THICKNESS (ft)		Time (days)	
0.0755		8.50E+01		8.50E+00		8.50E-01		0.00189		70		6		3650	
Hydraulic Cond (ft/day)		1.10E+00		0.079		0.35		1.7225		12		5.00E-03		1.295285714 0.192381162	
		Hydraulic Gradient (ft/ft)		Porosity (dec. frac.)		Soil Bulk Density (g/cm ³)		KOC		Frac. Org. Carb. (R)		Retardation (R)		V (=K ² /n*R) (ft/day)	
Point Concentration		x(ft)		y(ft)		z(ft)									
85		8.5		8.5		0.85									
Conc. At		x(ft)		y(ft)		z(ft)									
at		85		3650 days =		0.011									
						mg/l									
AREAL CALCULATION															
MODEL DOMAIN															
Length (ft)		100													
Width (ft)		50													
50		0.007		0.010		0.009		0.009		0.008		0.007		0.005	
25		0.047		0.032		0.025		0.020		0.016		0.014		0.009	
0		0.059		0.043		0.033		0.025		0.020		0.016		0.009	
-25		0.047		0.032		0.025		0.020		0.016		0.014		0.007	
-50		0.007		0.010		0.009		0.009		0.008		0.007		0.005	
Field Data: Centerline C Concentration		0.0755 0.0025 0 0 0 0 0 0 0 0 0 0 0 0													
Distance from Source		0 85 0 0 0 0 0 0 0 0 0 0 0 0													

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

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL											
Project: Seneca Mini Mart											
Date: 7/26/2017 Prepared by: RRB											
9/2/2016 MTBE, MW-5											
<div> <div>NEW QUICK_DOMENICO.XLS</div> <div>SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"</div> <div>P.A. Domenico (1987)</div> <div>Modified to Include Retardation</div> </div>											
SOURCE CONC (MG/L)	0.0755	8.50E+01	8.50E+00	8.50E-01	0.00189	70	6	5475			
					day-1	(ft)					
					LAMBDA	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)			
Hydraulic	Hydraulic										
Cond (ft/day)	1.10E+00	0.079	0.35	1.7225	KOC	Frac. Org. Carb. (R)	Retardation (R)	V (=K'i/n*R) (ft/day)			
					12	5.00E-03	1.295285714	0.192381162			
<div> <div>Centerline Plot (linear)</div> </div>											
<div> <div>Centerline Plot (log)</div> </div>											
Point Concentration											
x(ft)	y(ft)	z(ft)									
85	8.5	0.85									
Conc. At	x(ft)	y(ft)	z(ft)								
at	85	8.5	0								
		5475 days =									
			0.011								
			mg/l								
AREAL CALCULATION											
MODEL DOMAIN											
	Length (ft)	100									
	Width (ft)	50									
		20									
50	0.007	0.010	0.009	40	50	60	70	80	90	100	
25	0.047	0.032	0.025	0.009	0.008	0.007	0.007	0.006	0.005	0.005	
0	0.059	0.043	0.033	0.020	0.020	0.017	0.014	0.012	0.010	0.009	
-25	0.047	0.032	0.025	0.020	0.016	0.014	0.012	0.010	0.009	0.007	
-50	0.007	0.010	0.009	0.009	0.008	0.007	0.007	0.006	0.005	0.005	
Field Data: Centerline C Concentration			0.0755	0.0025	0	0	0	0	0	0	
Distance from Source			0	85	0	0	0	0	0	0	

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL														
Project: Seneca Mini Mart														
Date: 7/26/2017		Prepared by: RRB												
		9/2/2016 MTBE, MW-5												
SOURCE		Ax (ft)	Ay (ft)	Az (ft)	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)						
CONC (MG/L)					>=.001									
0.0755		8.50E+01	8.50E+00	8.50E-01	0.00189	70	6	7300						
Hydraulic														
Cond Gradient (ft/ft)		Porosity (dec. frac.)		Soil Bulk Density (g/cm ³)		Frac. Org. Carb.		Retard-ation (=K ² /ln*R)		V				
1.10E+00		0.079	0.35	1.7225	12	5.00E-03	1.295285714	0.192381162						
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														

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL												
Project: Seneca Mini Mart												
Date: 7/26/2017			Prepared by: RRB									
			9/2/2016			MTBE, MW-5						
SOURCE			Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	THICKNESS	Time (days)		
CONC			(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(days)		
(MGL)												
0.0755			8.50E+01	8.50E+00	8.50E-01	0.00189	70	6	9125			
Hydraulic Cond			Gradient	Porosity	Soil Bulk Density	KOC	Frac. Org. Carb.	Retard-ation	V			
(ft/day)			(ft/ft)	(dec. frac.)	(g/cm ³)		(R)	(ft/day)	(=K ¹ /n*R)			
1.10E+00			0.079	0.35	1.7225	12	5.00E-03	1.295285714	0.192381162			
Point Concentration												
x(ft)			y(ft)			z(ft)						
85			8.5			0.85						
x(ft)			y(ft)			z(ft)						
Conc. At			85			8.5			0			
at			9125			days =			0.011			
									mg/l			
AREAL MODEL CALCULATION												
DOMAIN												
Length (ft)			100									
Width (ft)			50									
50			0.007			0.010			0.009			
25			0.047			0.032			0.025			
0			0.059			0.043			0.033			
-25			0.047			0.032			0.025			
-50			0.007			0.010			0.009			
Field Data: Centerline C Concentration												
Distance from Source												

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project: Seneca Mini Mart														
Date: 7/26/2017		Prepared by: RRB												
		9/2/2016 MTBE, MW-5												
SOURCE	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)							
CONC (MG/L)				>=.001										
0.0755	8.50E+01	8.50E+00	8.50E-01	0.00189	70	6	10950							
Hydraulic														
Cond Gradient (ft/ft)	Porosity (dec. frac.)		Soil Bulk Density (g/cm ³)		Frac. Org. Carb.	Retard-ation (R)	V (=K ² /n*R) (ft/day)							
1.10E+00	0.079	0.35	1.7225	12	5.00E-03	1.295285714	0.192381162							
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														

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Seneca Mini-Mart
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Project			Seneca Mini Mart
Contaminant and Well ID			Naphthalene, MW-5
Date	7/26/2017	Prepared By	RRB
Parameter	Definition	Value	Reason
Source Concentration (mg/L)	Concentration of contaminant of concern in groundwater.	4.47	Highest concentration of Naphthalene observed in MW-5 during SCR sampling events.
Ax (ft)	Longitudinal dispersivity in the x direction	107	Distance from monitoring well to the unnamed tributary in the direction of groundwater flow.
Ay (ft)	Transverse dispersivity in the y direction	10.7	$Ay = Ax/10$
Az (ft)	Vertical dispersivity in the z direction	1.07	$Az = Ax/100$
Lambda	First order decay constant	0.00268	See Appendix A , Table 5 of the Act 2 Regulations
Source Width (ft)	Width of contaminated soil.	70	Width of contaminated soils under dispenser islands perpendicular to groundwater flow direction.
Source Thickness (ft)	Thickness of contaminated soil.	6	Thickness of contaminated soils under dispenser islands.
Time (Days)	Time since release in days.	See sheet	Time since release in days, presented in five year increments (5, 10, 15, 20, 25 and 30 years).
Hydraulic Cond. (ft/day)	Hydraulic Conductivity	1.104	Shallow hydraulic conductivity equals the geometric mean of the slug tests (Rising Head and Falling Head) conducted on selected monitoring wells (MW-1, MW-2, and MW-4) at the Site.
Hydraulic Gradient (ft/ft)	Hydraulic Gradient	0.079	Maximum gradient measured between high groundwater elevation MW-3 and MW-12 June 12, 2017.
Effective Porosity (decimal fraction)	Estimated Effective Porosity θ	0.35	Estimated range of silt from Groundwater (Freeze & Cherry)
Soil Bulk Density (g/cm ³)	Soil Bulk Density	1.7225	2.65 - (2.65 X Effective porosity)
KOC	Organic Carbon Partition Coefficient	950	See Appendix A , Table 5 of the Act 2 Regulations
Frac. Org. Carb	Fraction Organic Carbon	0.005	Estimated at 0.005

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Quick Domenico Fate and Transport Modeling

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL															
Project:		Seneca Mini Mart													
Date:	7/26/2017	Prepared by:	RRB												
		Contaminant:	Naphthalene, MW-5												
		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	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)						
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)						
(MG/L)			>=.001												
4.47	1.07E+02	1.07E+01	1.07E+00	0.00268	70	6	1825								
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-	V								
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation	(=K'i/n*R)								
(ft/day)	(ft/ft)		(g/cm ³)			(R)	(ft/day)								
1.10E+00	0.079	0.35	1.7225	950	5.00E-03	24.37678571	0.010222372								
Point Concentration															
x(ft)	y(ft)	z(ft)													
107	10.7	1.07													
	x(ft)	y(ft)	z(ft)												
Conc. At	107	10.7													
at	1825	days =													
			0.005												
			mg/l												
AREAL CALCULATION															
MODEL DOMAIN															
Length (ft)	80														
Width (ft)	75														
	8	24	32	40	48	56	64	72	80						
75	0.003	0.023	0.035	0.030	0.024	0.018	0.013	0.010	0.007						
37.5	1.109	0.665	0.255	0.162	0.103	0.067	0.043	0.028	0.018						
0	2.594	1.403	0.455	0.271	0.164	0.101	0.063	0.040	0.025						
-37.5	1.109	0.665	0.255	0.162	0.103	0.067	0.043	0.028	0.018						
-75	0.003	0.023	0.035	0.030	0.024	0.018	0.013	0.010	0.007						
Field Data: Centerline C Concentration															
Distance from Source															
			4.47	0.0025											
			0	85											

Centerline Plot (linear)

Centerline Plot (log)

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

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Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

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Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL															
Project:		Seneca Mini Mart													
Date:	7/26/2017	Prepared by:	RRB												
		Contaminant:	Naphthalene, MW-5												
		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	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)						
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)						
(MG/L)			>=.001												
4.47	1.07E+02	1.07E+01	1.07E+00	0.00268	70	6	7300								
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-	V								
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation	(=K'i/n*R)								
(ft/day)	(ft/ft)		(g/cm ³)			(R)	(ft/day)								
1.10E+00	0.079	0.35	1.7225	950	5.00E-03	24.37678571	0.010222372								
Point Concentration															
x(ft)	y(ft)	z(ft)													
107	10.7	1.07													
	x(ft)	y(ft)	z(ft)												
Conc. At	107	10.7													
at	7300	days =													
			0.006												
			mg/l												
AREAL CALCULATION															
MODEL DOMAIN															
Length (ft)	80														
Width (ft)	75														
	8	24	32	40	48	56	64	72	80						
75	0.003	0.023	0.035	0.030	0.024	0.018	0.014	0.010	0.007						
37.5	1.110	0.666	0.409	0.163	0.104	0.067	0.044	0.029	0.019						
0	2.598	1.406	0.788	0.272	0.166	0.102	0.064	0.040	0.026						
-37.5	1.110	0.666	0.409	0.163	0.104	0.067	0.044	0.029	0.019						
-75	0.003	0.023	0.035	0.030	0.024	0.018	0.014	0.010	0.007						
Field Data: Centerline C Concentration															
Distance from Source															
			0	85	0	0	0	0	0						

Centerline Plot (linear)

Centerline Plot (log)

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ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project:		Seneca Mini Mart												
Date:		7/26/2017		Prepared by:		RRB								
				Contaminant:		Naphthalene, MW-5								
						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		Ax	Ay	Az	LAMBDA	SOURCE WIDTH	SOURCE THICKNESS	Time (days)						
CONC (MG/L)					day-1	(ft)	(ft)	(days)						
4.47		1.07E+02	1.07E+01	1.07E+00	0.00268	70	6	9125						
Hydraulic		Hydraulic	Porosity	Soil Bulk Density	KOC	Frac. Org. Carb.	Retardation (R)	V (=K'i/n*R) (ft/day)						
1.10E+00		0.079	0.35	1.7225	950	5.00E-03	24.37678571	0.010222372						
Point Concentration														
x(ft)	y(ft)	z(ft)												
107	10.7	1.07												
	x(ft)	y(ft)	z(ft)											
Conc. At	107	10.7												
at	9125	days =												
			0.006											
			mg/l											
AREAL CALCULATION														
MODEL DOMAIN														
Length (ft)		80												
Width (ft)		75												
	75	0.003	0.023	0.035	0.035	0.030	0.024	0.018	0.014	0.010	0.007	0.007	0.007	0.007
	37.5	1.110	0.666	0.409	0.256	0.163	0.104	0.067	0.044	0.029	0.019	0.019	0.019	0.019
	0	2.598	1.406	0.788	0.457	0.272	0.166	0.102	0.064	0.040	0.026	0.026	0.026	0.026
	-37.5	1.110	0.666	0.409	0.256	0.163	0.104	0.067	0.044	0.029	0.019	0.019	0.019	0.019
	-75	0.003	0.023	0.035	0.035	0.030	0.024	0.018	0.014	0.010	0.007	0.007	0.007	0.007
Field Data: Centerline C Concentration														
Distance from Source														
				0	4.47	0.0025	0	0	0	0	0	0	0	0
				0	0	85	0	0	0	0	0	0	0	0

Centerline Plot (linear)

Centerline Plot (log)

Appendix J
Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
Seneca, Pennsylvania

Project			Seneca Mini Mart
Contaminant and Well ID			1,2,4-TMB, MW-3
Date	7/26/2017	Prepared By	RRB
Parameter	Definition	Value	Reason
Source Concentration (mg/L)	Concentration of contaminant of concern in groundwater.	4.92	Highest concentration of 1,2,4-TMB observed in MW-3 during SCR sampling events.
Ax (ft)	Longitudinal dispersivity in the x direction	107	Distance from monitoring well to the unnamed tributary in the direction of groundwater flow.
Ay (ft)	Transverse dispersivity in the y direction	10.7	$Ay = Ax/10$
Az (ft)	Vertical dispersivity in the z direction	1.07	$Az = Ax/100$
Lambda	First order decay constant	0.012329	See Appendix A , Table 5 of the Act 2 Regulations
Source Width (ft)	Width of contaminated soil.	70	Width of contaminated soils under dispenser islands perpendicular to groundwater flow direction.
Source Thickness (ft)	Thickness of contaminated soil.	6	Thickness of contaminated soils under dispenser islands.
Time (Days)	Time since release in days.	See sheet	Time since release in days, presented in five year increments (5, 10, 15, 20, 25 and 30 years).
Hydraulic Cond. (ft/day)	Hydraulic Conductivity	1.104	Shallow hydraulic conductivity equals the geometric mean of the slug tests (Rising Head and Falling Head) conducted on selected monitoring wells (MW-1, MW-2, and MW-4) at the Site.
Hydraulic Gradient (ft/ft)	Hydraulic Gradient	0.079	Maximum gradient measured between high groundwater elevation MW-3 and MW-12 June 12, 2017.
Effective Porosity (decimal fraction)	Estimated Effective Porosity θ	0.35	Estimated range of silt from Groundwater (Freeze & Cherry)
Soil Bulk Density (g/cm ³)	Soil Bulk Density	1.7225	2.65 - (2.65 X Effective porosity)
KOC	Organic Carbon Partition Coefficient	2200	See Appendix A , Table 5 of the Act 2 Regulations
Frac. Org. Carb	Fraction Organic Carbon	0.005	Estimated at 0.005

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL																																																			
Project: Seneca Mini Mart			7/26/2017			RRB			1,2,4-TMB, MW-3																																										
Date:			Prepared by:			1,2,4-TMB, MW-3																																													
			Contaminant:																																																
SOURCE			Ax			Ay			LAMBDA			SOURCE																																							
CONC			(ft)			(ft)			WIDTH			THICKNESS																																							
(MG/L)						>=.001			day-1			(ft)																																							
4.92			1.07E+02			1.07E+01			1.07E+00			0.012329			70			6			1825																														
Hydraulic			Hydraulic						Soil Bulk			Frac.			Retard-			V																																	
Cond			Gradient			Porosity			Density			KOC			Org. Carb.			ation			(=K*/ln*R)																														
(ft/day)			(ft/ft)			(dec. frac.)			(g/cm ³)						(R)			(ft/day)																																	
1.10E+00			0.079			0.35			1.7225			2200			5.00E-03			55.13571429			0.004519549																														
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												

Appendix J

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL																																												
Project: Seneca Mini Mart																																												
Date: 7/26/2017		Prepared by: RRB		1,2,4-TMB, MW-3																																								
		Contaminant: 1,2,4-TMB, MW-3																																										
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)																																			
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)																																			
(MG/L)			>=.001																																									
4.92	1.07E+02	1.07E+01	1.07E+00	0.012329	70	6	5475																																					
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-	V																																					
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation	(=K'i/n*R)																																					
(ft/day)	(ft/ft)		(g/cm ³)			(R)	(ft/day)																																					
1.10E+00	0.079	0.35	1.7225	2200	5.00E-03	55.13571429	0.004519549																																					
<div> <div> <div>NEW QUICK_DOMENICO.XLS</div> <div>SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES"</div> <div>P.A. Domenico (1987)</div> <div>Modified to Include Retardation</div> </div> </div>																																												
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x(ft)	y(ft)	z(ft)																																										
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MODEL	DOMAIN																																											
Length (ft)	50																																											
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Distance from Source	Conc																																											
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Appendix J

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL									
Project: Seneca Mini Mart									
Date:	7/26/2017		Prepared by: RRB		1,2,4-TMB, MW-3				
Contaminant:			1,2,4-TMB, MW-3						
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)
CONC	(ft)	(ft)	(ft)	day ⁻¹	(ft)	(ft)	(ft)	(ft)	(days)
(MG/L)				>=.001					
4.92	1.07E+02	1.07E+01	1.07E+00	0.012329	70	6	7300		
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-			
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation			
(ft/day)	(ft/ft)		(g/cm ³)		(R)	(ft/day)			
1.10E+00	0.079	0.35	1.7225	2200	5.00E-03	55.13571429	0.004519549		
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									
Point Concentration		z(ft)							
x(ft)	y(ft)	z(ft)							
107	10.7	1.07							
x(ft)		y(ft)							
107	10.7	1.07							
Conc. At	7300 days =		0.000						
at			mg/l						
AREAL CALCULATION									
MODEL DOMAIN									
Length (ft)	50								
Width (ft)	75								
75	0.000	0.003	0.004	0.004	0.002	0.001	0.001	0.000	0.000
37.5	0.842	0.358	0.150	0.063	0.027	0.012	0.005	0.000	0.000
0	2.080	0.814	0.320	0.128	0.052	0.021	0.009	0.000	0.001
-37.5	0.842	0.358	0.150	0.063	0.027	0.012	0.005	0.000	0.000
-75	0.000	0.003	0.004	0.004	0.002	0.001	0.001	0.000	0.000
Field Data: Centerline C Concentration									
Distance from Source									
				4.92	0.0025	0	0	0	0
				0	85	0	0	0	0
Centerline Plot (linear)									
Centerline Plot (log)									

Appendix J

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project: Seneca Mini Mart														
Date:	7/26/2017		Prepared by: RRB		1,2,4-TMB, MW-3									
			Contaminant:		1,2,4-TMB, MW-3									
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)					
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)					
(MG/L)														
	4.92	1.07E+02	1.07E+01	1.07E+00	0.012329	70	6	9125						
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-								
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation								
(ft/day)	(ft/ft)		(g/cm ³)			(R)								
1.10E+00	0.079	0.35	1.7225	2200	5.00E-03	55.13571429	0.004519549							
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)														
Point Concentration														
x(ft)	y(ft)	z(ft)												
107	10.7	1.07												
			x(ft)	y(ft)	z(ft)									
Conc. At	107	10.7												
at	9125	days =												
			0.000											
			mg/l											
AREAL CALCULATION														
MODEL DOMAIN														
Length (ft)	50													
Width (ft)	75													
75	0.000	0.003	0.004	0.004	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
37.5	0.842	0.358	0.150	0.063	0.027	0.012	0.005	0.002	0.001	0.000	0.000	0.000	0.000	0.000
0	2.080	0.814	0.320	0.128	0.052	0.021	0.009	0.004	0.002	0.001	0.000	0.000	0.000	0.000
-37.5	0.842	0.358	0.150	0.063	0.027	0.012	0.005	0.002	0.001	0.000	0.000	0.000	0.000	0.000
-75	0.000	0.003	0.004	0.004	0.002	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data: Centerline C Concentration														
Distance from Source														
			0	4.92	0.0025	0	0	0	0	0	0	0	0	0
			0	0	85	0	0	0	0	0	0	0	0	0

Appendix J
Quick Domenico Fate and Transport Modeling
Seneca Mini-Mart
3390 State Route 257
Seneca, Pennsylvania

Project			Seneca Mini Mart
Contaminant and Well ID			1,3,5-TMB, MW-3
Date	7/26/2017	Prepared By	RRB
Parameter	Definition	Value	Reason
Source Concentration (mg/L)	Concentration of contaminant of concern in groundwater.	1.59	Highest concentration of 1,3,5-TMB observed in MW-3 during SCR sampling events.
Ax (ft)	Longitudinal dispersivity in the x direction	107	Distance from monitoring well to the unnamed tributary in the direction of groundwater flow.
Ay (ft)	Transverse dispersivity in the y direction	10.7	$Ay = Ax/10$
Az (ft)	Vertical dispersivity in the z direction	1.07	$Az = Ax/100$
Lambda	First order decay constant	0.000275	See Appendix A , Table 5 of the Act 2 Regulations
Source Width (ft)	Width of contaminated soil.	70	Width of contaminated soils under dispenser islands perpendicular to groundwater flow direction.
Source Thickness (ft)	Thickness of contaminated soil.	6	Thickness of contaminated soils under dispenser islands.
Time (Days)	Time since release in days.	See sheet	Time since release in days, presented in five year increments (5, 10, 15, 20, 25 and 30 years).
Hydraulic Cond. (ft/day)	Hydraulic Conductivity	1.104	Shallow hydraulic conductivity equals the geometric mean of the slug tests (Rising Head and Falling Head) conducted on selected monitoring wells (MW-1, MW-2, and MW-4) at the Site.
Hydraulic Gradient (ft/ft)	Hydraulic Gradient	0.079	Maximum gradient measured between high groundwater elevation MW-3 and MW-12 June 12, 2017.
Effective Porosity (decimal fraction)	Estimated Effective Porosity θ	0.35	Estimated range of silt from Groundwater (Freeze & Cherry)
Soil Bulk Density (g/cm ³)	Soil Bulk Density	1.7225	2.65 - (2.65 X Effective porosity)
KOC	Organic Carbon Partition Coefficient	660	See Appendix A , Table 5 of the Act 2 Regulations
Frac. Org. Carb	Fraction Organic Carbon	0.005	Estimated at 0.005

Appendix J

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL																															
Project: Seneca Mini Mart																															
Date:	7/26/2017		Prepared by: RRB		1,3,5-TMB, MW-3																										
			Contaminant:		1,3,5-TMB, MW-3																										
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	Time (days)																							
CONC	(ft)	(ft)	(ft)	day-1	WIDTH	THICKNESS		(days)																							
(MG/L)			>=.001		(ft)	(ft)																									
1.59	1.07E+02	1.07E+01	1.07E+00	0.000275	70	6	1825																								
Hydraulic	Hydraulic	Porosity	Soil Bulk		Frac.	Retard-	V																								
Cond	Gradient	(dec. frac.)	Density	KOC	Org. Carb.	ation	(=K [*] i/n [*] R)																								
(ft/day)	(ft/ft)		(g/cm ³)			(R)	(ft/day)																								
1.10E+00	0.079	0.35	1.7225	660	5.00E-03	17.24071429	0.014453495																								
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																															
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x(ft)	y(ft)	z(ft)																													
107	10.7	1.07																													
x(ft)	y(ft)	z(ft)	Conc. At																												
107	10.7	1.07	0.033																												
x(ft)	y(ft)	z(ft)	mg/l																												
107	10.7	1.07	0.033																												
AREAL CALCULATION																															
MODEL DOMAIN																															
Length (ft)	100																														
Width (ft)	60																														
60	0.041	0.075	0.078	0.072	0.062	0.052	0.043	0.027	0.021																						
30	0.599	0.391	0.277	0.204	0.152	0.114	0.086	0.048	0.036																						
0	0.929	0.597	0.403	0.282	0.202	0.147	0.108	0.058	0.043																						
-30	0.599	0.391	0.277	0.204	0.152	0.114	0.086	0.048	0.036																						
-60	0.041	0.075	0.078	0.072	0.062	0.052	0.043	0.027	0.021																						
Field Data: Centerline C Concentration																															
Distance from Source																															
0																															
85																															

Appendix J

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project: Seneca Mini Mart														
Date: 7/26/2017		Prepared by: RRB		1,3,5-TMB, MW-3										
		Contaminant: 1,3,5-TMB, MW-3												
SOURCE		Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)				
CONC		(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)				
(MG/L)				>=.001										
1.59	1.07E+02	1.07E+01	1.07E+00	0.000275	70	6	3650							
Hydraulic		Soil Bulk												
Cond		Density												
(ft/day)		(g/cm ³)		KOC	Frac.	Retard-								
				(R)	Org. Carb.	ation								
1.10E+00		0.079	0.35	1.7225	660	5.00E-03	17.24071429	0.014453495						
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														
Point Concentration		z(ft)												
x(ft)	y(ft)													
107	10.7	1.07												
Conc. At		x(ft)	y(ft)											
at		107	10.7											
		3650 days =												
		0.064												
		mg/l												
AREAL CALCULATION														
MODEL DOMAIN														
Length (ft)		100												
Width (ft)		60												
60	0.046	0.086	0.093	0.089	0.081	0.071	0.062	0.053	0.045	0.038				
30	0.669	0.450	0.330	0.252	0.197	0.156	0.124	0.100	0.080	0.065				
0	1.039	0.687	0.480	0.350	0.262	0.201	0.156	0.122	0.097	0.077				
-30	0.669	0.450	0.330	0.252	0.197	0.156	0.124	0.100	0.080	0.065				
-60	0.046	0.086	0.093	0.089	0.081	0.071	0.062	0.053	0.045	0.038				
Field Data: Centerline C Concentration														
Distance from Source		1.59	0.0025	0	0	0	0	0	0	0				
		0	85	0	0	0	0	0	0	0				

Centerline Plot (linear)

Centerline Plot (log)

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

[illegible]

Appendix J

Quick Domenico Fate and Transport Modeling

Seneca Mini-Mart

3390 State Route 257

Seneca, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY AND RETARDATION - WITH CALIBRATION TOOL														
Project: Seneca Mini Mart														
Date: 7/26/2017		Prepared by: RRB		1,3,5-TMB, MW-3										
		Contaminant: 1,3,5-TMB, MW-3												
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	SOURCE	THICKNESS	Time (days)					
CONC	(ft)	(ft)	(ft)	day-1	(ft)	(ft)	(ft)	(ft)	(days)					
(MG/L)			>=.001											
1.59	1.07E+02	1.07E+01	1.07E+00	0.000275	70	6	9125							
Hydraulic	Hydraulic	Porosity	Soil Bulk	KOC	Frac.	Retard-	V							
Cond	Gradient	(dec. frac.)	Density		Org. Carb.	ation	(=K'i/n*R)							
(ft/day)	(ft/ft)		(g/cm ³)			(R)	(ft/day)							
1.10E+00	0.079	0.35	1.7225	660	5.00E-03	17.24071429	0.014453495							
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)														
Point Concentration														
x(ft)	y(ft)	z(ft)												
107	10.7	1.07												
Conc. At			x(ft)	y(ft)	z(ft)									
at			107	10.7	1.07									
			9125 days =											
			0.089											
			mg/l											
AREAL CALCULATION														
MODEL DOMAIN														
Length (ft) 100														
Width (ft) 60														
60	0.050	0.094	0.104	0.093	0.085	0.076	0.067	0.059	0.052					
30	0.720	0.491	0.367	0.286	0.185	0.151	0.125	0.104	0.087					
0	1.117	0.750	0.533	0.396	0.303	0.190	0.154	0.126	0.104					
-30	0.720	0.491	0.367	0.286	0.228	0.151	0.125	0.104	0.087					
-60	0.050	0.094	0.104	0.093	0.085	0.076	0.067	0.059	0.052					
Field Data: Centerline C Concentration														
Distance from Source														
0 85 0 0 0 0 0 0 0 0														

