Remedial Action Progress Report
Fourth Quarter, 2018

Seneca Mini Mart
3390 State Route 257,
Seneca, Venango County, Pennsylvania
PADEP Facility ID # 61-18854
USTIF Claim # 2015-120

Prepared for:
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(Owner of the Seneca Mini Mart)

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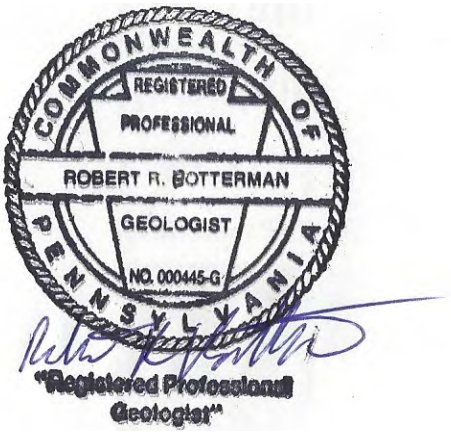

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Seneca Mini Mart, 3390 State Route 257
Seneca, Venango County, Pennsylvania
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1.0 Introduction

The Seneca Mini Mart facility (Site or Subject Property) is located at 3390 State Route 257, Seneca, Venango County, Pennsylvania. The Subject Property is located on the east side of State Route 257, approximately two hundred feet south of the intersection of State Route 257 and Bredinsburg Road/East State Road (State Route 2006). Site access is from State Route 257 along the west side of the property. A Site Location Map is provided as **Figure 1**.

The Subject Property was formerly operated as a fuel retail and convenience store facility, recently as an automobile repair facility and is currently vacant. The Seneca Mini Mart occupies the northern half of the 0.78 are parcel (Parcel ID 08-39-13), owned by Daniel Heath. The balance of the parcel was formerly occupied by Seneca Motors, a used car sales lot. 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 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. Storm sewer, natural gas, water, and sanitary sewer underground utility lines servicing the Subject Property and the vicinity are indicated on **Figure 2**.

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 11, 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.

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 14 and 17, 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.

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. 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.

Confirmatory soil samples collected from below the product dispensers and along the product line trenches indicated that naphthalene and 1,2,4-TMB exceeded their respective soil to groundwater residential used aquifer (RU) and non-residential used aquifer (NRU) Statewide Health Standard (SHS) Medium Specific Concentrations (MSCs).

As part of the UST removal, approximately 109.16 tons (Koziara estimated 350 tons) of petroleum-contaminated soil was removed from beneath the USTs, product lines and dispensers and encapsulated in 6-mil plastid pending disposal.

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 was approved on June 6, 2016.

The site characterization investigation conducted by Cribbs & Associates included advancing 23 soil borings and installing 15 monitoring wells. Soil borings SB-1 through SB-6 were advanced on April 28, 2016 along the path of the product line and in the vicinity of the dispenser island. On June 14, 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**. Cribbs & Associates installed five monitoring wells, (MW-1 through MW-5) at the locations shown on **Figure 2** on July 8, 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. On September 14, 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. Monitoring wells MW-6, MW-7 and MW-9 through MW-11 were installed on October 17 and 18, 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.

After negotiating access to the Seneca Lawn & Landscape property on the west side of State Route 257, three off-site monitoring wells (MW-12 through MW-14) were installed on January 24 and 25, 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 well MW-15 was installed on May 24, 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 29 and April 25, 2017.

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 UST system removal in September 2015. Sampling of the impacted soil stockpile was conducted on June 23, 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 24, 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.

On October 4, 2016, liquid phase hydrocarbons (LPH) was observed in monitoring well MW-3 and product recovery efforts were initiated. By March 7, 2017 LPH sheen had been observed in MW-1 through MW-5, although measurable thicknesses of LPH have only been recorded in MW-3 and MW-4. Adsorbent socks were placed in the wells that indicated the presence of LPH and are changed periodically.

Cribbs & Associates performed multiple groundwater sampling events at the Subject Property as part of the site 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 12, 2016. On October 4, 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 17, 2017. Monitoring well MW-11 was slow to make water, as evidently clay material in the well had become smeared across the water bearing zone during the drilling operations and did not allow for a sufficient volume of water to be sampled until February 22, 2017. The off-site monitoring wells MW-12 through MW-14 were initially sampled on February 1, 2017. The first sampling event to include all fourteen monitoring wells in one sampling event was conducted on March 28 and 29, 2017. Monitoring well MW-15 was initially sampled on June 12, 2017 and the follow up sampling was conducted on July 31, 2017.

The early sampling events, July 12, 2016 and October 4, 2016, with only the initial five monitoring wells present indicates that shallow groundwater flow direction was generally to the west, influenced primarily by the surface topography with flow generally towards the unnamed tributary to Lower Twomile Run located on the opposite side of State Route 257.

The later groundwater flow maps based on the January 17/February 1, 2017, March 28-29, 2017 and June 12, 2017 sampling events, with fourteen and fifteen monitoring wells present indicates

that shallow groundwater flow is a radial pattern centered on the dispenser islands and also slopes generally to the west, influenced by the surface topography with flow generally towards the unnamed tributary to Lower Twomile Run.

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 removal of the dispensers allowed the precipitation draining from the canopy to infiltrate the "bathtub" creating significant mounding in the area containing fill material.

Benzene, ethylbenzene, toluene, total xylenes, MTBE naphthalene, 1,2,4-TMB and 1,3,5-TMB were observed at concentrations that exceeded their respective RU SHS MSCs in one or more wells. Monitoring wells MW-1 through MW-5 typically indicated the highest concentrations of the contaminants of concern. The highest concentrations of benzene (17,800 µg/l, October 4, 2016), ethylbenzene (4,410 µg/l, March 29, 2017), toluene (10,500 µg/l, July 12, 2016), total xylenes (23,900 µg/l March 29, 2017), 1,2,4-TMB (4,920 µg/l, March 29, 2016) and 1,3,5-TMB 1,590 µg/l, March 29, 2017) were observed in MW-3. The highest concentration naphthalene (4,470 µg/l, June 13, 2017) was observed in MW-5.

MTBE was observed in MW-8 ranging from <5.0 µg/l (December 6, 2016) to 520 µg/l (June 12, 2017) and was the driving factor for the installation of MW-15 in May 2017 to complete the delineation to the east.

Benzene, MTBE and 1,2,4-TMB have also been observed in MW-10 at concentrations exceeding their respective SHS MSCs, with decreasing concentrations of benzene and 1,2,4-TMB observed over four sampling events and a single exceedance for the MTBE in that well.

None of the contaminants of concern have been detected above the laboratory method detection limits in the off-site monitoring wells (MW-12, MW-13 and MW-14) or the stream samples collected from the unnamed tributary to Lower Twomile Run

Two soil vapor points (VP-1 and VP-2) were installed adjoining the Site structure as indicated on **Figure 2**. Each soil vapor point was sampled on October 4, 2016 and May 3, 2017. Analytical results of the soil vapor sampling indicated that minor concentrations of benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB were detected; however, none of the soil vapor samples exhibited concentrations in excess of their respective, most stringent of the screening values (SSS non-residential sub-slab).

Slug tests were conducted on monitoring wells MW-1, MW-2 and MW-4 on September 1, 2016 to provide hydrogeologic data for contaminant migration evaluation during fate and transport modeling. 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. Both falling head and rising head tests were conducted on the selected monitoring wells, although the falling head test for MW-10 was not successful. The geometric mean of the derived hydraulic conductivities for the three wells in the vicinity of the dispenser island (fill material), is 1.1 ft./day or $5.71E^{-4}$ cm/sec. The geometric mean of the hydraulic conductivities derived for the two well installed in native soils is 0.128 ft./day or $4.51E^{-5}$ cm/sec.

Using the calculated hydraulic gradient of 0.079 ft./ft. for the shallow wells, the hydraulic conductivity geometric means listed above, 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.

Fate and transport modeling (Quick Domenico) was conducted for the contaminants of concern (COC). Quick Domenico modeling predicted that benzene was the only COC that could potentially migrate off-Site with the benzene contaminant plume extending west to the nearest downgradient sensitive receptor, the unnamed tributary to Lower Twomile Run.

In accordance with Title 25 of the Pennsylvania Code, Chapter 245.310, Cribbs & Associates submitted a Site Characterization Report (SCR) on September 13, 2017 and a Remedial Action Plan (RAP) (Chapter 245.311) on November 10, 2017. The selected cleanup goal for soil at the Site is the non-residential, used aquifer SHS. Due to the mixed classification for properties beyond the Subject Property, the cleanup standard applied to meet the required goal for groundwater cleanup is the residential, used aquifer SHS.

As reported in the SCR, extensive soil and groundwater contamination remains in the vicinity of the dispenser island. Given that the extent of soil impacts under State Route 257 is unknown, the RAP recommends additional soil sampling along the shoulder of the highway and, if needed in the center turning lane. A soil excavation is proposed to address the known soil impacts and will involve removing an estimated 1,250 cubic yards of impacted soil along approximately 140 feet of frontage.

Following the soil excavation activities random systematic soil sampling will be conducted following the completion of the remedial activities to document attainment of the NRU SHS MSCs. The proposed soil excavation activities will also remove monitoring wells MW-1 through MW-5 where the LPH and the highest concentrations have been observed in the groundwater for the majority of the contaminants of concern.

Based on the site characterization results, groundwater data obtained from the Site monitoring wells; benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB concentrations have been detected in the groundwater at concentrations that exceed their

respective RU/NRU SHS MSCs. Following the removal of the impacted soil and the subsequent replacement of the monitoring wells in the excavated area, a minimum of eight post-remediation groundwater sampling events will be required to statistically demonstrate attainment for these parameters.

The SCR and RAP were approved by the PADEP on January 8, 2018. Remedial Action Progress Reports (RAPRs) are required to be submitted to the PADEP in accordance with Section 245.312(b-d) by the 30 day of the month following the end of each quarter.

As part of the additional soil and groundwater characterization proposed in the RAP, nine soil borings (SB-27 through SB-35) and two monitoring wells (MW-16 and MW-17) were advanced and sampled during the Second Quarter 2018. Benzene concentrations exceeding the RU/NRU SHS MSC for soil were observed in SB-29 and SB-31. Benzene and 1,2,4-TMB concentrations exceeding their respective RU/NRU SHS MSCs for groundwater were observed in MW-17.

Two additional soil borings/monitoring wells (SB-36/MW-18 and SB-37/MW-19 were installed during the Third Quarter 2018. SB-36/MW-18 is located in the center turning lane north of SB-15 and SB-37/MW-19 is located on the west side of State Route 257 north of MW-12.0. The location of these soil borings/monitoring wells is presented on **Figure 2**.

The soil sample collected on September 13, 2018 from SB-36 was submitted to Pace Analytical Laboratories and analyzed for the PADEP post-March 2008 shortlist of unleaded gasoline parameters. The soil analytical results from SB-36 were below the laboratory method detection limits for all parameters. Groundwater in MW-18 indicated only concentrations of 1,2,4-TMB (366 µg/l) exceeding its RU SHS MSC. The groundwater sample from MW-19 indicated no exceedances.

This RAPR discusses the findings of the additional characterization activities and results of the groundwater sampling event conducted during the Fourth Quarter 2018

2.0 Remedial Actions

2.1 Product Recovery Actions

Liquid Phase Hydrocarbon Product Recovery efforts were discontinued following the Third Quarter of 2018 groundwater sampling event. The product recovery efforts, initially conducted twice a month have decreased in frequency and were last conducted on August 9, 2018. Historically, LPH has been observed on the water table in monitoring wells MW-1 through MW-5, typically with a slight to heavy sheen observed in the monitoring wells. Monitoring well MW-3 typically exhibits the heaviest sheen frequently with small globbules of product. Measurable product has been observed in MW-3 several times and only once in MW-4.

During the August 9, 2018 product recovery event, no measurable product was observed and only a moderate sheen was observed in monitoring well MW-3. No sheen was observed in

monitoring wells MW-1, MW-2, MW-4, and MW-5. The estimated product recovery through the Third Quarter 2018 is 9.74 gallons.

3.0 Quarterly Groundwater Monitoring Activities

Confirmation groundwater samples were collected from monitoring wells MW-18 and MW-19 on November 7, 2018. The analytical results of the confirmation samples for these two wells are included on **Table 2**.

The groundwater monitoring event for the Fourth Quarter 2018 was conducted on December 17 and 18, 2018. Nineteen monitoring wells (MW-1 through MW-19) were sampled during the quarterly groundwater sampling event. The location of the wells and other pertinent Site features are presented on **Figure 2**. Because monitoring wells located on the west side of State Route 257 are now in place and have consistently indicated no exceedances, the collection of stream samples (upstream and downstream) have been discontinued as part of the quarterly groundwater monitoring activities

3.1 Static Water Level Measurements

Prior to conducting groundwater sampling activities, static groundwater level measurements were obtained from each monitoring well in order to calculate groundwater elevations. These groundwater elevations were used to determine the volume of water in the well, as well as for the construction of groundwater flow maps for the shallow aquifer. **Table 1** presents the depth to groundwater measurements and the calculated groundwater elevations for the quarterly monitoring event.

3.2 Groundwater Sampling Activities

Groundwater samples were collected from all Site monitoring wells using low-flow pumping techniques as prescribed in the technical guidance manual *"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.

Prior to sampling, the monitoring wells were purged using a micro-purge low-flow stainless steel submersible air lift (bladder) pump. Each well was purged using dedicated, polyethylene tubing and a dedicated pump bladder. 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 in accordance with the USEPA criteria. Once the parameters had stabilized, the low-flow analysis chamber was removed and samples were collected directly into laboratory-supplied, pre-preserved sample containers with the appropriate preservatives. The samples were immediately placed on ice and delivered to Pace Analytical Laboratories (Pace 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 post-March 2008 shortlist of unleaded gasoline parameters including benzene, ethylbenzene, cumene, MTBE, naphthalene, toluene, 1,2,4-TMB, 1,3,5-TMB, and total xylenes.

3.3 Purge Water Disposal

The drum containing approximately 50-gallons of development water from monitoring wells MW-17, MW-18 and MW-19 and the purge water from the First, Second, and Third Quarter 2018 LPH recovery and sampling events was transported to the Heath Oil Bulk Terminal in Barkeyville, Pennsylvania in November 7, 2018. The petroleum contaminated groundwater will be processed through their water treatment system. Because low-flow sampling methods are used, less than one drum of purge water is generated during each sampling event. An empty drum will remain on-site to be used for containing water generated during future product recovery and groundwater sampling events. Purge water from the Fourth Quarter 2018 groundwater sampling event has been placed on one of these drums and remains on site. The petroleum contaminated groundwater, will be transferred to a vacuum truck and/or transported to the Heath Oil Bulk Terminal in Barkeyville, Pennsylvania and processed through their water treatment system. A Copy of the Bill of Lading for the November 7, 2018 transfer of the petroleum impacted groundwater is included in **Appendix A**.

4.0 Monitoring Results

4.1 Groundwater Elevations and Flow Directions

Depth to groundwater field measurements, obtained prior to the quarterly groundwater sampling event, were used to calculate groundwater elevations for each monitoring well. The groundwater elevations are presented in **Table 1**. **Figure 3** presents a Groundwater Contour Map that was constructed for the shallow aquifer utilizing data collected from the groundwater monitoring wells (MW-1 through MW-19) on December 17, 2018.

As depicted in **Figure 3**, the groundwater elevations indicate a localized high in the vicinity of the former dispenser island including monitoring wells MW-1 through MW-5 and MW-8 with a radial flow towards the surrounding wells. The highest groundwater elevations were observed at MW-1 and MW-8. Historically the groundwater elevations observed in monitoring wells MW-1 through MW-5, which are 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 and associated concrete islands 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.

The gradient is relatively flat to the northeast and east towards MW-7 and MW-15 but becomes steeper towards the southwest and west towards monitoring wells MW-9 through MW-14 indicating that the majority of the groundwater flow is towards the west and southwest.

4.2 Groundwater Analytical Results

The confirmation groundwater samples from MW-18 and MW-19 were collected on November 7, 2018 following their initial sampling conducted during the Third Quarter 2018.

Monitoring well MW-18 indicated the presence of 1,2,4-TMB at a concentration of 389 µg/l exceeding its RU/NRU SHS MSC. None of the other parameters analyzed exceeded their respective SHS MSCs. None of the parameters analyzed in MW-19 were detected above their laboratory method detection limits.

The groundwater monitoring event for the Fourth Quarter 2018 was conducted on December 17 and 18, 2018. This event marks the fifth sampling event performed simultaneously on monitoring wells MW-1 through MW-15 at the Site, the third event for MW-16 and MW-17 and the second quarterly sampling event for MW-18 and MW-19.

Each groundwater sample was analyzed for the PADEP March 2008 Shortlist of Unleaded Gasoline Parameters (benzene, ethylbenzene, toluene, total xylenes, cumene, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB). The results of the analysis are summarized on **Table 2**, and the associated laboratory analytical reports are provided in **Appendix B**. A Groundwater Analytical Map for the Fourth Quarter 2018 is presented as **Figure 4**.

Benzene was observed at concentrations exceeding the RU SHS MSC of 5 µg/l in the groundwater samples obtained from monitoring wells MW-1 through MW-5 and MW-17 at concentrations ranging from 46.0 µg/l (MW-1) to 15,800 µg/l (MW-3). The benzene concentration observed in MW-17 indicates that the contamination in the groundwater has migrated partially across State Route 257. Benzene concentrations were below the laboratory detection limit in the monitoring well MW-10 for the fourth consecutive time following three previous consecutive exceedances of the RU SHS MSC.

Ethylbenzene was observed at concentrations exceeding the RU SHS MSC of 700 µg/l in the groundwater samples obtained from monitoring wells MW-3 (3,520 µg/l), and MW-5 (2,780 µg/l). Detectable concentrations of ethylbenzene were observed in MW-1 (194 µg/l), MW-2 (144 µg/l), MW-4 (519 µg/l), MW-17 (489 µg/l), and MW-18 (43.2 µg/l).

Toluene and total xylenes were observed at concentrations exceeding their RU SHS MSCs of 1,000 µg/l and 10,000 µg/l, respectively, in the groundwater sample obtained from monitoring well MW-3 (2,320 µg/l, and 18,700 µg/l, respectively). Detectable concentrations of toluene and total xylenes were observed in MW-1 (total xylenes only), MW-2 (total xylenes only), MW-4,

MW-5, MW-17 (total xylenes only), and MW-18 (total xylenes only), at concentrations below their respective RU SHS MSCs.

MTBE was observed at concentrations exceeding the RU SHS MSC of 20 µg/l in the groundwater samples obtained from monitoring wells MW-3 (<25 µg/l [elevated laboratory method detection limit]), MW-5 (27.2 µg/l), MW-8 (144 µg/l) and MW-17 (41.5 µg/l). Detectable concentrations of MTBE were observed in MW-2 (11.1 µg/l), MW-10 (14.4 µg/l), and MW-11 (10.3 µg/l).

Naphthalene was observed at concentrations exceeding the RU SHS MSC of 100 µg/l in the groundwater samples obtained from monitoring wells MW-3 (558 µg/l), and MW-5 (317 µg/l). Detectable concentrations of naphthalene were observed in MW-1 (11.78 µg/l) and MW-2 (34.6 µg/l), MW-4 (85.2 µg/l), MW-17 (50.4 µg/l), and MW-18 (35.5 µg/l).

1,2,4-TMB was observed at concentrations exceeding the RU SHS MSC of 15 µg/l and the NRU SHS MSC of 62 µg/l in the groundwater samples obtained from monitoring wells MW-1 through MW-5, MW-17 and MW-18 at concentrations ranging from 89.0 µg/l (MW-18) to 3,800 µg/l (MW-3). The 1,2,4-TMB concentrations observed in MW-17 (156 µg/l) and MW-18 (89.0 µg/l) indicate that the contamination in the groundwater has made it partially across State Route 257. The concentrations of 1,2,4-TMB was below the laboratory method detection limit in the other monitoring wells.

1,3,5-TMB was observed at concentrations exceeding the RU SHS MSC of 420 µg/l in the groundwater samples obtained from monitoring wells MW-3 (958 µg/l), and MW-5 (971 µg/l). Detectable concentrations of 1,3,5-TMB were observed in MW-1 (16.9 µg/l), MW-2 (36.9 µg/l), MW-4 (36.6 µg/l), MW-17 (58.8 µg/l), and MW-18 (36.2 µg/l).

Monitoring wells MW-6, MW-7, MW-9, MW-12, MW-13, MW-14, MW-15, MW-16 and MW-19 had no parameters that exceeded their respective laboratory method detection limits.

Monitoring wells MW-1 through MW-5 continue to indicate the greatest impacts exceeding their respective SHS MSC with the exception of MTBE in MW-8. The impacts in MW-1 through MW-5 are expected because those are the monitoring wells where LPH is present. The observed concentrations of benzene, ethylbenzene, toluene, total xylenes and 1,2,4-TMB in MW-3 during the Second Quarter 2018 reached historic highs, likely as a result of the decreased LPH recovery efforts. The benzene, MTBE, naphthalene, and 1,2,4-TMB concentrations observed in MW-17 indicates that the contamination in the groundwater has made it partially across State Route 257.

Once the soil excavation remediation activities originally planned for this summer, (now being put out to bid by USTIF), the concentrations of the contaminants of concern in the soil and groundwater in the vicinity of the dispenser island should be drastically reduced. Once the soil excavation remediation has occurred and the destroyed wells have been replaced, concentration trend graphs will be assembled.

Monitoring wells MW-6, MW-7, MW-9, MW-11, MW-12, MW-13, MW-14, MW-15 and MW-19 currently have no parameters that have historically exceeded their respective RU SHS MSCs. As long as the concentrations in these wells remains below their respective RU SHS MSCs, they will demonstrate attainment once a sufficient number of sampling events have occurred.

The analytical results from the November 7, 2018 confirmation sampling event and the December 17 and 18, 2018 quarterly groundwater sampling event are included on **Table 2**. Copies of the laboratory analytical report for groundwater samples collected during the Fourth Quarter 2018 are included in **Appendix B**.

5.0 Summary

Product recovery efforts to collect LPH from monitoring wells MW-1 through MW-5 were discontinued following the Third Quarter 2018. Approximately 9.74 gallons of LPH have been recovered through the Third Quarter 2018.

The confirmation groundwater samples from MW-18 and MW-19 were collected on November 7, 2018 following their initial sampling conducted during the third quarter of 2018.

Monitoring well MW-18 indicated the presence of 1,2,4-TMB at a concentration of 389 µg/l exceeding its RU/NRU SHS MSC. None of the other parameters analyzed exceeded their respective SHS MSCs. None of the parameters analyzed in MW-19 were detected above their laboratory method detection limits.

In general, the groundwater analytical data obtained during the Fourth Quarter 2018 monitoring event is consistent with the historical groundwater data. The analytical results for the sampled wells have indicated that only nine of the 19 monitoring wells have had concentrations of one or more parameters that exceeded their respective RU SHS MSCs. The greatest impacts to the groundwater were typically observed in monitoring wells MW-1 through MW-5 with the exception of MTBE in MW-8. The observed concentrations of benzene, ethylbenzene, toluene, total xylenes and 1,2,4-TMB in MW-3 reached historic highs during the Second Quarter 2018, likely as a result of the decreased frequency of the LPH recovery efforts then decreased by roughly 50 percent during the Third Quarter 2018 indicating that it might be a seasonal fluctuation before rebounding again during the fourth quarter. The fourth quarter rebound observed in MW-1, MW-3, MW-4 and MW-5. The presence of benzene, MTBE, and 1,2,4-TMB in the groundwater sample from MW-17 and 1,2,4-TMB in MW-18 at concentrations exceeding their respective RU SHS MSCs confirmed the presence of groundwater impact beneath the roadway. All the other monitoring wells and the indicated no exceedances of their RU SHS MSCs.

Following the discovery of 1,2,4-TMB in MW-18, Cribbs & Associates is evaluating the need for an additional monitoring well farther north in the turning lane to complete the delineation of

groundwater impacts to the north. The installation of an additional monitoring well will require modification to the PennDOT permit.

In the interim, until the proposed soil excavation can be completed, the continuation of quarterly groundwater monitoring events will be conducted. The next event will occur during the First Quarter 2019 and the First Quarter RAPR will be submitted by April 30, 2019. The proposed soil excavation activities will not occur during the first quarter of 2019 because USTIF has mandated that the soil remediation excavation be put out to bid.

TABLES

Table 1
Historic Groundwater Elevation Data
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-1	2/22/2018	1450.44	8.0	0.81	Sheen	0.81	1449.63
MW-1	6/22/2018	1450.44	8.0	1.00	0.00	1.00	1449.44
MW-1	8/8/2018	1450.44	8.0	1.42	0.00	1.42	1449.02
MW-1	12/17/2018	1450.44	8.0	1.27	0.00	1.27	1449.17
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-2	2/22/2018	1449.80	8.0	0.79	Sheen	0.79	1449.01
MW-2	6/22/2018	1449.80	8.0	0.77	0.00	0.77	1449.03
MW-2	8/9/2018	1449.80	8.0	1.49	0.00	1.49	1448.31
MW-2	12/17/2018	1449.80	8.0	1.75	0.00	1.75	1448.05
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-3	2/22/2018	1450.14	8.0	0.36	Sheen	0.36	1449.78
MW-3	6/22/2018	1450.14	8.0	0.36	Sheen	0.36	1449.78
MW-3	8/9/2018	1450.14	8.0	1.89	Sheen	1.89	1448.25
MW-3	12/17/2018	1450.14	8.0	1.58	Sheen	1.58	1448.56

Table 1
Historic Groundwater Elevation Data
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-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-4	2/22/2018	1449.99	8.0	0.28	Sheen	0.28	1449.71
MW-4	6/22/2018	1449.99	8.0	0.45	Sheen	0.45	1449.54
MW-4	8/9/2018	1449.99	8.0	1.09	0.00	1.09	1448.90
MW-4	12/17/2018	1449.99	8.0	1.16	0.00	1.16	1448.83
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-5	2/22/2018	1449.93	8.0	0.83	Sheen	0.83	1449.10
MW-5	6/22/2018	1449.93	8.0	1.04	Sheen	1.04	1448.89
MW-5	8/9/2018	1449.93	8.0	1.37	0.00	1.37	1448.56
MW-5	12/17/2018	1449.93	8.0	1.30	0.00	1.30	1448.63
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-6	2/22/2018	1450.52	9.8	3.36	0.00	3.36	1447.16
MW-6	6/22/2018	1450.52	9.8	3.33	0.00	3.33	1447.19
MW-6	8/9/2018	1450.52	9.8	3.83	0.00	3.83	1446.69
MW-6	12/17/2018	1450.52	9.8	3.65	0.00	3.65	1446.87

Table 1
Historic Groundwater Elevation Data
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-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-7	2/21/2018	1451.98	10.0	3.07	0.00	3.07	1448.91
MW-7	6/22/2018	1451.98	10.0	3.32	0.00	3.32	1448.66
MW-7	8/9/2018	1451.98	10.0	3.71	0.00	3.71	1448.27
MW-7	12/17/2018	1451.98	10.0	3.38	0.00	3.38	1448.60
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
MW-8	2/22/2018	1449.95	16.0	1.14	0.00	1.14	1448.81
MW-8	6/22/2018	1449.95	16.0	1.70	0.00	1.70	1448.25
MW-8	8/8/2018	1449.95	16.0	2.70	0.00	2.70	1447.25
MW-8	12/17/2018	1449.95	16.0	0.76	0.00	0.76	1449.19
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-9	2/21/2018	1448.91	12.5	5.31	0.00	5.31	1443.60
MW-9	6/22/2018	1448.91	12.5	3.62	0.00	3.62	1445.29
MW-9	8/8/2018	1448.91	12.5	4.28	0.00	4.28	1444.63
MW-9	12/17/2018	1448.91	12.5	4.14	0.00	4.14	1444.77

Table 1
Historic Groundwater Elevation Data
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-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	3.49	0.00	3.49	1444.90
MW-10	6/12/2017	1448.39	9.9	3.53	0.00	3.53	1444.86
MW-10	2/22/2018	1448.39	9.9	5.42	0.00	5.42	1442.97
MW-10	6/22/2018	1448.39	9.9	4.04	0.00	4.04	1444.35
MW-10	8/8/2018	1448.39	9.9	4.96	0.00	4.96	1443.43
MW-10	12/17/2018	1448.39	9.9	3.45	0.00	3.45	1444.94
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-11	2/21/2018	1447.56	9.9	7.01	0.00	7.01	1440.55
MW-11	6/22/2018	1447.56	9.9	6.19	0.00	6.19	1441.37
MW-11	8/8/2018	1447.56	9.9	6.22	0.00	6.22	1441.34
MW-11	12/17/2018	1447.56	9.9	5.90	0.00	5.90	1441.66
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-12	2/21/2018	1447.76	8.0	3.99	0.00	3.99	1443.77
MW-12	6/22/2018	1447.76	8.0	4.10	0.00	4.10	1443.66
MW-12	8/9/2018	1447.76	8.0	5.81	0.00	5.81	1441.95
MW-12	12/17/2018	1447.76	8.0	4.04	0.00	4.04	1443.72

Table 1
Historic Groundwater Elevation Data
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-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-13	2/21/2018	1447.48	8.0	3.12	0.00	3.12	1444.36
MW-13	6/22/2018	1447.48	8.0	3.75	0.00	3.75	1443.73
MW-13	8/9/2018	1447.48	8.0	5.04	0.00	5.04	1442.44
MW-13	12/17/2018	1447.48	8.0	3.89	0.00	3.89	1443.59
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-14	2/21/2018	1448.07	8.0	4.10	0.00	4.10	1443.97
MW-14	6/22/2018	1448.07	8.0	4.35	0.00	4.35	1443.72
MW-14	8/9/2018	1448.07	8.0	DRY	0.00	DRY	<1440
MW-14	12/17/2018	1448.07	8.0	4.22	0.00	4.22	1443.85
MW-15*	6/12/2017	1451.80	12.5	10.76	0.00	10.76	1441.04
MW-15	7/31/2017	1449.53	12.5	1.67	0.00	1.67	1447.86
MW-15	2/22/2018	1449.53	12.5	1.72	0.00	1.72	1447.81
MW-15	6/22/2018	1449.53	12.5	1.66	0.00	1.66	1447.87
MW-15	8/9/2018	1449.53	12.5	1.90	0.00	1.90	1447.63
MW-15	12/17/2018	1449.53	12.5	1.43	0.00	1.43	1448.10

Table 1
Historic Groundwater Elevation Data
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-16*	6/22/2018	1449.56	10.0	10.00	0.00	DRY	DRY
MW-16*	7/10/2018	1449.56	10.0	9.77	0.00	9.77	1439.79
MW-16*	8/9/2018	1449.56	10.0	9.22	0.00	9.22	1440.34
MW-16*	12/17/2018	1449.56	10.0	8.92	0.00	8.92	1440.64
MW-17*	6/22/2018	1450.10	9.8	8.92	0.00	8.92	1441.18
MW-17*	8/9/2018	1450.10	9.8	8.40	Slight sheen	8.40	1441.70
MW-17	12/17/2018	1450.10	9.8	8.79	0.00	8.79	1441.31
MW-18*	9/27/2018	1450.00	10.0	7.39	0.00	7.39	1442.61
MW-18	11/7/2018	1450.00	10.0	7.43	0.00	7.43	1442.57
MW-18	12/17/2018	1450.00	10.0	7.59	0.00	7.59	1442.41
MW-19	9/27/2018	1447.00	4.2	0.86	0.00	0.86	1446.14
MW-19	11/7/2018	1447.00	4.2	0.34	0.00	0.34	1446.66
MW-19	12/17/2018	1447.00	4.2	0.55	0.00	0.55	1446.45

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.
MW-X * Groundwater Elevation measured before water level reaches static equlibrium.
Monitoring Wells MW-16 and MW-17 Surveyed by Cribbs & Associates July 10, 2018.
Monitoring Wells MW-18 and MW-19 TOC elevations approximated - not yet surveyed.

TABLE 2
Historical 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-1	2/22/2018	36.7	269	19.7	<5.0	49.0	<5.0	200	35.1	296
MW-1	6/22/2018	28.1	169	18.9	<5.0	30.9	<5.0	115	19.5	98.0
MW-1	8/8/2018	32.5	132	21.4	<5.0	19.8	<5.0	91.4	13.7	56.2
MW-1	12/17/2018	46.0	194	33.1	<5.0	11.7	<5.0	125	16.9	99.1
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-2	2/22/2018	750	345	28.6	13.0	37.0	<5.0	222	87.3	281
MW-2	6/22/2018	1,030	388	30.1	15.8	57.4	5.3	277	80.0	407
MW-2	8/9/2018	968	369	33.3	15.7	72.6	7.4	302	96.2	357
MW-2	12/18/2018	482	144	22.2	11.1	34.6	<5.0	137	36.9	91.9
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-3	2/22/2018	7,480	1,660	58.8	<25	300	2,390	1,810	526	12,200
MW-3	6/22/2018	26,000	5,650	74.4	<25	439	6,950	5,190	577	30,800
MW-3	8/9/2018	12,600	2,990	90.9	<25	580	2,800	2,510	712	16,000
MW-3	12/18/2018	15,800	3,520	125.0	<25	558	2,320	3,800	958	18,700
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-4	2/22/2018	2,010	796	72.8	5.0	130	72.3	440	104.0	1,220
MW-4	6/22/2018	1,800	884	88.4	5.0	210	29.7	358	36.3	325
MW-4	8/9/2018	1,520	445	67.4	<5.0	146	18.5	200	24.4	146
MW-4	12/18/2018	2,320	519	67.8	<5.0	85.2	33.4	339	36.6	569

TABLE 2
Historical 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-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-5	2/22/2018	**7,350**	**1,880**	72	**41.1**	**236**	<25	**1,570**	471	5,430
MW-5	6/22/2018	**10,100**	**2,390**	102	**32.9**	**470**	21.5	**2,210**	646	5,710
MW-5	8/9/2018	**8,080**	**2,350**	97.5	**54.1**	**1,100**	15.9	**2,290**	660	4,770
MW-5	12/18/2018	**8,950**	**2,780**	124	**27.2**	**317**	13.2	**3,400**	971	5,490
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-6	2/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-6	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1.4	<1.0	<5.0
MW-6	8/9/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-6	12/17/2018	<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-7	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-7	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-7	8/9/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-7	12/17/2018	<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-8	2/22/2018	<5.0	<5.0	<5.0	**157**	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	6/22/2018	<5.0	<5.0	<5.0	**247**	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	8/9/2018	<5.0	<5.0	<5.0	**226**	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	12/17/2018	<5.0	<5.0	<5.0	**144**	<5.0	<5.0	<1.0	<1.0	<5.0

TABLE 2
Historical 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-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
MW-9	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	8/8/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	12/17/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
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-10	2/22/2018	<5.0	53.4	17.7	16.4	<5.0	<5.0	1.6	1.6	<5.0
MW-10	6/22/2018	<5.0	8.9	6.4	15.3	<5.0	<5.0	1.0	<1.0	<5.0
MW-10	8/8/2018	<5.0	<5.0	<5.0	16.3	<5.0	<5.0	<1.0	<1.0	<5.0
MW-10	12/17/2018	<5.0	<5.0	<5.0	14.4	<5.0	<5.0	<1.0	<1.0	<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-11	2/21/2018	<5.0	<5.0	<5.0	12.2	<5.0	<5.0	<1.0	<1.0	<5.0
MW-11	6/22/2018	<5.0	<5.0	<5.0	15.8	<5.0	<5.0	<1.0	<1.0	<5.0
MW-11	8/8/2018	<5.0	<5.0	<5.0	15.7	<5.0	<5.0	<1.0	<1.0	<5.0
MW-11	12/17/2018	<5.0	<5.0	<5.0	10.3	<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-12	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	8/8/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	12/18/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0

TABLE 2
Historical 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-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-13	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	8/9/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	12/18/2018	<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-14	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-14	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-14	8/8/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
MW-14	12/18/2018	<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
MW-15	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-15	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-15	8/8/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-15	12/17/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-16	6/22/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
MW-16	7/10/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	2.0	2.1	19.4
MW-16	8/9/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	2.2	<5.0
MW-16	12/18/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-17	6/22/2018	**1,070**	376	15.5	14.7	69.9	<5.0	**591**	229	2,000
MW-17	8/8/2018	**1,630**	601	22.3	**33.1**	**130**	<5.0	**714**	204	2,710
MW-17	12/18/2018	**816**	489	14.9	**41.5**	50.4	<5.0	**156**	58.8	559
MW-18	9/27/2018	<5.0	50.3	14.7	<5.0	50.2	<5.0	**366**	51.8	69.0
MW-18	11/7/2018	<5.0	63.7	21.1	<5.0	62.6	<5.0	**389**	51.3	34.6
MW-18	12/18/2018	<5.0	43.2	18.1	<5.0	35.5	<5.0	**89.0**	36.2	10.0
MW-19	9/27/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-19	11/7/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-19	12/18/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0

TABLE 2
Historical 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
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
Upstream	2/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Upstream	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Upstream	8/9/2018	<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
Downstream	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Downstream	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Downstream	8/9/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Duplacates										
MW-10	2/22/2018	<5.0	52.4	18.1	16.6	<5.0	<5.0	1.6	1.6	<5.0
MW-5	6/22/2018	**9,350**	**2,230**	110	**39.3**	**455**	25.7	**2,130**	617	5,420
MW-8	12/17/2018	<5.0	<5.0	<5.0	**155**	<5.0	<5.0	<1.0	<1.0	<5.0

All concentrations provided in micrograms per liter(ug/L).
MTBE = Methyl Tert Butyl Ether
TMB = Trimethylbenzene
NA indicates parameter not analyzed.
Red values *denote exceedences of the Residential Statewide Health Standard.*
Red Bolded values *denote exceedences of the Non-Residential Statewide Health Standard.*
Highlighted value exceeds the Non-Residential Vapor Intrusion Screening Statewide Health Standard.

FIGURES

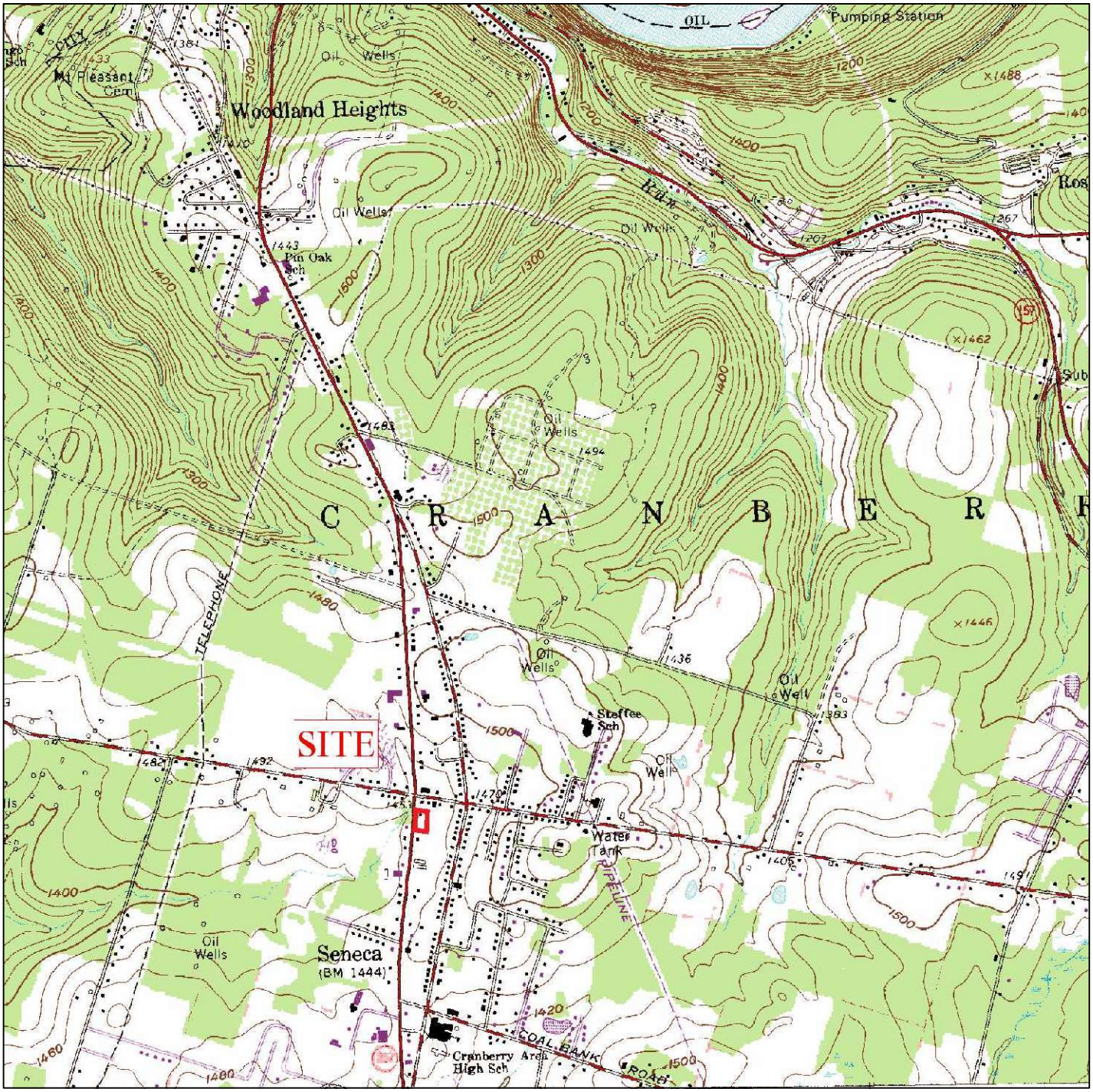

FIGURE 1
SITE LOCATION MAP

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

REFERENCE:
OIL CITY, PENNSYLVANIA
USGS 7.5-Minute Quadrangle

SCALE:
1 inch equals 2000 feet

CRIBBS & Associates, Inc
P.O. BOX 44
DELMONT, PA 15626
724.454.2310

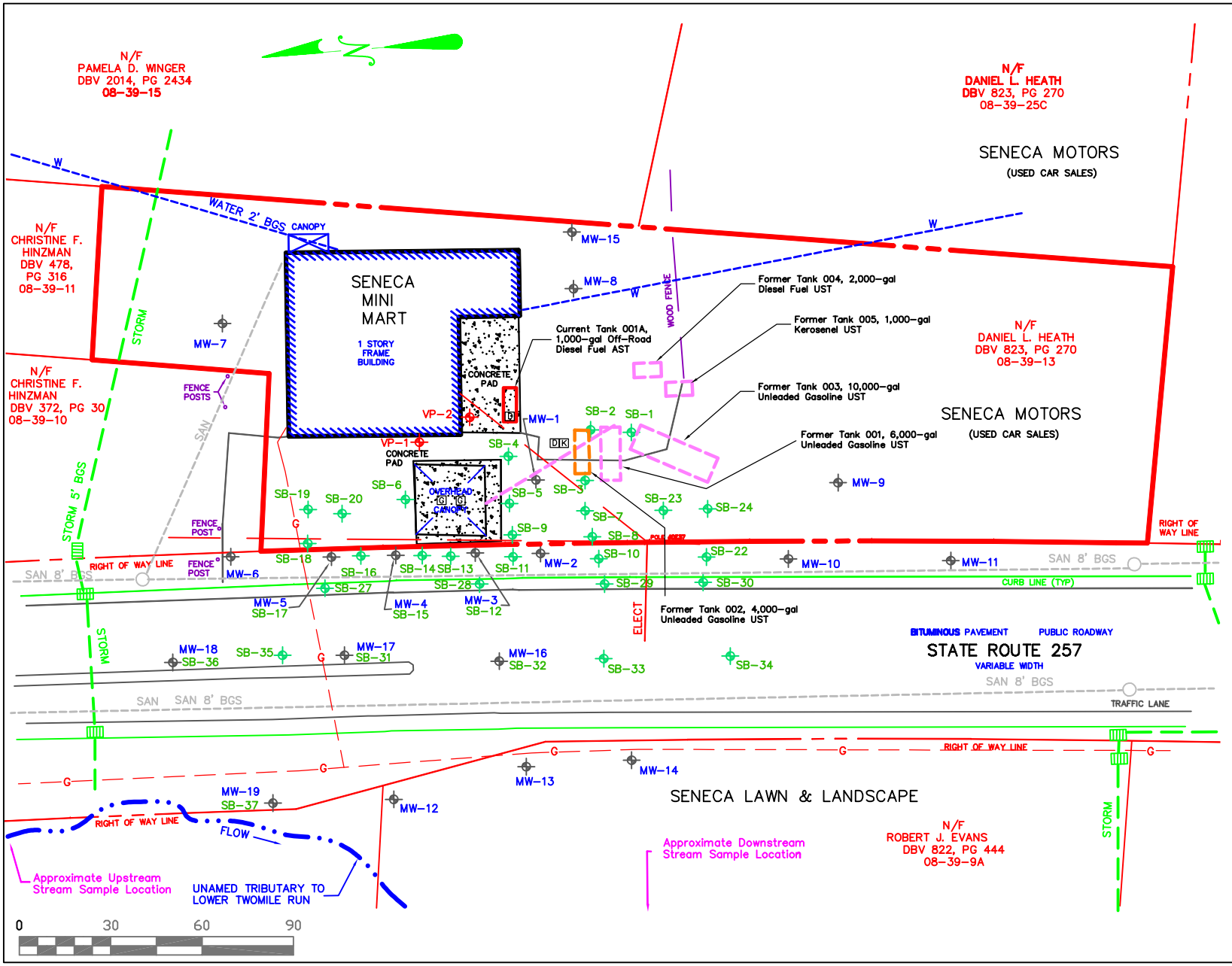

FIGURE 2
SITE PLAN – SOIL BORING AND MONITORING WELL LOCATION MAP

REMEDIAL ACTION PROGRESS REPORT
HARPER OIL COMPANY/HEATH OIL INC-SENECA MINI MART
SENECA, PENNSYLVANIA
PADEP FACILITY ID# 65-18854

SENECA BOROUGH
VENANGO COUNTY, PENNSYLVANIA

DATE: 10/4/18	APPROX. SCALE: See Scale Bar	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, 1999
- G — GASOLINE DISPENSER
- D — DIESEL DISPENSER
- K — KEROSINE DISPENSER

UTILITIES (DEPTHS MARKED IF KNOWN)

- GAS LINE
- WATER LINE
- SANITARY SEWER
- STORM SEWER

THREE ADDITIONAL SOIL BORINGS, SB-21, SB-25 AND SB-26, (NOT SHOWN) 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 ANNALYTICAL RESULTS FOR COMPLETING FORM FC-1 IN ANTICIPATION OF SOIL EXCAVATION ACTIVITY.

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

SURVEY FIELD WORK PREPARED BY MORRIS KNOWLES AND ASSOCIATES INC.

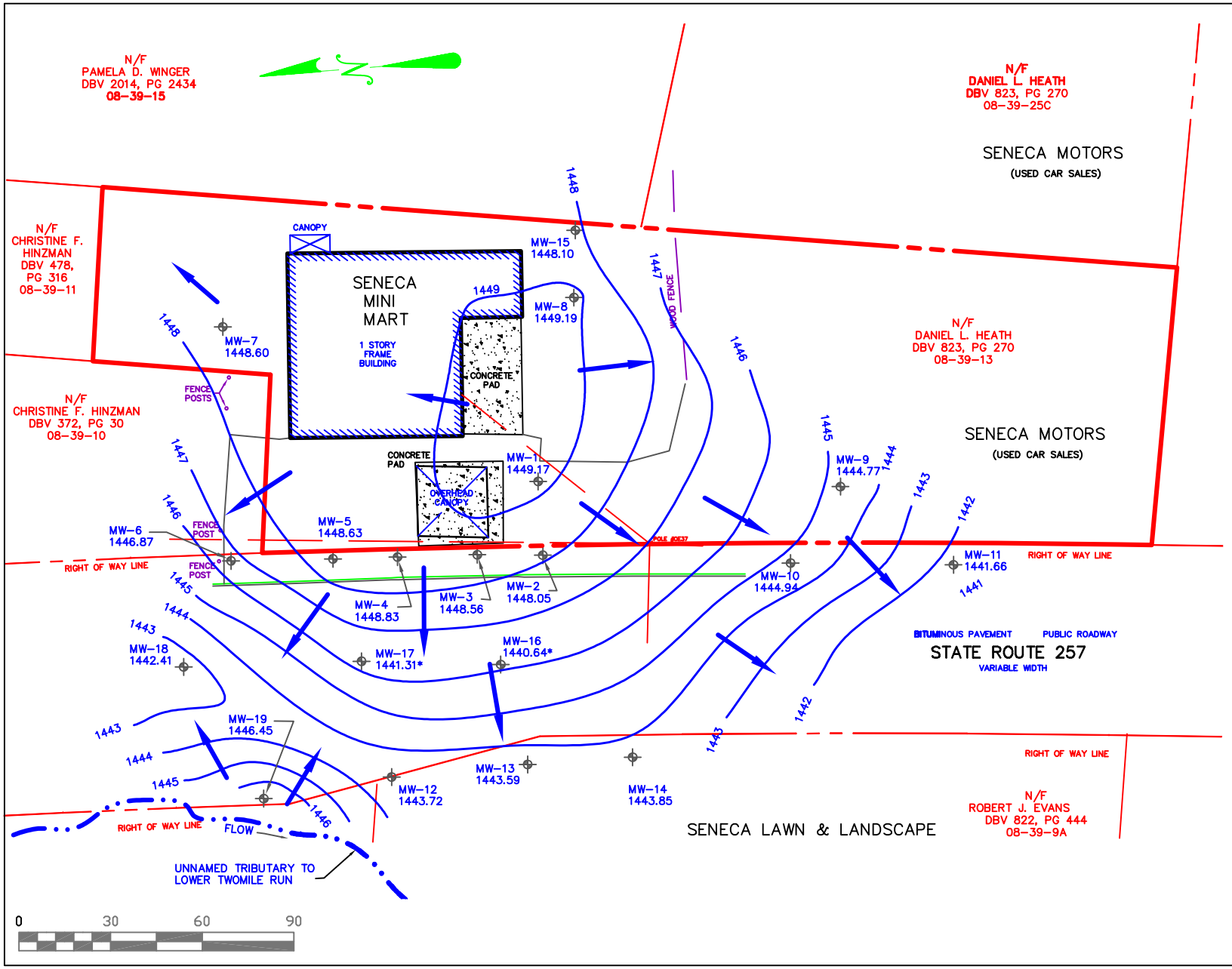

FIGURE 3
GROUNDWATER CONTOUR AND FLOW DIRECTION MAP – DECEMBER 17 & 18, 2018

REMEDIAL ACTION PROGRESS REPORT
HARPER OIL COMPANY/HEATH OIL INC–SENECA MINI MART
SENECA, PENNSYLVANIA
PADEP FACILITY ID# 65-18854

SENECA BOROUGH
VENANGO COUNTY, PENNSYLVANIA

DATE: 1/11/2019	APPROX. SCALE: See Scale Bar	DRAWN BY: RRB

LEGEND

MW-1 1449.17 — MONITORING WELL LOCATION MEASURED GROUNDWATER ELEVATION

GROUNDWATER CONTOUR LINE

GROUNDWATER FLOW DIRECTION

VP-1 — VAPOR POINT LOCATION

GROUNDWATER ELEVATIONS FOR ALL WELLS MEASURED DURING DECEMBER 17 & 18, 2018 SAMPLING EVENT.

* GROUNDWATER ELEVATIONS FOR WELLS MW-16 AND MW-17 MAY HAVE NOT REACHED STATIC LEVELS BY THE DECEMBER 17 & 18, 2018 SAMPLING EVENT AND WERE NOT USED TO PREPARE THIS FIGURE.

MONITORING WELLS MW-18 AND MW-19 INSTSALLED ON SEPTEMBER 13, 2018.

CRIBBS & Associates, Inc.
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DELMONT, PA 15626

SURVEY FIELD WORK PREPARED BY MORRIS KNOWLES AND ASSOCIATES INC.

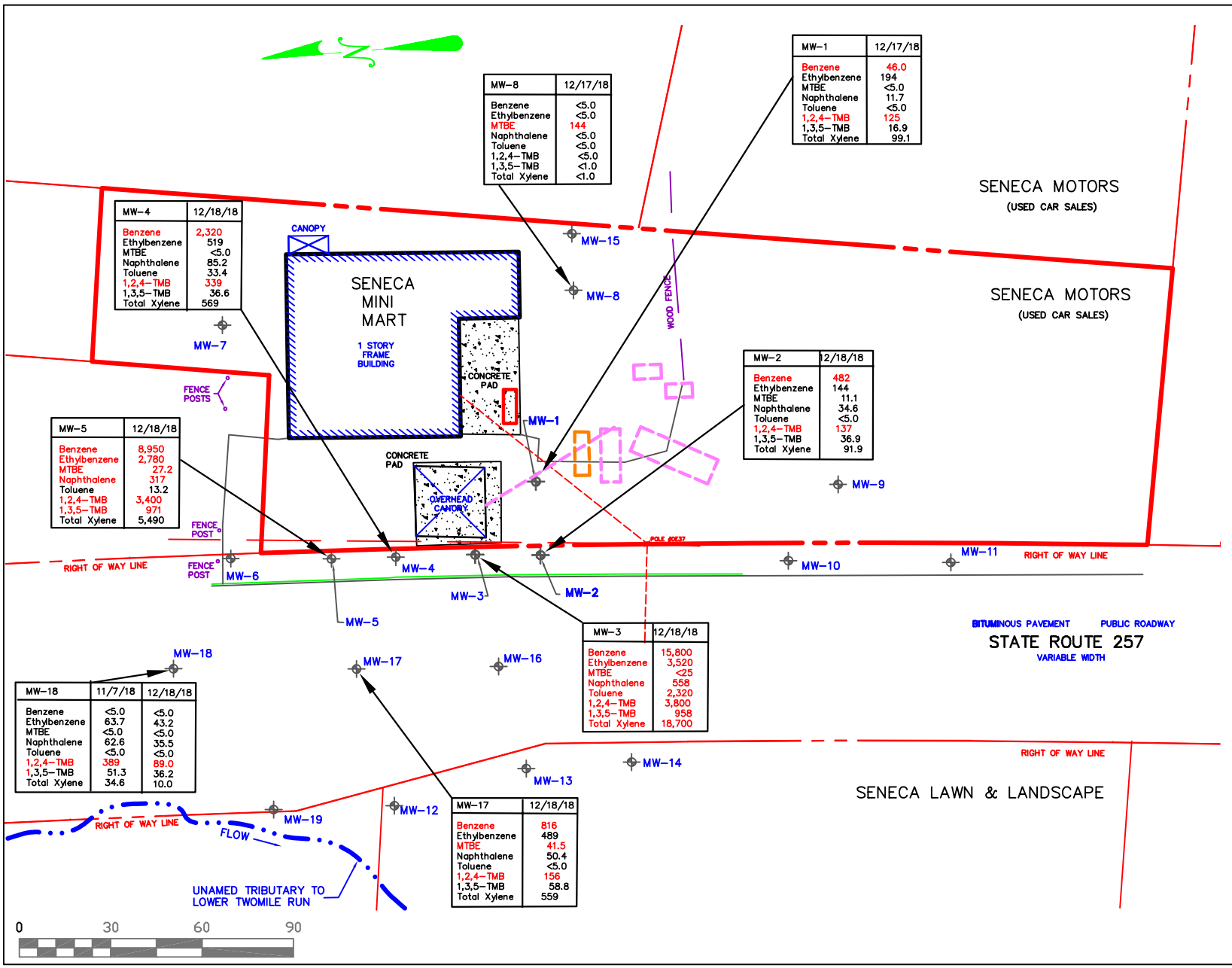

FIGURE 4
GROUNDWATER ANALYTICAL MAP

REMEDIAL ACTION PROGRESS REPORT
HARPER OIL COMPANY/HEATH OIL INC-SENECA MINI MART
SENECA, PENNSYLVANIA
PADEP FACILITY ID# 65-18854

SENECA BOROUGH
VENANGO COUNTY, PENNSYLVANIA

DATE: 1/14/19	APPROX. SCALE: See Scale Bar	DRAWN BY: RRB

LEGEND

MW-1 MONITORING WELL LOCATION

SHS MSCs	Residential	Non-Residential
Benzene	5	5
Ethylbenzene	700	700
MTBE	20	20
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

Confirmation groundwater samples collected from MW-18 and MW-10 on November 7, 2018.

Quarterly groundwater samples collected from MW-1 through MW-19 on December 17 and 18, 2018.

FORMER UST LOCATION
TANKS REMOVED
SEPTEMBER 14-17, 2015

CURRENT AST LOCATION

FORMER PRODUCT LINE LOCATION

FORMER UST LOCATION
TANK REMOVED
FEBRUARY 11, 1999

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

SURVEY FIELD WORK PREPARED BY MORRIS KNOWLES AND ASSOCIATES INC.

APPENDICES

APPENDIX A

Disposal Documentation

CRIBBS & Associates, Inc.

Bill of Lading

Cribbs & Associates, Inc.

Generator:

Heath Oil Company

3390 State Route 257

Seneca, PA

(888) 316-0211

Generator Signature: Jared Thorn

Generator Name: Jared Thorn for Heath Oil, Inc

Date: 11/7/18

Contents: Non-Hazardous petroleum contaminated purge water

Quantity: 1 55-gallon drums

50 gallons

Transporter:

Cribbs & Associates, Inc.

PO Box 44

Delmont, PA 15626

(888) 316-0211

Transporter Signature: Tyler J Vetter

Transporter Name: Tyler J Vetter

Date: 11-7-18

Disposal Facility:

Heath Oil Company

5609 State Road 8

Harrisville, PA 16038

(814) 437-7802

Disposal Facility Signature: Dan Howard

Name: Dan Howard

Date: 11-7-18

APPENDIX B

Laboratory Analytical Reports

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

November 15, 2018

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

RE: Project: HO: Seneca
Pace Project No.: 30270906

Dear Mr. Cribbs:
Enclosed are the analytical results for sample(s) received by the laboratory on November 08, 2018. 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

Samantha Bayura
samantha.bayura@pacelabs.com
(724)850-5622
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates
John A. Ducar, Cribbs & Associates, Inc.
Jared Thorn, Cribbs & Associates, Inc.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: HO: Seneca
Pace Project No.: 30270906

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
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 #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: HO: Seneca
Pace Project No.: 30270906

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30270906001	**MW-18**	EPA 8260B	JAS	13	PASI-PA
30270906002	**MW-19**	EPA 8260B	JAS	13	PASI-PA

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: HO: Seneca
Pace Project No.: 30270906

Method: **EPA 8260B**
Description: 8260B MSV
Client: Cribbs and Associates
Date: November 15, 2018

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.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: HO: Seneca
Pace Project No.: 30270906

Sample: MW-18 **Lab ID: 30270906001** Collected: 11/07/18 12:55 Received: 11/08/18 08:10 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		11/13/18 20:03	71-43-2	
Ethylbenzene	**63.7**	ug/L	5.0	1		11/13/18 20:03	100-41-4	
Isopropylbenzene (Cumene)	**21.1**	ug/L	5.0	1		11/13/18 20:03	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		11/13/18 20:03	1634-04-4	
Naphthalene	**62.6**	ug/L	5.0	1		11/13/18 20:03	91-20-3	
Toluene	ND	ug/L	5.0	1		11/13/18 20:03	108-88-3	
1,2,4-Trimethylbenzene	**389**	ug/L	1.0	1		11/13/18 20:03	95-63-6	
1,3,5-Trimethylbenzene	**51.3**	ug/L	1.0	1		11/13/18 20:03	108-67-8	
Xylene (Total)	**34.6**	ug/L	5.0	1		11/13/18 20:03	1330-20-7	
Surrogates								
Toluene-d8 (S)	108	%.	80-120	1		11/13/18 20:03	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	79-129	1		11/13/18 20:03	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%.	80-120	1		11/13/18 20:03	17060-07-0	
Dibromofluoromethane (S)	92	%.	80-120	1		11/13/18 20:03	1868-53-7	

Sample: MW-19 **Lab ID: 30270906002** Collected: 11/07/18 11:55 Received: 11/08/18 08:10 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		11/13/18 18:18	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		11/13/18 18:18	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		11/13/18 18:18	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		11/13/18 18:18	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		11/13/18 18:18	91-20-3	
Toluene	ND	ug/L	5.0	1		11/13/18 18:18	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		11/13/18 18:18	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		11/13/18 18:18	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		11/13/18 18:18	1330-20-7	
Surrogates								
Toluene-d8 (S)	107	%.	80-120	1		11/13/18 18:18	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	79-129	1		11/13/18 18:18	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%.	80-120	1		11/13/18 18:18	17060-07-0	
Dibromofluoromethane (S)	94	%.	80-120	1		11/13/18 18:18	1868-53-7	

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
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QUALITY CONTROL DATA

Project: HO: Seneca
Pace Project No.: 30270906

QC Batch: 320285 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 30270906001, 30270906002

METHOD BLANK: 1562516 Matrix: Water
Associated Lab Samples: 30270906001, 30270906002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	11/13/18 12:32	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	11/13/18 12:32	
Benzene	ug/L	ND	1.0	11/13/18 12:32	
Ethylbenzene	ug/L	ND	1.0	11/13/18 12:32	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	11/13/18 12:32	
Methyl-tert-butyl ether	ug/L	ND	1.0	11/13/18 12:32	
Naphthalene	ug/L	ND	2.0	11/13/18 12:32	
Toluene	ug/L	ND	1.0	11/13/18 12:32	
Xylene (Total)	ug/L	ND	3.0	11/13/18 12:32	
1,2-Dichloroethane-d4 (S)	%.	103	80-120	11/13/18 12:32	
4-Bromofluorobenzene (S)	%.	101	79-129	11/13/18 12:32	
Dibromofluoromethane (S)	%.	97	80-120	11/13/18 12:32	
Toluene-d8 (S)	%.	106	80-120	11/13/18 12:32	

LABORATORY CONTROL SAMPLE: 1562517

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.5	98	70-130	
1,3,5-Trimethylbenzene	ug/L	20	19.2	96	70-130	
Benzene	ug/L	20	17.4	87	70-130	
Ethylbenzene	ug/L	20	19.1	95	70-130	
Isopropylbenzene (Cumene)	ug/L	20	19.1	96	70-130	
Methyl-tert-butyl ether	ug/L	20	18.4	92	70-130	
Naphthalene	ug/L	20	21.6	108	70-130	
Toluene	ug/L	20	19.3	97	70-130	
Xylene (Total)	ug/L	60	59.0	98	70-130	
1,2-Dichloroethane-d4 (S)	%.			99	80-120	
4-Bromofluorobenzene (S)	%.			102	79-129	
Dibromofluoromethane (S)	%.			98	80-120	
Toluene-d8 (S)	%.			106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1562817 1562818

Parameter	Units	30271240001 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	22.1	21.4	111	107	75-125	3	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	20.2	20.4	101	102	76-121	1	
Benzene	ug/L	ND	20	20	18.1	18.2	91	91	67-121	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

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: HO: Seneca
Pace Project No.: 30270906

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1562817 1562818

Parameter	Units	30271240001 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	21.0	21.2	105	106	70-127	1	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	21.1	21.0	106	105	80-122	1	
Methyl-tert-butyl ether	ug/L	ND	20	20	17.1	17.4	86	87	79-135	2	
Naphthalene	ug/L	ND	20	20	21.5	21.7	108	108	62-131	1	
Toluene	ug/L	ND	20	20	20.6	21.2	103	106	77-125	3	
Xylene (Total)	ug/L	ND	60	60	62.1	64.5	104	107	69-128	4	
1,2-Dichloroethane-d4 (S)	%.						101	100	80-120		
4-Bromofluorobenzene (S)	%.						103	102	79-129		
Dibromofluoromethane (S)	%.						97	95	80-120		
Toluene-d8 (S)	%.						111	112	80-120		

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

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: HO: Seneca
Pace Project No.: 30270906

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HO: Seneca
Pace Project No.: 30270906

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30270906001	**MW-18**	EPA 8260B	320285		
30270906002	**MW-19**	EPA 8260B	320285		

REPORT OF LABORATORY ANALYSIS

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUST

The Chain-of-Custody is a LEG

WO# : 30270906

30270906

Page: 1 of 1

261360

Section A Required Client Information:

Company:	Cribbs & Associates, Inc
Address:	PO Box 44
	Delmont PA 15626
Email To:	GCribbs@CribbsandAssociates.com
Phone:	724-454-2310 Fax:
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Gary Cribbs
Copy To:	Robert Betterman
Purchase Order No.:	
Project Name:	HO: Seneca
Project Number:	

Sect Invoic

Attention:	Gary Cribbs
Company Name:	Cribbs & Associates, Inc
Address:	PO Box 44 Delmont PA 15626
Pace Quote Reference:	
Pace Project Manager:	Samantha Bayura
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: PA

Section D Required Client Information

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test ↓ SEE BELOW	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-18	WT	G			11/7/18	1255		3				3						X		001
2	MW-19	WT	G			11/7/18	1155		3				3						X		002
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Analyze all samples for	Jared Thorn Cribbs&Assoc	11/7/18	1800		11/7/18	1800				
PADEP NEW SHORTLIST		11/8/18	0810		11/8/18	0810	3.4	Y	N	Y
for Unleaded Gasoline										

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jared Thorn

SIGNATURE of SAMPLER: Jared Thorn DATE Signed (MM/DD/YY): 11/7/18

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | 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.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Gibbs

Project # 30270906

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

Label MPM

LIMS Login PLM

Tracking #: _____

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

Thermometer Used 11 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 3.2 °C Correction Factor: +0.2 °C Final Temp: 3.4 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# N/A	Date and Initials of person examining contents: MDS 11-8-18
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: -Includes date/time/ID Matrix: WA	✓			5.	
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: -Pace Containers Used:	✓ ✓			10.	
Containers Intact:	✓			11.	
Orthophosphate field filtered			✓	12.	
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.	
Organic Samples checked for dechlorination:			✓	14.	
Filtered volume received for Dissolved tests			✓	15.	
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: (VOA), coliform, TOC, O&G, Phenolics			✓	16. Initial when completed MDS Date/time of preservation Lot # of added preservative	
Headspace in VOA Vials (>6mm):		✓		17.	
Trip Blank Present:		✓		18.	
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.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

January 08, 2019

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

RE: Project: Ho: Seneca
Pace Project No.: 30274940

Dear Mr. Cribbs:
Enclosed are the analytical results for sample(s) received by the laboratory on December 19, 2018. 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

Samantha Bayura
samantha.bayura@pacelabs.com
(724)850-5622
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates
John A. Ducar, Cribbs & Associates, Inc.
Jared Thorn, Cribbs & Associates, Inc.

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: Ho: Seneca
Pace Project No.: 30274940

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
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 #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: Ho: Seneca
Pace Project No.: 30274940

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30274940001	**MW-1**	EPA 8260B	JAS	13	PASI-PA
30274940002	**MW-2**	EPA 8260B	JAS	13	PASI-PA
30274940003	**MW-3**	EPA 8260B	JAS	13	PASI-PA
30274940004	**MW-4**	EPA 8260B	JAS	13	PASI-PA
30274940005	**MW-5**	EPA 8260B	JAS	13	PASI-PA
30274940006	**MW-6**	EPA 8260B	JAS	13	PASI-PA
30274940007	**MW-7**	EPA 8260B	JAS	13	PASI-PA
30274940008	**MW-8**	EPA 8260B	JAS	13	PASI-PA
30274940009	**MW-9**	EPA 8260B	JAS	13	PASI-PA
30274940010	**MW-10**	EPA 8260B	JAS	13	PASI-PA
30274940011	**MW-11**	EPA 8260B	JAS	13	PASI-PA
30274940012	**MW-12**	EPA 8260B	JAS	13	PASI-PA
30274940013	**MW-13**	EPA 8260B	JAS	13	PASI-PA
30274940014	**MW-14**	EPA 8260B	JAS	13	PASI-PA
30274940015	**MW-15**	EPA 8260B	JAS	13	PASI-PA
30274940016	**MW-16**	EPA 8260B	JAS	13	PASI-PA
30274940017	**MW-17**	EPA 8260B	JAS	13	PASI-PA
30274940018	**MW-18**	EPA 8260B	JAS	13	PASI-PA
30274940019	**MW-19**	EPA 8260B	JAS	13	PASI-PA
30274940020	**MW-20**	EPA 8260B	JAS	13	PASI-PA

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: Ho: Seneca
Pace Project No.: 30274940

Method: **EPA 8260B**
Description: 8260B MSV
Client: Cribbs and Associates
Date: January 08, 2019

General Information:
20 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.

QC Batch: 325545

CL: The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased low.

- BLANK (Lab ID: 1586427)
  - Toluene
- LCS (Lab ID: 1586428)
  - Toluene
- MS (Lab ID: 1586813)
  - Toluene
- MSD (Lab ID: 1586814)
  - Toluene
- MW-18 (Lab ID: 30274940018)
  - Toluene

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: 325346

SR: Surrogate recovery was below laboratory control limits. Results may be biased low.

- MS (Lab ID: 1585802)
  - Dibromofluoromethane (S)

QC Batch: 325502

S2: Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

- MW-3 (Lab ID: 30274940003)
  - Dibromofluoromethane (S)

SR: Surrogate recovery was below laboratory control limits. Results may be biased low.

- MW-3 (Lab ID: 30274940003)
  - Dibromofluoromethane (S)

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PROJECT NARRATIVE

Project: Ho: Seneca
Pace Project No.: 30274940

Method: **EPA 8260B**
Description: 8260B MSV
Client: Cribbs and Associates
Date: January 08, 2019

QC Batch: 325545

SR: Surrogate recovery was below laboratory control limits. Results may be biased low.
- BLANK (Lab ID: 1586427)
  - 1,2-Dichloroethane-d4 (S)
  - Dibromofluoromethane (S)

QC Batch: 325638

S0: Surrogate recovery outside laboratory control limits.
- LCS (Lab ID: 1586715)
  - Dibromofluoromethane (S)

ST: Surrogate recovery was above laboratory control limits. Results may be biased high.
- MSD (Lab ID: 1586812)
  - 4-Bromofluorobenzene (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.

QC Batch: 325545

L2: Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
- LCS (Lab ID: 1586428)
  - Methyl-tert-butyl ether

QC Batch: 325638

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
- LCS (Lab ID: 1586715)
  - Methyl-tert-butyl ether

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

QC Batch: 325346

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30274940008

ML: Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.
- MSD (Lab ID: 1585803)
  - Methyl-tert-butyl ether

QC Batch: 325347

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30275119015

ML: Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.
- MS (Lab ID: 1585804)
  - Methyl-tert-butyl ether

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PROJECT NARRATIVE

Project: Ho: Seneca
Pace Project No.: 30274940

Method: **EPA 8260B**
Description: 8260B MSV
Client: Cribbs and Associates
Date: January 08, 2019

QC Batch: 325347

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30275119015

ML: Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.

- MSD (Lab ID: 1585805)
  - Methyl-tert-butyl ether

QC Batch: 325502

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30274815001

ML: Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.

- MS (Lab ID: 1586089)
  - Methyl-tert-butyl ether
- MSD (Lab ID: 1586090)
  - Methyl-tert-butyl ether

QC Batch: 325504

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30274954002

ML: Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.

- MS (Lab ID: 1586091)
  - Methyl-tert-butyl ether

QC Batch: 325545

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30274951006

MH: Matrix spike recovery and/or matrix spike duplicate recovery was above laboratory control limits. Result may be biased high.

- MS (Lab ID: 1586813)
  - 1,2,4-Trimethylbenzene

ML: Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.

- MS (Lab ID: 1586813)
  - Methyl-tert-butyl ether
- MSD (Lab ID: 1586814)
  - Methyl-tert-butyl ether

QC Batch: 325638

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30275112001

MH: Matrix spike recovery and/or matrix spike duplicate recovery was above laboratory control limits. Result may be biased high.

- MSD (Lab ID: 1586812)
  - Isopropylbenzene (Cumene)
  - Naphthalene

ML: Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.

- MS (Lab ID: 1586811)
  - Methyl-tert-butyl ether
- MSD (Lab ID: 1586812)
  - Methyl-tert-butyl ether

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Ho: Seneca
Pace Project No.: 30274940

Method: **EPA 8260B**
Description: 8260B MSV
Client: Cribbs and Associates
Date: January 08, 2019

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

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ANALYTICAL RESULTS

Project: Ho: Seneca
Pace Project No.: 30274940

Sample: MW-1 **Lab ID: 30274940001** Collected: 12/17/18 13:40 Received: 12/19/18 15:24 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	**46.0**	ug/L	5.0	1		12/28/18 09:22	71-43-2	
Ethylbenzene	**194**	ug/L	5.0	1		12/28/18 09:22	100-41-4	
Isopropylbenzene (Cumene)	**33.1**	ug/L	5.0	1		12/28/18 09:22	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/28/18 09:22	1634-04-4	
Naphthalene	**11.7**	ug/L	5.0	1		12/28/18 09:22	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 09:22	108-88-3	
1,2,4-Trimethylbenzene	**125**	ug/L	5.0	1		12/28/18 09:22	95-63-6	
1,3,5-Trimethylbenzene	**16.9**	ug/L	5.0	1		12/28/18 09:22	108-67-8	
Xylene (Total)	**99.1**	ug/L	5.0	1		12/28/18 09:22	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%.	80-120	1		12/28/18 09:22	2037-26-5	
4-Bromofluorobenzene (S)	109	%.	79-129	1		12/28/18 09:22	460-00-4	
1,2-Dichloroethane-d4 (S)	84	%.	80-120	1		12/28/18 09:22	17060-07-0	
Dibromofluoromethane (S)	92	%.	80-120	1		12/28/18 09:22	1868-53-7	

Sample: MW-2 **Lab ID: 30274940002** Collected: 12/18/18 12:10 Received: 12/19/18 15:24 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	**482**	ug/L	50.0	10		12/28/18 10:01	71-43-2	
Ethylbenzene	**144**	ug/L	5.0	1		12/28/18 09:35	100-41-4	
Isopropylbenzene (Cumene)	**22.2**	ug/L	5.0	1		12/28/18 09:35	98-82-8	
Methyl-tert-butyl ether	**11.1**	ug/L	5.0	1		12/28/18 09:35	1634-04-4	
Naphthalene	**34.6**	ug/L	5.0	1		12/28/18 09:35	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 09:35	108-88-3	
1,2,4-Trimethylbenzene	**137**	ug/L	1.0	1		12/28/18 09:35	95-63-6	
1,3,5-Trimethylbenzene	**36.9**	ug/L	1.0	1		12/28/18 09:35	108-67-8	
Xylene (Total)	**91.9**	ug/L	5.0	1		12/28/18 09:35	1330-20-7	
Surrogates								
Toluene-d8 (S)	103	%.	80-120	1		12/28/18 09:35	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	79-129	1		12/28/18 09:35	460-00-4	
1,2-Dichloroethane-d4 (S)	88	%.	80-120	1		12/28/18 09:35	17060-07-0	
Dibromofluoromethane (S)	87	%.	80-120	1		12/28/18 09:35	1868-53-7	

Sample: MW-3 **Lab ID: 30274940003** Collected: 12/18/18 13:00 Received: 12/19/18 15:24 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	**15800**	ug/L	500	100		12/29/18 01:45	71-43-2	
Ethylbenzene	**3520**	ug/L	500	100		12/29/18 01:45	100-41-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ho: Seneca
Pace Project No.: 30274940

Sample: MW-3 **Lab ID: 30274940003** Collected: 12/18/18 13:00 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Isopropylbenzene (Cumene)	**125**	ug/L	25.0	5		12/29/18 01:19	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	25.0	5		12/29/18 01:19	1634-04-4	
Naphthalene	**558**	ug/L	25.0	5		12/29/18 01:19	91-20-3	
Toluene	**2320**	ug/L	500	100		12/29/18 01:45	108-88-3	
1,2,4-Trimethylbenzene	**3800**	ug/L	100	100		12/29/18 01:45	95-63-6	
1,3,5-Trimethylbenzene	**958**	ug/L	5.0	5		12/29/18 01:19	108-67-8	
Xylene (Total)	**18700**	ug/L	500	100		12/29/18 01:45	1330-20-7	
Surrogates								
Toluene-d8 (S)	106	%.	80-120	5		12/29/18 01:19	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	79-129	5		12/29/18 01:19	460-00-4	
1,2-Dichloroethane-d4 (S)	86	%.	80-120	5		12/29/18 01:19	17060-07-0	
Dibromofluoromethane (S)	75	%.	80-120	5		12/29/18 01:19	1868-53-7	S2,SR

Sample: MW-4 **Lab ID: 30274940004** Collected: 12/18/18 14:00 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	**2320**	ug/L	50.0	10		12/29/18 00:00	71-43-2	
Ethylbenzene	**519**	ug/L	50.0	10		12/29/18 00:00	100-41-4	
Isopropylbenzene (Cumene)	**67.8**	ug/L	5.0	1		12/28/18 23:33	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/28/18 23:33	1634-04-4	
Naphthalene	**85.2**	ug/L	5.0	1		12/28/18 23:33	91-20-3	
Toluene	**33.4**	ug/L	5.0	1		12/28/18 23:33	108-88-3	
1,2,4-Trimethylbenzene	**339**	ug/L	1.0	1		12/28/18 23:33	95-63-6	
1,3,5-Trimethylbenzene	**36.6**	ug/L	1.0	1		12/28/18 23:33	108-67-8	
Xylene (Total)	**569**	ug/L	5.0	1		12/28/18 23:33	1330-20-7	
Surrogates								
Toluene-d8 (S)	94	%.	80-120	1		12/28/18 23:33	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	79-129	1		12/28/18 23:33	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%.	80-120	1		12/28/18 23:33	17060-07-0	
Dibromofluoromethane (S)	94	%.	80-120	1		12/28/18 23:33	1868-53-7	

Sample: MW-5 **Lab ID: 30274940005** Collected: 12/18/18 14:35 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	**8950**	ug/L	250	50		12/29/18 00:53	71-43-2	
Ethylbenzene	**2780**	ug/L	250	50		12/29/18 00:53	100-41-4	
Isopropylbenzene (Cumene)	**124**	ug/L	5.0	1		12/29/18 00:26	98-82-8	
Methyl-tert-butyl ether	**27.2**	ug/L	5.0	1		12/29/18 00:26	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ho: Seneca
Pace Project No.: 30274940

Sample: MW-5 **Lab ID: 30274940005** Collected: 12/18/18 14:35 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Naphthalene	**317**	ug/L	5.0	1		12/29/18 00:26	91-20-3	
Toluene	**13.2**	ug/L	5.0	1		12/29/18 00:26	108-88-3	
1,2,4-Trimethylbenzene	**3400**	ug/L	250	50		12/29/18 00:53	95-63-6	
1,3,5-Trimethylbenzene	**971**	ug/L	250	50		12/29/18 00:53	108-67-8	
Xylene (Total)	**5490**	ug/L	250	50		12/29/18 00:53	1330-20-7	
Surrogates								
Toluene-d8 (S)	88	%.	80-120	1		12/29/18 00:26	2037-26-5	
4-Bromofluorobenzene (S)	116	%.	79-129	1		12/29/18 00:26	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%.	80-120	1		12/29/18 00:26	17060-07-0	
Dibromofluoromethane (S)	106	%.	80-120	1		12/29/18 00:26	1868-53-7	

Sample: MW-6 **Lab ID: 30274940006** Collected: 12/17/18 14:30 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 04:47	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 04:47	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 04:47	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/28/18 04:47	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		12/28/18 04:47	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 04:47	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 04:47	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 04:47	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/28/18 04:47	1330-20-7	
Surrogates								
Toluene-d8 (S)	103	%.	80-120	1		12/28/18 04:47	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	79-129	1		12/28/18 04:47	460-00-4	
1,2-Dichloroethane-d4 (S)	82	%.	80-120	1		12/28/18 04:47	17060-07-0	
Dibromofluoromethane (S)	91	%.	80-120	1		12/28/18 04:47	1868-53-7	

Sample: MW-7 **Lab ID: 30274940007** Collected: 12/17/18 14:40 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 05:13	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 05:13	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 05:13	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/28/18 05:13	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		12/28/18 05:13	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 05:13	108-88-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: Ho: Seneca
Pace Project No.: 30274940

Sample: MW-7 **Lab ID: 30274940007** Collected: 12/17/18 14:40 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

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		12/28/18 05:13	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 05:13	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/28/18 05:13	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%.	80-120	1		12/28/18 05:13	2037-26-5	
4-Bromofluorobenzene (S)	93	%.	79-129	1		12/28/18 05:13	460-00-4	
1,2-Dichloroethane-d4 (S)	85	%.	80-120	1		12/28/18 05:13	17060-07-0	
Dibromofluoromethane (S)	91	%.	80-120	1		12/28/18 05:13	1868-53-7	

Sample: MW-8 **Lab ID: 30274940008** Collected: 12/17/18 13:35 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 05:39	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 05:39	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 05:39	98-82-8	
Methyl-tert-butyl ether	**144**	ug/L	5.0	1		12/28/18 05:39	1634-04-4	ML
Naphthalene	ND	ug/L	5.0	1		12/28/18 05:39	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 05:39	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 05:39	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 05:39	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/28/18 05:39	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%.	80-120	1		12/28/18 05:39	2037-26-5	
4-Bromofluorobenzene (S)	95	%.	79-129	1		12/28/18 05:39	460-00-4	
1,2-Dichloroethane-d4 (S)	85	%.	80-120	1		12/28/18 05:39	17060-07-0	
Dibromofluoromethane (S)	94	%.	80-120	1		12/28/18 05:39	1868-53-7	

Sample: MW-9 **Lab ID: 30274940009** Collected: 12/17/18 11:40 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 06:06	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 06:06	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 06:06	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/28/18 06:06	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		12/28/18 06:06	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 06:06	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 06:06	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 06:06	108-67-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Ho: Seneca
Pace Project No.: 30274940

Sample: MW-9 **Lab ID: 30274940009** Collected: 12/17/18 11:40 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

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		12/28/18 06:06	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%.	80-120	1		12/28/18 06:06	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	79-129	1		12/28/18 06:06	460-00-4	
1,2-Dichloroethane-d4 (S)	85	%.	80-120	1		12/28/18 06:06	17060-07-0	
Dibromofluoromethane (S)	92	%.	80-120	1		12/28/18 06:06	1868-53-7	

Sample: MW-10 **Lab ID: 30274940010** Collected: 12/17/18 12:35 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 08:56	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 08:56	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 08:56	98-82-8	
Methyl-tert-butyl ether	**14.4**	ug/L	5.0	1		12/28/18 08:56	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		12/28/18 08:56	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 08:56	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 08:56	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 08:56	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/28/18 08:56	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%.	80-120	1		12/28/18 08:56	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	79-129	1		12/28/18 08:56	460-00-4	
1,2-Dichloroethane-d4 (S)	88	%.	80-120	1		12/28/18 08:56	17060-07-0	
Dibromofluoromethane (S)	81	%.	80-120	1		12/28/18 08:56	1868-53-7	

Sample: MW-11 **Lab ID: 30274940011** Collected: 12/17/18 11:35 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 06:32	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 06:32	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 06:32	98-82-8	
Methyl-tert-butyl ether	**10.3**	ug/L	5.0	1		12/28/18 06:32	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		12/28/18 06:32	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 06:32	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 06:32	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 06:32	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/28/18 06:32	1330-20-7	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Ho: Seneca
Pace Project No.: 30274940

Sample: MW-11 **Lab ID: 30274940011** Collected: 12/17/18 11:35 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Surrogates								
Toluene-d8 (S)	104	%.	80-120	1		12/28/18 06:32	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	79-129	1		12/28/18 06:32	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%.	80-120	1		12/28/18 06:32	17060-07-0	
Dibromofluoromethane (S)	93	%.	80-120	1		12/28/18 06:32	1868-53-7	

Sample: MW-12 **Lab ID: 30274940012** Collected: 12/18/18 11:20 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 09:08	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 09:08	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 09:08	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/28/18 09:08	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		12/28/18 09:08	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 09:08	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 09:08	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 09:08	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/28/18 09:08	1330-20-7	
Surrogates								
Toluene-d8 (S)	104	%.	80-120	1		12/28/18 09:08	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	79-129	1		12/28/18 09:08	460-00-4	
1,2-Dichloroethane-d4 (S)	90	%.	80-120	1		12/28/18 09:08	17060-07-0	
Dibromofluoromethane (S)	94	%.	80-120	1		12/28/18 09:08	1868-53-7	

Sample: MW-13 **Lab ID: 30274940013** Collected: 12/18/18 10:10 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 21:21	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 21:21	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 21:21	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/28/18 21:21	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		12/28/18 21:21	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 21:21	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 21:21	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 21:21	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/28/18 21:21	1330-20-7	
Surrogates								
Toluene-d8 (S)	103	%.	80-120	1		12/28/18 21:21	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: Ho: Seneca
Pace Project No.: 30274940

Sample: MW-13 **Lab ID: 30274940013** Collected: 12/18/18 10:10 Received: 12/19/18 15:24 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Surrogates								
4-Bromofluorobenzene (S)	97	%.	79-129	1		12/28/18 21:21	460-00-4	
1,2-Dichloroethane-d4 (S)	89	%.	80-120	1		12/28/18 21:21	17060-07-0	
Dibromofluoromethane (S)	96	%.	80-120	1		12/28/18 21:21	1868-53-7	

Sample: MW-14 **Lab ID: 30274940014** Collected: 12/18/18 11:00 Received: 12/19/18 15:24 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 21:48	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 21:48	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 21:48	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/28/18 21:48	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		12/28/18 21:48	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 21:48	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 21:48	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 21:48	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/28/18 21:48	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%.	80-120	1		12/28/18 21:48	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	79-129	1		12/28/18 21:48	460-00-4	
1,2-Dichloroethane-d4 (S)	86	%.	80-120	1		12/28/18 21:48	17060-07-0	
Dibromofluoromethane (S)	97	%.	80-120	1		12/28/18 21:48	1868-53-7	

Sample: MW-15 **Lab ID: 30274940015** Collected: 12/17/18 12:40 Received: 12/19/18 15:24 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 06:59	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 06:59	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 06:59	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/28/18 06:59	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		12/28/18 06:59	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 06:59	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 06:59	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 06:59	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/28/18 06:59	1330-20-7	
Surrogates								
Toluene-d8 (S)	97	%.	80-120	1		12/28/18 06:59	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	79-129	1		12/28/18 06:59	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Greensburg, PA 15601
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ANALYTICAL RESULTS

Project: Ho: Seneca
Pace Project No.: 30274940

Sample: MW-15 **Lab ID: 30274940015** Collected: 12/17/18 12:40 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%.	80-120	1		12/28/18 06:59	17060-07-0	
Dibromofluoromethane (S)	95	%.	80-120	1		12/28/18 06:59	1868-53-7	

Sample: MW-16 **Lab ID: 30274940016** Collected: 12/18/18 12:20 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/31/18 18:09	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/31/18 18:09	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/31/18 18:09	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/31/18 18:09	1634-04-4	L1
Naphthalene	ND	ug/L	5.0	1		12/31/18 18:09	91-20-3	
Toluene	ND	ug/L	5.0	1		12/31/18 18:09	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/31/18 18:09	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/31/18 18:09	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/31/18 18:09	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%.	80-120	1		12/31/18 18:09	2037-26-5	
4-Bromofluorobenzene (S)	116	%.	79-129	1		12/31/18 18:09	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%.	80-120	1		12/31/18 18:09	17060-07-0	
Dibromofluoromethane (S)	96	%.	80-120	1		12/31/18 18:09	1868-53-7	

Sample: MW-17 **Lab ID: 30274940017** Collected: 12/18/18 13:20 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	**816**	ug/L	50.0	10		12/29/18 01:05	71-43-2	
Ethylbenzene	**489**	ug/L	50.0	10		12/29/18 01:05	100-41-4	
Isopropylbenzene (Cumene)	**14.9**	ug/L	5.0	1		12/29/18 00:39	98-82-8	
Methyl-tert-butyl ether	**41.5**	ug/L	5.0	1		12/29/18 00:39	1634-04-4	
Naphthalene	**50.4**	ug/L	5.0	1		12/29/18 00:39	91-20-3	
Toluene	ND	ug/L	5.0	1		12/29/18 00:39	108-88-3	
1,2,4-Trimethylbenzene	**156**	ug/L	1.0	1		12/29/18 00:39	95-63-6	
1,3,5-Trimethylbenzene	**58.8**	ug/L	1.0	1		12/29/18 00:39	108-67-8	
Xylene (Total)	**559**	ug/L	5.0	1		12/29/18 00:39	1330-20-7	
Surrogates								
Toluene-d8 (S)	89	%.	80-120	1		12/29/18 00:39	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	79-129	1		12/29/18 00:39	460-00-4	
1,2-Dichloroethane-d4 (S)	114	%.	80-120	1		12/29/18 00:39	17060-07-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: Ho: Seneca
Pace Project No.: 30274940

Sample: MW-17 **Lab ID: 30274940017** Collected: 12/18/18 13:20 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Surrogates								
Dibromofluoromethane (S)	109	%.	80-120	1		12/29/18 00:39	1868-53-7	

Sample: MW-18 **Lab ID: 30274940018** Collected: 12/18/18 14:00 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/30/18 09:09	71-43-2	
Ethylbenzene	**43.2**	ug/L	5.0	1		12/30/18 09:09	100-41-4	
Isopropylbenzene (Cumene)	**18.1**	ug/L	5.0	1		12/30/18 09:09	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/30/18 09:09	1634-04-4	L2
Naphthalene	**35.5**	ug/L	5.0	1		12/30/18 09:09	91-20-3	
Toluene	ND	ug/L	5.0	1		12/30/18 09:09	108-88-3	CL
1,2,4-Trimethylbenzene	**89.0**	ug/L	1.0	1		12/30/18 09:09	95-63-6	
1,3,5-Trimethylbenzene	**36.2**	ug/L	1.0	1		12/30/18 09:09	108-67-8	
Xylene (Total)	**10.0**	ug/L	5.0	1		12/30/18 09:09	1330-20-7	
Surrogates								
Toluene-d8 (S)	104	%.	80-120	1		12/30/18 09:09	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	79-129	1		12/30/18 09:09	460-00-4	
1,2-Dichloroethane-d4 (S)	83	%.	80-120	1		12/30/18 09:09	17060-07-0	
Dibromofluoromethane (S)	92	%.	80-120	1		12/30/18 09:09	1868-53-7	

Sample: MW-19 **Lab ID: 30274940019** Collected: 12/18/18 10:20 Received: 12/19/18 15:24 Matrix: Water
Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 23:07	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 23:07	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 23:07	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		12/28/18 23:07	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		12/28/18 23:07	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 23:07	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 23:07	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 23:07	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/28/18 23:07	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%.	80-120	1		12/28/18 23:07	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	79-129	1		12/28/18 23:07	460-00-4	
1,2-Dichloroethane-d4 (S)	83	%.	80-120	1		12/28/18 23:07	17060-07-0	
Dibromofluoromethane (S)	94	%.	80-120	1		12/28/18 23:07	1868-53-7	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Ho: Seneca
Pace Project No.: 30274940

Sample: MW-20 **Lab ID: 30274940020** Collected: 12/17/18 13:40 Received: 12/19/18 15:24 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV	Analytical Method: EPA 8260B							
Benzene	ND	ug/L	5.0	1		12/28/18 07:25	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		12/28/18 07:25	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		12/28/18 07:25	98-82-8	
Methyl-tert-butyl ether	**155**	ug/L	5.0	1		12/28/18 07:25	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		12/28/18 07:25	91-20-3	
Toluene	ND	ug/L	5.0	1		12/28/18 07:25	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 07:25	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/28/18 07:25	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		12/28/18 07:25	1330-20-7	
Surrogates								
Toluene-d8 (S)	105	%.	80-120	1		12/28/18 07:25	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	79-129	1		12/28/18 07:25	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%.	80-120	1		12/28/18 07:25	17060-07-0	
Dibromofluoromethane (S)	89	%.	80-120	1		12/28/18 07:25	1868-53-7	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

QC Batch: 325346 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 30274940001, 30274940006, 30274940007, 30274940008, 30274940009, 30274940010, 30274940011, 30274940015, 30274940020

METHOD BLANK: 1585498 Matrix: Water
Associated Lab Samples: 30274940001, 30274940006, 30274940007, 30274940008, 30274940009, 30274940010, 30274940011, 30274940015, 30274940020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	12/28/18 01:41	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	12/28/18 01:41	
Benzene	ug/L	ND	1.0	12/28/18 01:41	
Ethylbenzene	ug/L	ND	1.0	12/28/18 01:41	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	12/28/18 01:41	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/28/18 01:41	
Naphthalene	ug/L	ND	2.0	12/28/18 01:41	
Toluene	ug/L	ND	1.0	12/28/18 01:41	
Xylene (Total)	ug/L	ND	3.0	12/28/18 01:41	
1,2-Dichloroethane-d4 (S)	%.	99	80-120	12/28/18 01:41	
4-Bromofluorobenzene (S)	%.	90	79-129	12/28/18 01:41	
Dibromofluoromethane (S)	%.	91	80-120	12/28/18 01:41	
Toluene-d8 (S)	%.	93	80-120	12/28/18 01:41	

LABORATORY CONTROL SAMPLE: 1585499

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.7	99	70-130	
1,3,5-Trimethylbenzene	ug/L	20	20.0	100	70-130	
Benzene	ug/L	20	19.4	97	70-130	
Ethylbenzene	ug/L	20	19.3	96	70-130	
Isopropylbenzene (Cumene)	ug/L	20	20.4	102	70-130	
Methyl-tert-butyl ether	ug/L	20	17.0	85	70-130	
Naphthalene	ug/L	20	22.0	110	70-130	
Toluene	ug/L	20	20.2	101	70-130	
Xylene (Total)	ug/L	60	59.7	99	70-130	
1,2-Dichloroethane-d4 (S)	%.			89	80-120	
4-Bromofluorobenzene (S)	%.			96	79-129	
Dibromofluoromethane (S)	%.			94	80-120	
Toluene-d8 (S)	%.			103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1585802 1585803

Parameter	Units	30274940008 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	21.4	19.4	107	97	75-125	10	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	20.9	19.6	105	98	76-121	6	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1585802 1585803

Parameter	Units	30274940008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	ND	20	20	17.9	19.3	90	97	67-121	8	
Ethylbenzene	ug/L	ND	20	20	19.2	19.0	96	95	70-127	1	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	21.2	20.1	106	101	80-122	6	
Methyl-tert-butyl ether	ug/L	144	20	20	164	129	98	-76	79-135	24	ML
Naphthalene	ug/L	ND	20	20	21.2	20.0	106	100	62-131	6	
Toluene	ug/L	ND	20	20	20.6	19.3	103	96	77-125	7	
Xylene (Total)	ug/L	ND	60	60	59.5	57.7	99	96	69-128	3	
1,2-Dichloroethane-d4 (S)	%.						89	83	80-120		
4-Bromofluorobenzene (S)	%.						97	99	79-129		
Dibromofluoromethane (S)	%.						77	92	80-120		SR
Toluene-d8 (S)	%.						95	99	80-120		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

QC Batch: 325347 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 30274940002, 30274940012

METHOD BLANK: 1585500 Matrix: Water
Associated Lab Samples: 30274940002, 30274940012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	12/28/18 01:54	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	12/28/18 01:54	
Benzene	ug/L	ND	1.0	12/28/18 01:54	
Ethylbenzene	ug/L	ND	1.0	12/28/18 01:54	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	12/28/18 01:54	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/28/18 01:54	
Naphthalene	ug/L	ND	2.0	12/28/18 01:54	
Toluene	ug/L	ND	1.0	12/28/18 01:54	
Xylene (Total)	ug/L	ND	3.0	12/28/18 01:54	
1,2-Dichloroethane-d4 (S)	%.	89	80-120	12/28/18 01:54	
4-Bromofluorobenzene (S)	%.	97	79-129	12/28/18 01:54	
Dibromofluoromethane (S)	%.	93	80-120	12/28/18 01:54	
Toluene-d8 (S)	%.	107	80-120	12/28/18 01:54	

LABORATORY CONTROL SAMPLE: 1585501

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.2	96	70-130	
1,3,5-Trimethylbenzene	ug/L	20	18.0	90	70-130	
Benzene	ug/L	20	18.7	93	70-130	
Ethylbenzene	ug/L	20	18.6	93	70-130	
Isopropylbenzene (Cumene)	ug/L	20	19.0	95	70-130	
Methyl-tert-butyl ether	ug/L	20	17.0	85	70-130	
Naphthalene	ug/L	20	21.5	107	70-130	
Toluene	ug/L	20	19.1	96	70-130	
Xylene (Total)	ug/L	60	55.8	93	70-130	
1,2-Dichloroethane-d4 (S)	%.			84	80-120	
4-Bromofluorobenzene (S)	%.			97	79-129	
Dibromofluoromethane (S)	%.			92	80-120	
Toluene-d8 (S)	%.			104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1585804 1585805

Parameter	Units	30275119015 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	19.4	19.8	97	99	75-125	2	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	18.6	18.4	93	92	76-121	1	
Benzene	ug/L	ND	20	20	19.3	19.3	96	97	67-121	0	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1585804 1585805

Parameter	Units	30275119015 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	19.4	20.0	97	100	70-127	3	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	19.4	19.6	97	98	80-122	1	
Methyl-tert-butyl ether	ug/L	ND	20	20	13.1	13.6	66	68	79-135	4	ML
Naphthalene	ug/L	ND	20	20	18.4	18.9	92	95	62-131	3	
Toluene	ug/L	ND	20	20	19.7	20.5	98	102	77-125	4	
Xylene (Total)	ug/L	ND	60	60	57.5	59.4	96	99	69-128	3	
1,2-Dichloroethane-d4 (S)	%.						86	85	80-120		
4-Bromofluorobenzene (S)	%.						98	97	79-129		
Dibromofluoromethane (S)	%.						93	93	80-120		
Toluene-d8 (S)	%.						107	107	80-120		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

QC Batch: 325502 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 30274940003, 30274940004, 30274940005, 30274940013, 30274940014, 30274940019

METHOD BLANK: 1586051 Matrix: Water
Associated Lab Samples: 30274940003, 30274940004, 30274940005, 30274940013, 30274940014, 30274940019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	12/28/18 17:49	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	12/28/18 17:49	
Benzene	ug/L	ND	1.0	12/28/18 17:49	
Ethylbenzene	ug/L	ND	1.0	12/28/18 17:49	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	12/28/18 17:49	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/28/18 17:49	
Naphthalene	ug/L	ND	2.0	12/28/18 17:49	
Toluene	ug/L	ND	1.0	12/28/18 17:49	
Xylene (Total)	ug/L	ND	3.0	12/28/18 17:49	
1,2-Dichloroethane-d4 (S)	%.	89	80-120	12/28/18 17:49	
4-Bromofluorobenzene (S)	%.	104	79-129	12/28/18 17:49	
Dibromofluoromethane (S)	%.	93	80-120	12/28/18 17:49	
Toluene-d8 (S)	%.	104	80-120	12/28/18 17:49	

LABORATORY CONTROL SAMPLE: 1586052

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.4	97	70-130	
1,3,5-Trimethylbenzene	ug/L	20	20.0	100	70-130	
Benzene	ug/L	20	19.1	95	70-130	
Ethylbenzene	ug/L	20	19.4	97	70-130	
Isopropylbenzene (Cumene)	ug/L	20	20.0	100	70-130	
Methyl-tert-butyl ether	ug/L	20	16.0	80	70-130	
Naphthalene	ug/L	20	22.3	112	70-130	
Toluene	ug/L	20	19.4	97	70-130	
Xylene (Total)	ug/L	60	58.7	98	70-130	
1,2-Dichloroethane-d4 (S)	%.			86	80-120	
4-Bromofluorobenzene (S)	%.			98	79-129	
Dibromofluoromethane (S)	%.			91	80-120	
Toluene-d8 (S)	%.			98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1586089 1586090

Parameter	Units	30274815001 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	21.8	21.0	109	105	75-125	4	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	19.6	20.8	98	104	76-121	6	
Benzene	ug/L	ND	20	20	20.2	21.3	101	107	67-121	6	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1586089 1586090

Parameter	Units	30274815001 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	18.8	20.7	94	103	70-127	9	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	19.5	20.7	98	104	80-122	6	
Methyl-tert-butyl ether	ug/L	ND	20	20	15.4	13.6	77	68	79-135	13	ML
Naphthalene	ug/L	ND	20	20	20.5	22.0	103	110	62-131	7	
Toluene	ug/L	ND	20	20	19.7	20.2	98	101	77-125	3	
Xylene (Total)	ug/L	ND	60	60	59.0	61.4	98	102	69-128	4	
1,2-Dichloroethane-d4 (S)	%.						85	85	80-120		
4-Bromofluorobenzene (S)	%.						98	100	79-129		
Dibromofluoromethane (S)	%.						91	84	80-120		
Toluene-d8 (S)	%.						100	101	80-120		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

QC Batch: 325504
QC Batch Method: EPA 8260B
Analysis Method: EPA 8260B
Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 30274940017

METHOD BLANK: 1586059
Matrix: Water
Associated Lab Samples: 30274940017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	12/28/18 18:02	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	12/28/18 18:02	
Benzene	ug/L	ND	1.0	12/28/18 18:02	
Ethylbenzene	ug/L	ND	1.0	12/28/18 18:02	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	12/28/18 18:02	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/28/18 18:02	
Naphthalene	ug/L	ND	2.0	12/28/18 18:02	
Toluene	ug/L	ND	1.0	12/28/18 18:02	
Xylene (Total)	ug/L	ND	3.0	12/28/18 18:02	
1,2-Dichloroethane-d4 (S)	%.	88	80-120	12/28/18 18:02	
4-Bromofluorobenzene (S)	%.	117	79-129	12/28/18 18:02	
Dibromofluoromethane (S)	%.	90	80-120	12/28/18 18:02	
Toluene-d8 (S)	%.	105	80-120	12/28/18 18:02	

LABORATORY CONTROL SAMPLE: 1586060

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.0	95	70-130	
1,3,5-Trimethylbenzene	ug/L	20	17.8	89	70-130	
Benzene	ug/L	20	18.2	91	70-130	
Ethylbenzene	ug/L	20	19.3	96	70-130	
Isopropylbenzene (Cumene)	ug/L	20	19.0	95	70-130	
Methyl-tert-butyl ether	ug/L	20	16.1	81	70-130	
Naphthalene	ug/L	20	21.0	105	70-130	
Toluene	ug/L	20	19.0	95	70-130	
Xylene (Total)	ug/L	60	60.4	101	70-130	
1,2-Dichloroethane-d4 (S)	%.			85	80-120	
4-Bromofluorobenzene (S)	%.			92	79-129	
Dibromofluoromethane (S)	%.			91	80-120	
Toluene-d8 (S)	%.			106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1586091 1586092

Parameter	Units	30274954002 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	19.0	19.3	95	97	75-125	1	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	17.3	18.1	87	91	76-121	4	
Benzene	ug/L	ND	20	20	18.8	17.6	94	88	67-121	6	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1586091 1586092

Parameter	Units	30274954002 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	19.8	18.8	99	94	70-127	5	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	20.8	19.3	104	96	80-122	8	
Methyl-tert-butyl ether	ug/L	2.0	20	20	16.6	18.4	73	82	79-135	11	ML
Naphthalene	ug/L	ND	20	20	20.1	18.5	100	92	62-131	8	
Toluene	ug/L	ND	20	20	19.4	19.3	97	97	77-125	0	
Xylene (Total)	ug/L	ND	60	60	56.3	55.9	94	93	69-128	1	
1,2-Dichloroethane-d4 (S)	%.						87	84	80-120		
4-Bromofluorobenzene (S)	%.						103	96	79-129		
Dibromofluoromethane (S)	%.						93	83	80-120		
Toluene-d8 (S)	%.						108	105	80-120		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

QC Batch: 325545 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 30274940018

METHOD BLANK: 1586427 Matrix: Water
Associated Lab Samples: 30274940018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	12/30/18 07:54	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	12/30/18 07:54	
Benzene	ug/L	ND	1.0	12/30/18 07:54	
Ethylbenzene	ug/L	ND	1.0	12/30/18 07:54	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	12/30/18 07:54	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/30/18 07:54	
Naphthalene	ug/L	ND	2.0	12/30/18 07:54	
Toluene	ug/L	ND	1.0	12/30/18 07:54	CL
Xylene (Total)	ug/L	ND	3.0	12/30/18 07:54	
1,2-Dichloroethane-d4 (S)	%.	64	80-120	12/30/18 07:54	SR
4-Bromofluorobenzene (S)	%.	98	79-129	12/30/18 07:54	
Dibromofluoromethane (S)	%.	62	80-120	12/30/18 07:54	SR
Toluene-d8 (S)	%.	107	80-120	12/30/18 07:54	

LABORATORY CONTROL SAMPLE: 1586428

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	21.3	106	70-130	
1,3,5-Trimethylbenzene	ug/L	20	21.5	108	70-130	
Benzene	ug/L	20	20.6	103	70-130	
Ethylbenzene	ug/L	20	21.8	109	70-130	
Isopropylbenzene (Cumene)	ug/L	20	21.7	109	70-130	
Methyl-tert-butyl ether	ug/L	20	10.3	51	70-130	L2
Naphthalene	ug/L	20	22.9	114	70-130	
Toluene	ug/L	20	21.4	107	70-130	CL
Xylene (Total)	ug/L	60	65.6	109	70-130	
1,2-Dichloroethane-d4 (S)	%.			80	80-120	
4-Bromofluorobenzene (S)	%.			98	79-129	
Dibromofluoromethane (S)	%.			93	80-120	
Toluene-d8 (S)	%.			102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1586813 1586814

Parameter	Units	30274951006 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	27.1	22.9	136	115	75-125	17	MH
1,3,5-Trimethylbenzene	ug/L	ND	20	20	21.8	20.7	109	103	76-121	5	
Benzene	ug/L	ND	20	20	20.9	19.2	104	96	67-121	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1586813 1586814

Parameter	Units	30274951006 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	21.6	21.4	108	107	70-127	1	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	21.5	22.3	107	111	80-122	4	
Methyl-tert-butyl ether	ug/L	ND	20	20	10.1	10.1	50	51	79-135	1	ML
Naphthalene	ug/L	ND	20	20	25.0	20.7	125	103	62-131	19	
Toluene	ug/L	ND	20	20	22.9	22.7	114	113	77-125	1	CL
Xylene (Total)	ug/L	ND	60	60	71.5	65.6	119	109	69-128	9	
1,2-Dichloroethane-d4 (S)	%.						89	84	80-120		
4-Bromofluorobenzene (S)	%.						100	103	79-129		
Dibromofluoromethane (S)	%.						89	88	80-120		
Toluene-d8 (S)	%.						100	111	80-120		

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

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

QC Batch: 325638 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 30274940016

METHOD BLANK: 1586714 Matrix: Water
Associated Lab Samples: 30274940016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	12/31/18 15:46	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	12/31/18 15:46	
Benzene	ug/L	ND	1.0	12/31/18 15:46	
Ethylbenzene	ug/L	ND	1.0	12/31/18 15:46	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	12/31/18 15:46	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/31/18 15:46	
Naphthalene	ug/L	ND	2.0	12/31/18 15:46	
Toluene	ug/L	ND	1.0	12/31/18 15:46	
Xylene (Total)	ug/L	ND	3.0	12/31/18 15:46	
1,2-Dichloroethane-d4 (S)	%.	116	80-120	12/31/18 15:46	
4-Bromofluorobenzene (S)	%.	107	79-129	12/31/18 15:46	
Dibromofluoromethane (S)	%.	96	80-120	12/31/18 15:46	
Toluene-d8 (S)	%.	101	80-120	12/31/18 15:46	

LABORATORY CONTROL SAMPLE: 1586715

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	21.2	106	70-130	
1,3,5-Trimethylbenzene	ug/L	20	21.1	106	70-130	
Benzene	ug/L	20	22.6	113	70-130	
Ethylbenzene	ug/L	20	19.7	98	70-130	
Isopropylbenzene (Cumene)	ug/L	20	21.6	108	70-130	
Methyl-tert-butyl ether	ug/L	20	29.4	147	70-130	L1
Naphthalene	ug/L	20	20.2	101	70-130	
Toluene	ug/L	20	20.5	103	70-130	
Xylene (Total)	ug/L	60	60.8	101	70-130	
1,2-Dichloroethane-d4 (S)	%.			111	80-120	
4-Bromofluorobenzene (S)	%.			103	79-129	
Dibromofluoromethane (S)	%.			145	80-120	S0
Toluene-d8 (S)	%.			97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1586811 1586812

Parameter	Units	30275112001 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	23.4	22.8	117	114	75-125	3	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	22.2	22.7	111	114	76-121	3	
Benzene	ug/L	ND	20	20	20.3	19.9	102	99	67-121	2	

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

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Ho: Seneca
Pace Project No.: 30274940

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1586811 1586812

Parameter	Units	30275112001 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	21.9	20.1	109	101	70-127	9	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	23.1	29.6	116	148	80-122	25	MH
Methyl-tert-butyl ether	ug/L	ND	20	20	10.1	11.7	50	58	79-135	15	ML
Naphthalene	ug/L	ND	20	20	21.5	26.6	108	133	62-131	21	MH
Toluene	ug/L	ND	20	20	22.5	20.7	112	104	77-125	8	
Xylene (Total)	ug/L	ND	60	60	63.7	60.7	106	101	69-128	5	
1,2-Dichloroethane-d4 (S)	%.						93	87	80-120		
4-Bromofluorobenzene (S)	%.						104	138	79-129		ST
Dibromofluoromethane (S)	%.						89	89	80-120		
Toluene-d8 (S)	%.						104	103	80-120		

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

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: Ho: Seneca
Pace Project No.: 30274940

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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

CL	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased low.
L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
MH	Matrix spike recovery and/or matrix spike duplicate recovery was above laboratory control limits. Result may be biased high.
ML	Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.
S0	Surrogate recovery outside laboratory control limits.
S2	Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).
SR	Surrogate recovery was below laboratory control limits. Results may be biased low.
ST	Surrogate recovery was above laboratory control limits. Results may be biased high.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ho: Seneca
Pace Project No.: 30274940

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30274940001	**MW-1**	EPA 8260B	325346		
30274940002	**MW-2**	EPA 8260B	325347		
30274940003	**MW-3**	EPA 8260B	325502		
30274940004	**MW-4**	EPA 8260B	325502		
30274940005	**MW-5**	EPA 8260B	325502		
30274940006	**MW-6**	EPA 8260B	325346		
30274940007	**MW-7**	EPA 8260B	325346		
30274940008	**MW-8**	EPA 8260B	325346		
30274940009	**MW-9**	EPA 8260B	325346		
30274940010	**MW-10**	EPA 8260B	325346		
30274940011	**MW-11**	EPA 8260B	325346		
30274940012	**MW-12**	EPA 8260B	325347		
30274940013	**MW-13**	EPA 8260B	325502		
30274940014	**MW-14**	EPA 8260B	325502		
30274940015	**MW-15**	EPA 8260B	325346		
30274940016	**MW-16**	EPA 8260B	325638		
30274940017	**MW-17**	EPA 8260B	325504		
30274940018	**MW-18**	EPA 8260B	325545		
30274940019	**MW-19**	EPA 8260B	325502		
30274940020	**MW-20**	EPA 8260B	325346		

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CHAIN-OF-C

The Chain-of-Custody is

WO# : 30274940

30274940

Page: 1 of 2

2261343

Section A Required Client Information:

Company:	Cribbs & Associates, Inc
Address:	PO Box 44
	Delmont PA 15626
Email To:	GCribbs@Cribbsandassociates.com
Phone: 724-454-2310	Fax:
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Gary Cribbs
Copy To:	Robert Bottemen
Purchase Order No.:	
Project Name:	HO: Seneca
Project Number:	

Invoice Information:

Attention:	Gary Cribbs
Company Name:	Cribbs and Associates, Inc
Address:	PO Box 44 Delmont PA 15626
Pace Quote Reference:	
Pace Project Manager:	Samantha Beyard
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: PA

Section D Required Client Information

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test ↓ SEE BELOW	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G			12/17/18	1340		3				3						X		001
2	MW-2	WT	G			12/18/18	1210		3				3						X		002
3	MW-3	WT	G			12/18/18	1300		3				3						X		003
4	MW-4	WT	G			12/18/18	1400		3				3						X		004
5	MW-5	WT	G			12/18/18	1435		3				3						X		005
6	MW-6	WT	G			12/17/18	1430		3				3						X		006
7	MW-7	WT	G			12/17/18	1440		3				3						X		007
8	MW-8	WT	G			12/17/18	1335		3				3						X		008
9	MW-9	WT	G			12/17/18	1140		3				3						X		009
10	MW-10	WT	G			12/17/18	1235		3				3						X		010
11	MW-11	WT	G			12/17/18	1135		3				3						X		011
12	MW-12	WT	G			12/18/18	1120		3				3						X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Analyze all samples for PADEP NEW SHORTLIST for UNLEADED GASOLINE	Jared Thorn Cribbs & Assoc	12/19/18	1524		12/19/18	1524	2.9 / 4 / N / Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jared Thorn

SIGNATURE of SAMPLER: Jared Thorn DATE Signed (MM/DD/YY): 12/18/18

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
2.9	Y	N	Y

ORIGINAL

*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.

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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.

30274940

Page: 2 of 2

2261344

Section A Required Client Information:

Company: Cribbs & Associates Inc
Address: PO Box 44 A
Oelmont PA 15626
Email To: GCribbs@Cribbsandassociates.com
Phone: 724-454-2310 Fax:
Requested Due Date/TAT: Standard

Section B Required Project Information:

Report To: Gary Cribbs
Copy To: Robert Botterman
Purchase Order No.:
Project Name: HO: Seneca
Project Number:

Section C Invoice Information:

Attention: Gary Cribbs
Company Name: Cribbs & Associates.com
Address: PO Box 44 Oelmont PA 15626
Pace Quote Reference:
Pace Project Manager: Samantha Bayard
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER

Site Location STATE: PA

Section D Required Client Information

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: SEE BELOW	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-13	WT	G			12/18/18	1010		3				3					XX		013
2	MW-14	WT	G			12/18/18	1100		3				3					XX		014
3	MW-15	WT	G			12/18/18	1240		3				3					XX		015
4	MW-16	WT	G			12/18/18	1220		3				3					XX		016
5	MW-17	WT	G			12/18/18	1320		3				3					XX		017
6	MW-18	WT	G			12/18/18	1400		3				3					XX		018
7	MW-19	WT	G			12/18/18	1020		3				3					XX		019
8	MW-20	WT	G			12/17/18	1340		3				3					X		020
9																				
10																				
11																				
12																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Analyze all samples for PADEP NEW SHORTLIST for UNLEADED GASOLINE	Jared Thorn Cribbs & Asso	12/19/18	1524		12/19/18	1524	2.9	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jared Thorn

SIGNATURE of SAMPLER: Jared Thorn DATE Signed (MM/DD/YY): 12/18/18

ORIGINAL

*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.

F-ALL-C-010-rev.00, 09Nov2017

Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name: Cripps

Project # 30274940

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

Label HKL

LIMS Login BLA

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 2.9 °C Correction Factor: +0.0 °C Final Temp: 2.9 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# N/A / Date and Initials of person examining contents: HKL 12/19/18
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: -Includes date/time/ID Matrix: WT	✓			5.
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: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics			✓	16. Initial when completed HKL Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):		✓		17.
Trip Blank Present:		✓		18.
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.