

REMEDIAL ACTION PLAN

**HERR FOODS, INC. MANUFACTURING FACILITY
273 OLD BALTIMORE PIKE
WEST NOTTINGHAM TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA
FACILITY ID No. 15-24418**

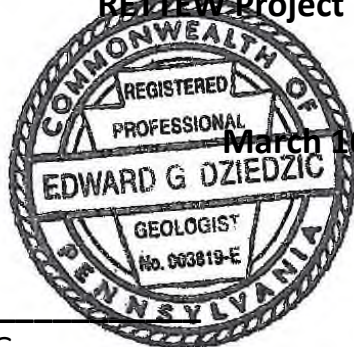
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RETTEW Project No. 101722001



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1.0 INTRODUCTION

This Remedial Action Plan (RAP) has been prepared by RETTEW Associates, Inc. (RETTEW) on behalf of Herr Foods, Inc. (Herr's), to present proposed methods to remediate a release of petroleum from a regulated underground storage tank (UST) system at Herr's manufacturing facility (the Site), located at 273 Old Baltimore Pike in West Nottingham Township, Chester County, Pennsylvania (Facility ID No. 15-24418). A Site Location Map is included as **Figure 1**.

This report was prepared in accordance with the corrective action regulations defined in Title 25 Pennsylvania Code Chapter 245 titled *Administration of the Storage Tank and Spill Prevention Program* and the requirements of the Pennsylvania Land Recycling and Remediation Standards Act (Act 2). Herr's owns the Site, which is currently operating as a snack food manufacturing facility. Remediation will focus on a release of unleaded gasoline and diesel that was discovered in 1997 during UST closure activities at the facility truck garage on the southern portion of the Site.

The proposed remedial action described herein is intended to treat the source of impacts remaining from the 1997 release, and reduce groundwater concentrations of regulated substances to attain the Act 2 Site-Specific Standard for groundwater at the groundwater/surface water interface and meet applicable surface water quality criteria.

2.0 SITE DESCRIPTION AND BACKGROUND

2.1 SITE DESCRIPTION

Herr's manufacturing facility is a 13.8-acre parcel owned and operated by Herr's and historically used for snack food manufacturing. The truck garage is located on the southern portion of the parcel as shown on **Figure 2**. The truck garage was built in 1978 and is currently used for the maintenance of Herr's fleet vehicles. The area surrounding the truck garage is covered with impervious asphalt paving and is used for parking Herr's fleet trucks and trailers. The truck garage is connected to an off-site water supply well operated by Herr's that serves the Site and surrounding properties owned by Herr's; however, the truck garage was previously served by a decommissioned water supply well located on the Site. The former supply well is disconnected from the truck garage and is no longer used. A Site Plan showing the truck garage and the former supply well is included as **Figure 3**.

Two regulated 10,000-gallon USTs [Pennsylvania Department of Environmental Protection (PADEP) Facility ID No. 15-24418] are located at the truck garage containing gasoline and diesel used for fueling Herr's fleet vehicles. These tanks were installed in June 1997 and replaced five former USTs that were removed from service between May 28 and June 4, 1997. Current and former UST locations are shown on **Figure 3**.

A release of petroleum was discovered at the truck garage during UST system closure activities in 1997. During UST closure, holes were noted in two USTs containing diesel fuel and unleaded gasoline. Approximately 1,200 tons of petroleum impacted soil and fill material were removed and disposed; however, complete source removal was not feasible due to space constraints and concerns regarding the structural integrity of the truck garage. A UST Closure Report was prepared in July 1997, which indicated concentrations of methyl tert-butyl ether (MTBE) exceeding the unsaturated soil standard/action level in three soil samples. The current UST system was installed in the excavation following UST closure activities, and no further assessment or remediation was conducted at that time.

On July 2, 1997, a Notification of Reportable Release was submitted to the PADEP. The notification indicated that contamination was confirmed at the Site and was described as product stained or product saturated soil, and free product or sheen on ponded water. It was noted that ponded water was described as runoff that collected in the UST excavation and was not characterized as groundwater. In correspondence dated November 17, 1997, PADEP indicated that they accepted the Closure Report, and that “no further action is required regarding the closure of the tanks”.

Phase I and Phase II Environmental Site Assessments (ESAs) were conducted at the Site by RETTEW between April and October 2014, which identified several recognized environmental conditions (RECs) associated with both past and current land uses. The Phase I ESA identified RECs at the truck garage, and a subsequent Phase II ESA was conducted to investigate soil quality at each REC and compare results to applicable remediation standards. Soil borings located downgradient of the UST system revealed the presence of petroleum impacted soil with regulated substances (i.e., benzene and naphthalene) exceeding the Act 2 Statewide Health Standards. The release was reported to the PADEP, and corrective action was initiated by Herr’s.

2.2 HYDROGEOLOGIC SETTING

According to publications of the Pennsylvania Bureau of Topographic and Geologic Survey¹, the Site is located in the Piedmont Upland Section of the Piedmont Physiographic Province of Pennsylvania, and is underlain by complexly folded and faulted schist, gneiss, quartzite and some saprolite. Local topography is characterized by broad, rounded to flat-topped hills and shallow valleys. According to the United States Geological Survey (USGS) 7.5-minute Rising Sun Quadrangle (**Figure 1**), the truck garage is situated at an approximate elevation of 510 feet above mean sea level (AMSL). Surface topography slopes gently to the southeast. The headwater of an unnamed tributary (UNT) to North East Creek is located approximately 300 feet east of the truck garage and flows generally to the southeast.

The geology mapped by the Chester County Water Resources Authority, in cooperation with the USGS², indicates that the Site is underlain by the Wissahickon Schist of the Glenarm Supergroup (see **Figure 4**). The Wissahickon Schist is described as light to medium gray schist and gneiss. The rocks of the Glenarm Supergroup surround massifs of older pre-Cambrian felsic and ultramafic gneiss basement rock. Ultramafic rock (i.e., serpentinite) associated with the Baltimore Mafic Complex is mapped approximately 1,000 feet south of the Site. Geologic strike and structural trend of the Wissahickon Formation is generally oriented to the east-northeast.

In the area of the Site, the fractured bedrock aquifers are characterized as crystalline rocks (Wissahickon Schist³). In the crystalline rocks, groundwater moves through the granular primary porosity of the weathered saprolite to a network of interconnected secondary fractures and joints in the bedrock aquifer. The groundwater flow systems are local and discharge to streams. Groundwater flows from areas of higher elevation to adjacent streams and flow paths tend to be short. Groundwater basins and surface water basins tend to coincide. Crystalline rock aquifers are generally under water-table (unconfined) conditions and the water table generally mimics surface topography; however, semi-confined conditions may be present locally.

¹ W.D. Sevon, 2000, Map 13, Physiographic Provinces of Pennsylvania, Pennsylvania Bureau of Topographic and Geologic Survey, Harrisburg, Pennsylvania.

² Sloto, R., 1994, Geology, Hydrology, and Ground-Water Quality of Chester County, Pennsylvania, Chester County Water Resources Authority, Water Resource Report 2, West Chester, Pennsylvania.

In the Piedmont Upland, the soils (regolith) are composed of granular to clayey soil, saprolite, and decomposed bedrock³. The regolith allows the infiltration of precipitation and is capable of storing large quantities of water in the intergranular pore spaces. Water is then slowly released to the underlying fractured bedrock aquifer. Generally, the porosity of the regolith exceeds the porosity of the fractured bedrock aquifer. The direction and rate of groundwater flow within the regolith can be affected by the degree of bedrock weathering, mineral composition of the parent bedrock, orientation of mineral grains (mica), the presence of shear zones, quartz veins and fractures.

The UNT to North East Creek is classified as an intermittent stream according to the USGS National Hydrography Dataset (NHD). Intermittent streams have flowing water during the wet season (i.e., winter and spring), but are normally dry during hot summer months. Intermittent streams do not have continuous flowing water year-round. The headwater of the UNT is located approximately 300 feet east of the truck garage adjacent to a railroad right-of-way (**Figure 3**) and is characterized as an area of seasonal groundwater discharge. During the wet season, standing water forms in this area and flows to a culvert under the railroad, and continues to flow as surface water to the south and southeast toward North East Creek, located 6,700 feet southeast of the Site.

2.3 SITE CHARACTERIZATION SUMMARY

Site characterization was performed in iterative phases at the truck garage between February 2015 and April 2016 to delineate soil and groundwater impacts resulting from the 1997 release. The results were presented in a Revised Site Characterization Report (SCR) dated June 9, 2016 and subsequently approved by the PADEP on September 1, 2016.

Site characterization included the installation of 25 soil borings (SB-6 through SB-30) to delineate soil quality. Soil quality data collected during Site characterization is presented in **Table 1** and **Table 2**. Thirteen groundwater monitoring wells (MW-1 through MW-13) were installed to define the hydraulic gradient. Quarterly groundwater monitoring was initiated at the truck garage in March 2015 to delineate groundwater quality. Groundwater quality data collected during site characterization is presented in **Table 3**. Site characterization has delineated the extent of soil and groundwater impacts resulting from the 1997 release as shown on **Figure 5**. Key findings of the Site characterization are summarized below.

- The truck garage is underlain by micaceous schist bedrock and approximately 60 feet of saprolite comprised of micaceous silt and sand that forms an unconsolidated, unconfined aquifer.
- The area of maximum soil impacts (benzene concentrations greater than 500 micrograms per kilogram, or $\mu\text{g}/\text{kg}$) is delineated and located directly downgradient of the UST system at depths ranging from seven to 13 feet below ground surface (bgs).
- Soil impacted by the release is below the seasonally high water table (two feet bgs) and within the zone of groundwater saturation.
- Separate phase liquid (SPL) has been observed in MW-4 within the area of maximum soil impacts. The occurrence of SPL at MW-4 coincides with the highest concentrations of benzene, toluene, ethylbenzene, and total xylenes (BTEX) in soil (SB-7). The SPL thickness is approximately 0.02 feet, and the recoverability of the SPL is negligible. Fingerprint analysis characterized the SPL as unweathered gasoline.
- All of the regulated substances monitored in groundwater (except isopropylbenzene) have been detected at concentrations exceeding their Act 2 non-residential Statewide Health Standards.

³ D.J. Low, D.J. Hippe and D. Yannacci, 2002, Geohydrology of Southeastern Pennsylvania, United States Geological Survey, Water-Resources Investigations Report 00-4166.

Groundwater quality meets the Statewide Health Standard Medium Specific Concentrations (MSCs) at the downgradient parcel boundary (point of compliance, or POC) for all of the PADEP Short List Petroleum Products for unleaded gasoline and diesel except benzene and MTBE.

- Based on local topography, regional drainage patterns and interpreted fracture traces (**Figure 4**), regional groundwater is expected to flow to the east and southeast across the Site toward the UNT to North East Creek, located 150 feet east of the parcel boundary.
- Groundwater discharges to the UNT downgradient of the Site on an adjacent, separate parcel owned by Herr's. Discharging groundwater also supports a wetland, which forms the headwater to the UNT to North East Creek.
- Benzene and MTBE have been detected above Statewide Health Standard MSCs in groundwater at the point of groundwater discharge (MW-11).
- Benzene and MTBE have been detected in surface water and sediment in the northern portion of the wetland area.

The subject Site obtains its water supply from an off-site groundwater source owned and operated by Herr's located 3,100 feet southwest (downgradient) of the truck garage. The area surrounding the Site obtains domestic water supplies from water wells. There are no downgradient water supplies threatened by the release, and Herr's owns and controls land downgradient and adjacent to the Site.

Fate and transport analysis showed that the plume is not stable for benzene in groundwater. The benzene plume is expanding and is not expected to reach steady state for approximately 13 years. The MTBE plume is currently at steady state. Groundwater monitoring data shows that there is some evidence of natural attenuation and degradation of petroleum substances in groundwater; however, fate and transport modelling of benzene and MTBE suggests that degradation rates are low.

Fate and transport modeling was performed in accordance with the procedure for impacts to surface water from diffuse flow of contaminated groundwater detailed in Section IV.A.3. of the Act 2 Technical Guidance Manual (TGM). The analysis also showed that surface water will continue to be impacted by dissolved benzene and MTBE into the future. Steady state discharge of MTBE is not expected to exceed applicable water quality based effluent limits (WQBELs); however, steady state discharge of benzene is expected to exceed the calculated Cancer Risk Level (CRL) water quality criteria for the UNT to North East Creek. Steady state discharge of benzene is expected to meet the calculated Acute Fish Criteria (AFC) and Chronic Fish Criteria (CFC) water quality criteria for fish and aquatic life in the UNT to North East Creek. An ecological risk assessment of the area of plume discharge indicated that no species of concern were identified within the study area, no evidence of stressed vegetation was observed, and no substantial ecological impacts were identified.

2.4 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) was developed as presented in the Revised SCR and further refined for this RAP. As described in **Section 2.1**, the source has been characterized as the former UST system containing gasoline and diesel that was removed in 1997. Although impacted soil and groundwater was removed during UST closure activities, the release impacted shallow groundwater and migrated downgradient with groundwater flow. Site characterization data indicates that groundwater flow and off-site groundwater discharge to surface water are the primary migration pathways for the release. **Table 4** presents a CSM identifying other potential migration and exposure pathways. The extent of soil and groundwater impacts associated with the release in relation to the parcel boundary and existing improvements are shown on **Figure 5**.

Per Act 2, the extent of petroleum impacts resulting from the release within the parcel boundaries, and all areas in close proximity to the impacts necessary for the implementation of remediation action, is defined as the "Site". At the truck garage, the Site includes the area defined by the former UST system, the benzene plume in groundwater, and the UNT to North East Creek as shown on **Figure 5**. The Site represents the area proposed for remediation and attainment of an Act 2 standard.

The media affected by the release include groundwater, saturated soil (below the seasonally-high water table), off-site surface water and indoor air; however, site characterization data collected to date has not revealed a complete exposure pathway for inhalation. Potential exposure pathways include incidental ingestion and dermal contact with groundwater, saturated soil, and off-site surface water. Site characterization data shows that the Act 2 direct contact MSCs are met for saturated soil. In addition, the source area is covered by an impervious surface (asphalt pavement), and the exposure pathway for surface soil is incomplete. It is noted that Herr's does not anticipate a change in land use at the truck garage in the foreseeable future.

Of particular concern is exposure of humans and ecological receptors to off-site surface water. Although no ecological impacts were identified during site characterization, the benzene plume has not reached steady state. Steady state discharge of benzene is expected to meet applicable water quality criteria for fish and aquatic life in the UNT to North East Creek; however, potential exposure remains for ecological receptors such as terrestrial species and habitats within the wetland.

2.5 DATA GAP ANALYSIS

Site characterization data presented in the Revised SCR revealed data gaps with respect to the evaluation of candidate remedial technologies and selection of a remediation strategy for the Site. To the extent possible, these data gaps required additional investigation to improve the evaluation of remedial technologies and the selection of an effective remediation strategy for the Site. The data gaps identified include the following:

Vertical Delineation of Groundwater Quality: Saturated soil contamination was observed from approximately five to 13 feet bgs. The seasonally high groundwater table occurs at approximately two feet bgs, and low permeability zones are apparent at less than eight feet bgs. The vertical delineation of groundwater impacts (i.e., where the majority of the groundwater contamination is located) was unknown.

Characterization of Former Supply Well Impacts: The flow path of dissolved petroleum in groundwater between the source area and the former supply well was unknown. The former supply well is known to be cased to a depth of 74 feet bgs. It is unclear if the casing is leaking, or if vertical hydraulic gradients exist in the former supply well.

Monitored Natural Attenuation (MNA) Data: Groundwater monitoring data shows evidence of natural attenuation and degradation of petroleum substances in groundwater; however, the processes were not clear. Groundwater geochemical parameters, such as sulfate, nitrate, and ferrous iron (MNA parameters), are needed to support an evaluation of the occurrence of natural attenuation at the Site.

The investigation of these data gaps and the findings are described in **Section 3.0**.

3.0 ADDITIONAL SITE CHARACTERIZATION METHODS AND FINDINGS

Additional Site characterization was performed by RETTEW during July and August 2016 to investigate data gaps identified by previous site characterization activities and provide the data needed to refine the recommended remedial strategy for the Site. High resolution, real-time data collection was utilized to optimize remediation design and target soil and groundwater sample locations. The methods and findings of additional Site characterization are described in the following sections.

3.1 MEMBRANE INTERFACE PROBE SURVEY, SOIL SAMPLING AND ANALYSIS

RETTEW retained Cascade Technical Services (Cascade), of Millersville, Maryland to perform a membrane interface probe (MIP) survey to provide high-resolution, real-time data to delineate volatile organic compounds (VOCs) in soil and groundwater in support of remediation design. The MIP tooling was deployed on direct-push drilling equipment and driven at a nominal rate of one foot per minute. The MIP consisted of a soil electrical conductivity (EC) sensor and a membrane that is permeable to gas but impermeable to liquid. The membrane was connected to a port containing a resistive heater coil. As the device was pushed to the required depth, it was heated, volatilizing VOC gasses, and capturing them for analysis. The gas was carried to the surface and injected directly into portable analytical equipment, including the following:

- Flame ionization detector (FID) sensitive to combustible VOCs (i.e., methane, BTEX, etc.);
- Photo ionization detector (PID) sensitive to aromatic VOCs (i.e., BTEX); and
- Electron-capture detector (ECD) and halogen specific detector (XSD), sensitive to halogenated VOCs (i.e., chlorinated solvents).

Ten MIP borings (MIP-1 through MIP-10) were completed on July 28, 2016 at depths ranging from 12 to 23 feet bgs as shown on **Figure 6**. The MIP borings in each target treatment zone were located on the centreline of the plume and on both sides to vertically and horizontally profile soil and groundwater quality. The resulting MIP profiles are included as **Appendix A** and are summarized as follows:

Boring	Maximum PID	Maximum FID	Depth
MIP-1	1.6×10^7 microvolts (μV)	$5.0 \times 10^7 \mu\text{V}$	5.5 ft.
MIP-3	$1.0 \times 10^7 \mu\text{V}$	$2.75 \times 10^7 \mu\text{V}$	7.5 ft.
MIP-4	$0.1 \times 10^7 \mu\text{V}$	$2.5 \times 10^7 \mu\text{V}$	4.75 ft.
MIP-7	$0.98 \times 10^6 \mu\text{V}$	$3.5 \times 10^7 \mu\text{V}$	7.5 ft.

Maximum PID response occurred at MIP-1 in the source area, and decreased by more than an order of magnitude in the downgradient direction to MIP-7. PID response was also noted at a depth of 13 feet in MIP-1, suggesting a source thickness of 10 feet. Other MIP survey findings are summarized as follows:

- Maximum EC response indicated silty sand in the source area at shallower depths; however, EC response decreased with depth, where micaceous schist saprolite was observed at depths below seven feet, consistent with previous lithologic profiling;
- EC response varied in the downgradient groundwater and wetlands treatment areas, suggesting approximately eight feet of fill materials are present above micaceous schist saprolite; and
- Generally, ECD and XSD response did not vary significantly from the baseline in each boring.

Based on the MIP survey findings, four MIP borings (MIP-1, MIP-3, MIP-4 and MIP-7) were selected for confirmatory sampling (including two borings in the source area). Each boring was advanced using truck-

mounted direct-push drilling equipment operated by Cascade on July 29, 2016. One soil sample was collected from each boring at the depth of the highest observed PID reading during the MIP survey for laboratory analysis of total organic carbon (TOC), total petroleum hydrocarbons (TPH) and the PADEP Short List of Petroleum Products for unleaded gasoline and diesel. In addition, an undisturbed one-foot tube soil sample was collected from each boring and delivered to Jay Kay Testing, Inc. (Jay Kay) of Spring Grove, Pennsylvania, for geotechnical laboratory analysis of grain size, bulk density, void ratio and Atterberg Limits. A composite soil sample from borings MIP-1, MIP-3, MIP-4 and MIP-7 was also delivered to Jay Kay for Standard Proctor analysis.

Following soil sample collection, a temporary well was constructed in each of the four borings for the collection of groundwater samples for laboratory analysis of TOC, TPH and the PADEP Short List of Petroleum Products for unleaded gasoline and diesel. Each sample was collected with a peristaltic pump and disposable poly tubing. All samples were placed into a cooler with ice and delivered to Lancaster Laboratories Environmental (LLE) of Lancaster, Pennsylvania, following standard chain-of-custody procedures. Sample depths are summarized in the following table.

Boring	Soil Sample Depth	Tube Sample Depth	Temporary Well Depth
MIP-1	5.5 feet	6.5 to 7.5 feet	8.0 feet
MIP-3	7.5 feet	5.0 to 6.0 feet	8.0 feet
MIP-4	4.75 feet	6.0 to 7.0 feet	8.0 feet
MIP-7	7.5 feet	6.0 to 7.0 feet	8.0 feet

Upon completion of groundwater sample collection, the temporary well screens were removed and the borings were abandoned with bentonite hole plug and asphalt cold patch. Geotechnical laboratory analytical results are summarized below.

Boring	Depth	Moisture Content	Void Ratio	Porosity	Dry Bulk Density	USCS Classification
MIP-1	5.5 feet	29.2 %	0.820	0.451	92.6 PCF	Silty Sand (SM)
MIP-3	7.5 feet	35.5 %	1.040	0.510	82.6 PCF	Silty Sand (SM)
MIP-4	4.75 feet	28.4 %	1.178	0.541	77.4 PCF	Sandy Silt (ML)
MIP-7	7.5 feet	16.1 %	0.623	0.384	103.8 PCF	Silty Sand (SM)

Notes:

PCF – Pounds per cubic foot

USCS – Unified Soil Classification System

Porosity = $e/(1+e)$, where e is Void Ratio

Soil and groundwater sample analytical data summaries are presented as **Table 5** and **Table 6**, respectively. Laboratory analytical data sheets are provided in **Appendix B**.

Of the regulated substances exceeding the Statewide Health Standard in soil, benzene is present at the greatest distance from the source area. The spatial distribution of benzene in soil (i.e., the source area) is shown on **Figure 7**. The soil sample collected at MIP-3 indicates a maximum benzene concentration of 450 µg/kg, which is below the benzene non-residential Statewide Health Standard of 500 µg/kg; therefore, the downgradient extent of benzene in soil has been delineated.

The vertical distribution of benzene in soil is shown on a strike-perpendicular geologic cross-section presented as **Figure 8**. Benzene distribution was observed in the five- to 13-foot depth range in the MIP

borings; therefore, the vertical distribution of benzene in soil has been delineated. Static groundwater levels measured in the source area between March 2015 and January 2017 (**Table 3**) show that the water table fluctuated between approximately 2.5 and 7.5 feet bgs. Soil between 2.5 and 7.5 feet bgs is within the zone of groundwater saturation during the wetter seasons, and soil below a depth of 7.5 feet is in contact with groundwater on a year-round basis. For these reasons, one-tenth of the Generic Value was used in the process to determine the Act 2 soil-to-groundwater MSC for each parameter in soil.

3.2 FORMER SUPPLY WELL PACKER TESTING

RETTEW retained Odyssey Environmental Services, Inc. (Odyssey) of Harrisburg, Pennsylvania to perform packer testing at the former supply well on August 11, 2016. The purpose of packer testing was to determine if the casing of the well provides an effective seal from shallow aquifer impacts to deeper groundwater. The former supply well is a six-inch diameter open rock well with 74 feet of steel casing and a total depth of 210 feet bgs. Prior to testing, a static water level was measured from the top of the well casing. An inflatable six-inch packer was connected to one-inch galvanized pipe and set at a depth of 100 feet in the open portion of the well. Upon stabilization, a second static water level was measured inside the pipe. Both water levels compared very closely (6.31 feet from top of casing).

Three individual packer tests were then performed in series at various depths. A Grundfos® electric submersible pump with an in-line check valve was positioned below the packer, and a Mega Monsson submersible pump was set above the packer to purge groundwater as noted in the following table.

Test No.	Packer Depth	Test Description
1	70 feet	Purged 59 gallons inside casing, water level stabilized at 22.2 feet during pumping.
2	80 feet	Purged over 580 gallons (three well volumes) from 130-foot open interval.
3	30 feet	Purged 16 gallons inside casing, pump shut off, water level rebounded from 24.5 feet to 18 feet in 17 minutes.

All purged groundwater was routed through a 55-gallon granular activated carbon (GAC) filter and discharged to the surface. At the conclusion of each test, a groundwater sample was collected for laboratory analysis. Groundwater samples were collected above the packer after Test 1 and Test 3 using a disposable bailer. A groundwater sample was collected below the packer from the pump discharge after Test 2. All samples were placed into a cooler with ice and delivered to LLE following standard chain-of-custody procedures for analysis of the PADEP Short List of Petroleum Products for unleaded gasoline and diesel. Groundwater sample analytical data sheets are provided in **Appendix C**. A groundwater sample analytical data summary is presented as **Table 7**. The findings of packer testing are summarized as follows:

- The stabilized water level observed during Test 1 pumping inside the casing indicates that recharge is entering the well through the casing at a rate equal to the pumping rate of 1.6 gallons per minute (gpm);
- The recharge observed after the pump was shut off during Test 3 (6.5 feet of recharge in 17 minutes) indicates that recharge is entering the well through the upper 30 feet of casing at a rate of approximately 0.5 gpm;
- During Test 3, trickling of recharging water was audible in the well when the water level was below 19 feet;
- Based on the difference in recharge rates observed between Test 1 and Test 3, the well casing appears to be leaking at multiple locations;

- The groundwater sample analytical results indicate that impacts associated with the release are minimal below a depth of 80 feet in the fractured rock aquifer (**Table 7**); and
- The groundwater sample analytical results indicate that maximum impacts associated with the release are entering the casing with shallow groundwater above 30 feet.

Based on the above findings, proper abandonment of the former supply well is recommended to preclude the migration of the release from shallow groundwater to deeper portions of the aquifer.

3.3 GROUNDWATER MONITORING WELL INSTALLATION

RETTEW retained a Pennsylvania-licensed well driller, Eichelbergers, Inc. (Eichelbergers) of Mechanicsburg, Pennsylvania, to install a pair of nested groundwater monitoring wells (MW-14S and MW-14D) to vertically delineate groundwater quality immediately downgradient and outside of the source area. The nested well pair was installed on August 12, 2016 at the location of boring MIP-3 as shown on **Figure 6**. The nested well pair was installed in a single borehole using 12-inch outer diameter hollow-stem augers to a depth of 15 feet, followed by an eight-inch diameter borehole drilled using air-rotary drilling methods. All drilling was performed using a Geoprobe™ 7822 DT drilling rig with an auxiliary air compressor. During drilling, borehole cuttings were containerized in 55-gallon open-top drums and staged on-site pending proper disposal.

Well drilling and installation was performed under the direction of a RETTEW geologist. The deep groundwater monitoring well (MW-14D) was installed with a total depth of 25 feet and screened from approximately 15 to 25 feet below grade using two-inch diameter PVC 0.020-inch slotted well screen and solid riser pipe to grade. The shallow groundwater monitoring well (MW-14S) was screened from 10 feet to three feet below grade using two-inch diameter PVC 0.020-inch slotted well screen and solid riser pipe to grade. The annular space between the borehole wall and the well screen interval of each well was filled with a gravel filter pack, with a hydrated bentonite seal placed between 13 feet and 11 feet below grade between the two wells. Each well was capped with bentonite hole plug to fill the remaining annular space to grade. A flush-mount manhole and locking well cap was installed on each well to prevent unauthorized access. Drilling logs documenting the lithology encountered and well construction details are provided in **Appendix D**.

Upon completion of drilling and well construction, each well was developed by surging and over-pumping to remove drilling residuals. The purged water generated during well development was treated with GAC and discharged to the surface. All drilling waste was transported and disposed as residual waste at a PADEP-approved facility by Environmental Recovery Corporation (ERC) of Lancaster, Pennsylvania. Non-hazardous waste disposal manifests are provided in **Appendix E**.

The top-of-casing elevation of each monitoring well was surveyed by a RETTEW professional land surveyor and referenced to sea-level datum. Groundwater monitoring well top-of-casing elevations are shown on **Table 3**.

3.4 GROUNDWATER SAMPLING AND ANALYSIS

Quarterly groundwater monitoring and sampling of the monitoring well network was performed by Suburban Testing Labs (STL) of Gilbertsville, Pennsylvania on July 11, 2016, October 3, 2016 and January 16, 2017. After gauging static water levels, groundwater was purged from each well with a peristaltic pump to maintain flow rates at approximately 250 milliliters per minute (ml/min) with minimal drawdown in accordance with the PADEP *Groundwater Monitoring Guidance Manual* (December 2001) low-flow purging methods. The pump tubing was set at a depth of eight to 10 feet below grade, corresponding to

the depth of the greatest observed soil impacts at the truck garage. Purged groundwater was routed through a flow-cell and an HI 98914 water quality meter to monitor intrinsic groundwater quality parameters including pH, conductivity, dissolved oxygen (DO), total dissolved solids (TDS), temperature, and oxidation-reduction potential (ORP). Intrinsic parameters were monitored frequently until stabilization, indicative of representative groundwater chemistry. Purged groundwater was then treated with GAC and discharged to the surface. Low flow purging and monitoring data sheets for each groundwater monitoring event are included as **Appendix F**.

Upon intrinsic parameter stabilization, groundwater samples were collected from the pump discharge tubing. To reduce the likelihood of cross-contamination, new tubing was used and nitrile gloves were worn during the collection of each groundwater sample. Groundwater samples were collected in laboratory bottleware, placed in a cooler with ice, and delivered to STL for analysis of PADEP Short List parameters for unleaded gasoline and diesel fuel. A summary of groundwater sample analytical data is provided as **Table 3**. Groundwater sample analytical reports are provided in **Appendix G**. Groundwater monitoring data collected on July 11, 2016 are plotted on **Figure 9** and **Figure 10**. Groundwater monitoring data collected on October 3, 2016 and January 16, 2017 are plotted on **Figure 11** and **Figure 12**, respectively.

RETTEW conducted two rounds of groundwater sampling and analysis from the newly installed nested well pair (MW-14S and MW-14D) on August 19 and September 16, 2016. Groundwater purging and sampling techniques were consistent with the methods used for the quarterly groundwater monitoring events described above. Low flow purging and monitoring data sheets for the nested well pair are included as **Appendix F**. Upon intrinsic parameter stabilization, groundwater samples were collected from the pump discharge using disposable tubing and laboratory bottleware, placed in a cooler with ice, and delivered to LLE for analysis of PADEP Short List parameters for unleaded gasoline and diesel fuel. A summary of groundwater sample analytical data is provided as **Table 3**. Groundwater sample analytical reports are provided in **Appendix G**.

3.5 MONITORED NATURAL ATTENUATION EVALUATION

During the July 11, 2016 groundwater monitoring event, groundwater samples were collected from selected wells for laboratory analysis of chemical indicators of natural attenuation. Wells selected were located along the centerline of the dissolved benzene plume as shown on **Figure 6** and included MW-1, MW-4, MW-6, MW-7, MW-10, MW-11 and MW-12. Samples collected were analyzed for sulfate, nitrate, total iron and dissolved (ferrous) iron. In addition, selected wells within the source area, the groundwater treatment area and the wetland treatment area (MW-4, MW-10 and MW-11) were selected for collection of samples for analysis of chemical oxygen demand (COD) and TOC. Intrinsic groundwater quality parameters measured during the sampling event (see **Section 3.4**) were also used in the evaluation. A summary of additional groundwater analytical data collected from selected wells noted above is provided as **Table 8**. Groundwater sample analytical reports are provided in **Appendix G**.

Upgradient background well results from MW-1 and MW-6 show that anaerobic biodegradation is occurring. Dissolved oxygen concentrations are below 2.0 milligrams per liter (mg/L) throughout the plume (**Figure 13**), until flow reaches MW-12 outside of the plume. Low ORP data (**Figure 14**), indicative of reducing, anaerobic conditions, are noted in the source area. Nitrate, the first depleted electron receptor (**Figure 15**), does not reappear until flow reaches MW-11. The presence of elevated ferrous iron in MW-4, MW-7, and MW-10, and the low ferrous iron concentrations outside of the plume are an indicator of biodegradation via natural attenuation. Other groundwater sample analytical results are summarized as follows:

Well No.	COD	TOC
MW-4	50.0 mg/L	9.79 mg/L
MW-10	47.0 mg/L	5.29 mg/L
MW-11	< 5.0 mg/L	0.831 mg/L

The COD concentrations (i.e., the mass of oxygen consumed per liter) are elevated in the source area and concentrations of organic carbon in groundwater decrease from the source area to downgradient portions of the plume, indicating that organic chemicals (petroleum) are breaking down by natural attenuation.

3.6 SUMMARY AND CONCLUSIONS

The findings of additional site characterization and remedial optimization indicated the following:

- Maximum PID response during the MIP survey occurred in the five to 7.5-foot range. Petroleum impacts associated with the release were observed in the five to 13-foot depth range in the MIP borings; therefore, the vertical distribution of the release in soil has been delineated.
- MIP survey and soil sample analytical results (MIP-3) show that the horizontal extent of the release has been delineated.
- Packer testing of the former supply well revealed evidence of groundwater infiltration through the casing. Groundwater sample analytical results indicate that dissolved petroleum is entering the casing with shallow groundwater above 30 feet. Petroleum impacts are minimal below a depth of 80 feet in the fractured rock aquifer.
- Groundwater sample analytical results from MIP-1 and MW-14S indicate that the most significant petroleum impacts in shallow groundwater occur at approximately eight to 10 feet bgs.
- Groundwater sample analytical results from MW-14D indicate that minimal dissolved phase impacts are present below 15 feet bgs.
- Groundwater sample analytical results indicate that anaerobic biodegradation of the release is occurring in the source area. Elevated COD concentrations in the source area and decreasing concentrations of TOC with groundwater flow suggests petroleum is breaking down by natural attenuation.

4.0 REMEDIATION STANDARD SELECTION

Petroleum impacted soil is present at the Site below the seasonally high water table (i.e., soil in the zone of groundwater saturation), and dissolved benzene and MTBE in groundwater is discharging to off-site surface water. Surface water will continue to be impacted by dissolved benzene and MTBE into the future. Steady state discharge of MTBE is not expected to exceed applicable WQBELs; however, steady state discharge of benzene is expected to exceed the calculated CRL water quality criteria for the UNT to North East Creek. Surface water criteria attainment demonstration is required for benzene and MTBE.

Herr's proposes to attain the Act 2 Site-Specific Standard for the PADEP Short List of Petroleum Products for unleaded gasoline and diesel in soil and groundwater. In accordance with 250.406(c) and the procedure for determining impacts to surface water from diffuse flow of contaminated groundwater described in the Act 2 TGM Section IV.A.3, the instream benzene and MTBE concentrations are determined at the point of groundwater discharge (i.e., groundwater/surface water interface). The following actions are proposed to demonstrate attainment of the Site-Specific Standard for soil and groundwater.

- Remediation of soil and groundwater at the source to reduce dissolved benzene in groundwater to concentrations below the CRL WLA surface water quality criteria prior to discharge to surface water.
- Revised fate and transport analysis to demonstrate that the CRL for benzene in surface water will be met in the future.
- Exposure pathway elimination to demonstrate attainment for soil within the zone of saturation.
- A post-remedial care plan may be required that includes the following:
 - Groundwater and/or surface water monitoring to verify that the CRL will be met;
 - An activity use restriction to prohibit the use of groundwater at the Site and eliminate potential human exposure to the release;
 - A land use restriction to prohibit future residential use; and
 - An activity use restriction requiring worker health and safety provisions and waste handling protocols during future disturbance of the Site to eliminate potential human exposure to the release.

To demonstrate attainment of the Site-Specific Standard for benzene and MTBE in groundwater, remediation of the source area is proposed to reduce dissolved benzene in groundwater to concentrations below the CRL wasteload allocation (WLA) surface water quality criteria prior to discharge to surface water. Revised fate and transport analysis was performed to establish remedial objectives and to demonstrate that the CRL for benzene in surface water will be met in the future as described in **Section 7.1**. An environmental covenant containing post-remedial care provisions will also be implemented as necessary.

5.0 REMEDIAL ALTERNATIVES EVALUATION

RETTEW performed a remediation alternatives evaluation (RAE) for the Site based on the findings of site characterization. The purpose of the RAE is to evaluate candidate remedial technologies and identify a practicable remedial strategy for further refinement and, ultimately, implementation at the Site. The RAE includes a description of contaminant sources and affected media, remediation technology screening, and recommendations for Site remediation.

5.1 CONTAMINANT SOURCE AND AFFECTED MEDIA

The contaminant source at the Site is characterized as an area of subsurface diesel and unleaded gasoline impact to saturated soil and groundwater immediately downgradient of the former UST system (i.e., the source area). Petroleum impacted soil is located below the seasonally high water table in the zone of saturation in the source area; therefore, remediation and attainment demonstration will focus on groundwater. Only benzene and MTBE have been detected off-site in groundwater at concentrations exceeding their non-residential Act 2 MSCs. Benzene concentration trends are increasing and the dissolved benzene plume has not reached steady state. Benzene and MTBE have been detected in surface water in the UNT of North East Creek at concentrations of 19 µg/L and 25 µg/L, respectively.

SPL has been historically detected in the source area. Dissolved benzene and MTBE have been detected in groundwater outside the source area at concentrations exceeding their non-residential Statewide Health Standards over 300 feet downgradient from the former UST system. No public or private drinking water supplies have been impacted by the release. Groundwater discharges to surface water over 300 feet downgradient from the former UST system. Benzene and MTBE have been detected in the sediment and surface water of the UNT to North East Creek. Discharging groundwater also supports wetlands at the Site.

5.2 REMEDIATION TECHNOLOGY SCREENING

RETTEW screened preferred remedial technologies to obtain information and select a practicable remedial alternative for the Site. Conceptually, the remedial action objectives for the Site include source remediation (removal of the source and elimination of continued degradation of groundwater) and groundwater plume remediation (enhance natural attenuation and stabilization/degradation of the groundwater plume) to achieve WQBELs for surface water in the wetlands and the UNT to North East Creek. The remedial technology evaluation to meet remedial action objectives is described below.

Source Area Technology Evaluation and Recommendations

Pre-screening of source area remediation technologies resulted in a list of seven candidate remediation options for further evaluation; MNA, groundwater pump and treat, air sparge, multiphase extraction, ISCO, enhanced bioremediation, and excavation. **Table 9** provides a description of the screening criteria used and the candidate remediation technologies selected for consideration. Based on the initial technology screening, the primary source area remediation technologies selected for further evaluation were ISCO and excavation. MNA was selected to be performed in combination with active remediation. A description of how these remediation technologies could be applied is as follows:

ISCO

Technology Description: ISCO relies on chemical oxidants to oxidize and chemically convert hazardous compounds to nonhazardous or less toxic compounds that are more stable, less mobile, or inert. Redox reactions involve the transfer of electrons from one compound to another. Oxidizing agents commonly used for the treatment of hazardous contaminants in soil and groundwater are ozone, hydrogen peroxide, catalyzed hydrogen peroxide, potassium permanganate, sodium permanganate, and sodium persulfate. ISCO is applicable to vadose zone remediation but is more often used to remediate groundwater. ISCO uses injection wells or direct injection probes to deliver the oxidant to the subsurface.

Advantages: The effects of ISCO are immediate due to the oxidation of the contaminants. Compared to other remedial technologies, ISCO is the most rapid with the highest removal/destruction in the shortest duration. Minimal infrastructure is required. Temporary probes can also be used for injections eliminating the need for added infrastructure.

Disadvantages: Disadvantages include possible migration of contaminants or breakdown products, release of vapor phase VOCs from oxidative reactions, increase in temperature from exothermic reactions, and potential damage to subsurface utilities from heat and/or oxidation. The distribution of ISCO is dependent on the permeability of the subsurface soil and can be limited in less permeable formations.

Site Application: Based on the ISCO pilot testing conducted at the Site (described in **Section 6.0**), ISCO is a viable remedial alternative. ISCO can be performed throughout the source area and groundwater plume with minimal constraints from Site infrastructure. ISCO achieved a minimum ROI of 10 feet and was injected at low pressures during pilot testing. Consideration is needed relative to maintaining low injection flow rates (approximately 1.0 gpm) during ISCO application at shallower intervals due to the potential for surfacing of the injection materials. ISCO is the selected alternative for treatment within the source area because of its ability to rapidly treat source contaminant mass, minimal disruption to Herr's operations, potential to enhance biodegradation of residual hydrocarbons as part of a subsequent bioremediation or MNA program, compatibility with post-treatment MNA, and there is no permanent infrastructure required for implementation.

Excavation

Technology Description: Excavation involves the physical removal of impacted soil. The excavated soil can be transported off-site for disposal, treated on-site and then transported, or treated on-site then returned to the excavation. Soil excavation enhances groundwater remediation by removal of the soil source area. If the excavation is extended into the saturated zone, SPL and saturated soil in contact with high dissolved-phase concentrations in groundwater can also potentially be removed. Excavation can be accomplished using excavators and backhoes or by advancing large diameter soil borings.

Advantages: Excavation is generally the simplest, fastest, and most certain remedial technique, because it involves removal of the soil matrix and does not depend on permeability to move hydrocarbons out of the soil. Excavation is most feasible when small quantities of impacted soil are involved, the site is undeveloped, the natural soil permeability is low, and/or the depth of soil to be remediated is shallow and accessible to excavation equipment.

Disadvantages: Excavation is typically not feasible on developed sites or sites with deep contamination (beyond the depth capability of excavation equipment) and generally cannot be used to address contamination that has migrated off site. Excavation is not cost-competitive with other technologies for large volumes (more than several thousand tons) of soil. The presence of subsurface structures including utilities require subsurface investigations to identify the depth and alignment of the structures. There is the potential to damage subsurface structures and utilities during excavation. The sides of the excavation may need support (sheeting/shoring), which can result with increased safety concerns for workers in or near the excavation. Groundwater dewatering is required when excavating below the water table.

Site Application: Soil removal by excavation was evaluated for the source area to a depth of approximately 13 feet bgs, which is the approximate depth of known soil impacts. This is approximately 10 feet below the seasonally high water table and would require dewatering during excavation. Shoring would also be necessary near the truck garage due to structural concerns. Excavation was not selected due to the impact to Herr's operations including concerns regarding shoring requirements, compaction and load bearing issues, disruption to operations, dewatering, and ex-situ management of contaminated soil and groundwater. Additionally, dissolved phase groundwater treatment and discharge would be required in addition to excavation.

Groundwater Plume Technology Evaluation and Recommendations

Pre-screening of groundwater plume remediation technologies resulted in a list of five candidate remediation technologies for further evaluation, including MNA, groundwater pump and treat, air sparge, ISCO, and enhanced bioremediation. **Table 9** provides a description of the screening criteria used and the candidate remediation technologies selected for consideration. Based on the initial technology screening, the primary technologies selected for further evaluation were ISCO and enhanced bioremediation. MNA was selected to be performed in combination with active remediation. A description of how these remediation technologies could be applied is as follows:

ISCO

Technology Description: The technology description, advantages, and disadvantages are consistent with those described for the source area technology evaluation.

Site Application: As described above, pilot testing proved ISCO to be a viable alternative for Site-wide application. Additionally, the use of ISCO for groundwater plume treatment in addition to source area remediation allows for implementation efficiencies to be gained through consistent remedial application across the Site. Because soil impacts are within the zone of groundwater saturation, and attainment

demonstration will focus on groundwater, ISCO is the selected alternative for treatment within the groundwater plume for the same reasons as described for the source area technology evaluation.

Enhanced Bioremediation

Technology Description: Enhanced bioremediation is a process in which subsurface bacteria use petroleum hydrocarbons as a substrate and generate water and carbon dioxide as metabolic byproducts, thereby destroying petroleum hydrocarbons. Numerous studies and case histories have shown that the natural biodegradation of hydrocarbons occurs in groundwater at virtually all sites. Depending on the relative rates of introduction of hydrocarbons into the dissolved-phase in groundwater from soil/LNAPL sources and the consumption of hydrocarbons via natural biodegradation, the net groundwater hydrocarbon plume may be expanding, contracting, or stable. A technology that can be applied in conjunction with enhanced bioremediation is activated carbon based material. Enhanced bioremediation combined with activated carbon allows the contaminant to be adsorbed immediately, then biologically treated.

Advantages: Bioremediation is typically cost effective when compared to other remedial technologies. Natural attenuation in groundwater, coupled with active source remediation, can be very effective for petroleum hydrocarbon releases. Enhanced bioremediation, using oxygen releasing products or another method, depends on the delivery of oxygen, nutrients, introduced bacteria, or other materials into contaminated zones, and is most effective in permeable, homogeneous soils. In situ bioremediation is most applicable to sites in which the time frame for cleanup can be relatively long, soils are coarse grained, and SPL is not present to act as a continuing source.

Disadvantages: Typically, bioremediation applied to attain cleanup standards requires extended periods of time. If SPL and/or impacted soil are present to act as a continuing source of hydrocarbons, cleanup can take even longer. Enhanced bioremediation can accelerate up the process and is effective at sites with high permeability and/or unstratified soils.

Site Application: Remediation products to enhance bioremediation could be applied in-situ similar to the methods described for ISCO. Enhanced bioremediation was not selected as a primary remediation technology due to the slower timeframes required to achieve remedial objectives and the presence of petroleum hydrocarbons in the saturated soil matrix that provide a continuing source of groundwater impacts. However, enhanced bioremediation, specifically in conjunction with activated carbon based amendments, is selected as a secondary remediation technology that could be applied as a “polishing” technology following initial ISCO application. This could be evaluated following initial ISCO application.

Wetlands and Surface Water Technology Evaluation and Recommendations

Pre-screening of wetland and surface water protection remediation technologies resulted in a list of eight candidate remediation technologies for further evaluation, including MNA, groundwater pump and treat, air sparging, ISCO, enhanced bioremediation, permeable reactive barrier, sheet pile wall, and engineered wetlands. **Table 9** provides a description of the screening criteria used and the candidate remediation technologies selected for consideration. Based on the initial technology screening, the technology selected for remediation to support wetland and surface water protection was MNA. MNA was selected based on the implementation of source area and groundwater plume remediation technologies, resulting in treatment of the dissolved plume within the wetland area.

6.0 REMEDIAL PILOT TESTING

The findings of the additional site characterization work performed during July and August, 2016 indicated that the maximum impacts to groundwater extend farther downgradient than previously known, and the majority of the contaminant mass is deeper than previously anticipated; therefore, in-situ chemical oxidation (ISCO) via injection becomes a more practical remedial approach than source excavation and soil mixing. A remedial pilot testing design using a combination of fixed-point and direct-push injection was proposed resulting in less impact to truck garage operations by eliminating the need for excavation and reducing the time required for implementation in the area directly adjacent to the truck garage. Pilot testing of the ISCO injection program was conducted to collect the data needed to assess the effectiveness of ISCO to remediate the release, and to provide the data needed for remedial design.

6.1 ISCO PILOT TEST DESIGN AND IMPLEMENTATION

An ISCO pilot test was designed to evaluate ISCO as a viable alternative for remediating groundwater and saturated soil impacted by the 1997 release. The contaminant source has migrated downgradient (generally to the east) from the UST system within the smear zone, resulting in what appears to be two distinct areas. These are referred to herein as Pilot Test Area 1 (PT1) and Pilot Test Area 2 (PT2). The pilot test was designed to evaluate ISCO injections in both areas. A map depicting the pilot test injection locations is provided as **Figure 16** as described below.

PT1 Area – PT1 refers to an area north of the truck garage in the western portion of the contaminant plume and includes the area surrounding monitoring well MW-4. ISCO testing was performed in PT1 using direct push injection (IP-1) targeting the interval from seven to 15 feet bgs (total target interval of eight feet). MW-4 and an observation well (OW-1) were used as monitoring points during the test.

PT2 Area – PT2 refers to an area north and northeast of the garage and includes monitoring wells MW-7, MW-14S, MW-14D, and the former water supply well. ISCO testing was performed in PT2 using direct push injection (IP-2) and fixed well injection (IW-1) targeting the interval from eight to 12 feet bgs (total target interval of four feet). Observation points used during the test included MW-14S, MW-14D and an observation well (OW-2).

The pilot test was designed using activated sodium persulfate as the oxidant. Activation was achieved by raising the pH of the injection through the addition of sodium hydroxide (NaOH). Sodium persulfate was selected because of its ability to treat BTEX, MTBE, polyaromatic hydrocarbons, petroleum hydrocarbons in the source zone and/or downgradient plume. When activated, the sulfate radical and hydroxyl radical are formed, which have high oxidation potentials, migrate greater distances in the aquifer and remain active longer in the subsurface for diffusion into low permeability soils⁴. The reaction produces inert products such as water, carbon dioxide, and chloride.

The test was performed to assess injection pressures, flow rates, distribution of the sodium persulfate, and degradation ratios (mass of oxidant used versus mass of contaminant degraded). The results of the test were subsequently used to evaluate the feasibility of ISCO for remediation and provide design parameters for full-scale implementation, if viable.

⁴ Contaminated Site Cleanup Information, United States Department of Environmental Protection, available online at https://clu-in.org/techfocus/default.focus/sec/In_Situ_Oxidation/cat/Guidance/#3, accessed March 6, 2017.

6.1.1 Subsurface Utility Survey

A subsurface utility survey was performed prior to pilot testing activities by RETTEW Field Services on November 14, 2016 to identify and field-mark private and/or abandoned subsurface utilities prior to pilot test field activities. Ground penetrating radar (GPR), electromagnetic line locating (RD 8000) equipment and M-scoping equipment were used within PT1 and PT2 to locate and mark subsurface utilities. Detected utilities were marked on the surface with paint and mapped with a Trimble GPS receiver with sub-meter accuracy. The GPS data collected was downloaded and processed for use in creating scaled CADD mapping showing the locations of identified subsurface utilities. Detected utilities within PT1 and PT2 are shown on **Figure 16**.

6.1.2 Pilot Test Observation and Injection Well Installation

RETTEW retained Cascade to install one injection well (IW-1) and two observation wells (OW-1 and OW-2) to monitor remedial effectiveness and design optimization parameters during the pilot test. The wells were installed on November 28, 2016 as shown on **Figure 16**. Well drilling and installation was performed under the direction of a RETTEW geologist. Each well was installed using a Geoprobe™ 7822 DT drilling rig with eight-inch outer diameter hollow-stem augers. During drilling, borehole cuttings were containerized in 55-gallon open-top drums and staged on-site pending proper disposal.

OW-1 and OW-2 were installed to a total depth of 15 feet and screened from three to 15 feet below grade using two-inch diameter Schedule 40 PVC 0.020-inch slotted well screen and solid riser pipe to grade. IW-1 was installed to a total depth of 12 feet and screened from eight to 12 feet below grade using two-inch diameter Schedule 80 PVC 0.020-inch wire-wrapped well screen and solid riser pipe to grade. The annular space between the borehole wall and the well screen interval of each well was filled with a gravel filter pack. Each observation well was capped with two feet of hydrated bentonite hole plug to fill the remaining annular space to surface grade. IW-1 was grouted from six feet below grade to the surface using neat cement. A flush-mount manhole and locking well cap was installed on each well to prevent unauthorized access. Drilling logs documenting the lithology encountered and well construction details are attached in **Appendix D**.

Upon completion of drilling and well construction, each well was developed by surging and over-pumping to remove drilling residuals. The purged water generated during well development was treated with GAC and discharged to the surface. All drilling waste was transported and disposed of as residual waste at a PADEP-approved facility by ERC. Non-hazardous waste disposal manifests are provided in **Appendix E**.

The top-of-casing elevation of each monitoring well was surveyed by a RETTEW professional land surveyor and referenced to sea-level datum. Groundwater monitoring well top-of-casing elevations are shown on **Table 3**.

6.1.3 Pre-Pilot Test Performance Monitoring

Prior to the pilot test, RETTEW collected soil and groundwater samples near the ISCO injection locations to provide a baseline for evaluating contaminant mass reduction. RETTEW collected pre-test grab groundwater samples from wells MW-4 and OW-1 (PT1) and wells IW-1, MW-14S, MW-14D, and OW-2 (PT2) on November 30, 2016. Groundwater was not purged prior to sample collection. A grab groundwater sample was collected from each well using a disposable bailer and nitrile gloves to reduce the likelihood of cross-contamination. Groundwater samples were collected in laboratory bottleware, placed in a cooler with ice, and delivered to Eurofins Lancaster Labs Environmental for analysis of the PADEP Short List of Petroleum Products for unleaded gasoline and diesel using Method 8260 and total petroleum

hydrocarbons as gasoline range organics (TPH-GRO) and diesel range organics (TPH-DRO) using United States Environmental Protection Agency (USEPA) Method 8015. A summary of the pilot test groundwater sample analytical data is provided as **Table 10**. Groundwater sample analytical reports are provided in **Appendix H**.

In addition to groundwater sample collection, RETTEW collected pre-test soil samples near the injection locations using a Geoprobe™ 7822 DT direct-push drilling rig on November 30, 2016. A pre-test soil boring (SA1-SB-Initial) was installed approximately three feet northwest of IP-1. Saturated soil samples were collected from soil boring SA1-SB-Initial and injection well IW-1 at a depth of 10 feet bgs for analysis of the PADEP Short List of Petroleum Products for unleaded gasoline and diesel using USEPA Method 8260, and TPH-GRO and TPH-DRO using USEPA Method 8015. Soil sample analytical reports are provided in **Appendix H**. The soil sampling results were used to support design calculations in **Section 7.4**.

6.1.4 Pilot Test Injection and Monitoring

ISCO pilot testing was performed at the Site between November 30 and December 2, 2016. RETTEW retained Cascade to perform ISCO injections at PT1 and PT2 utilizing a top-down injection method and Geoprobe® direct push technology (DPT). The DPT consisted of a two-foot long, 1.75-inch diameter screen driven into the subsurface using a Geoprobe® 77200DT track-mounted rig at each injection point location. The DPT was connected to a custom-built injection system, comprising three skid-mounted totes for containing fresh water and injection materials, mixers to prepare injection materials, pneumatic diaphragm pumps and an air compressor to deliver injection materials to the DPT. The pumps were connected to a manifold with valving, flow meters and pressure gauges to allow controlled delivery of injection materials to multiple DPT points. The injection system was placed on and within a secondary containment berm, and site control measures, including traffic cones and signage, were used to delineate the work area. Spill kits and portable vacuums were staged adjacent to the injection system in an equipment trailer for immediate deployment.

In addition to the setup and operation of the injection system, Cascade managed and handled the injection materials, which were staged adjacent to the injection system. Injection materials included granular sodium persulfate in 55-pound bags and liquid sodium hydroxide (caustic soda 25%) in 575-pound plastic drums. A solution of sodium persulfate activated with sodium hydroxide was mixed injected at each location. The solution was injected through the DPT tooling into the subsurface targeting four different two-foot intervals (see **Table 11**, ISCO Pilot Test Injection Summary for details). The solution was mixed on-site in “batches” and injected as follows.

Injection Solution	Treatment Zone PT1	Treatment Zone PT2
Reagent	20% Activated Persulfate	12% Activated Persulfate
Targeted Pore Space	25%	20%
Assumed Radius of Influence	10 feet	10 feet
Sodium Persulfate	297 pounds (32 gallons)	179 pounds (19 gallons)
Activator (Sodium Hydroxide)	46 gallons	33 gallons
Water	133 gallons	146 gallons
Batch Volume	211 gallons	198 gallons
Number of Batches	10	8
Total Injection Volume	2,110 gallons	1,585 gallons
Injection Intervals	7-9, 9-11, 11-13 and 13-15 feet bgs	8-10 and 10-12 feet bgs
Target Injection per Interval	527 gallons	400 gallons

Notes: Persulfate = 9.35 pounds/gallon

The target injection volume for IW-1 in PT2 was 800 gallons for both intervals, since it was constructed with four feet of well screen across the injection interval of eight to 12 feet.

During the pilot test, RETTEW monitored the injection system for downhole injection pressures, flow rates and totalized injection volumes (**Table 11**). Selected wells were also used to monitor groundwater quality and evaluate oxidant dispersion within each treatment zone during the test. Wells selected for monitoring included MW-4, OW-1, MW-14S, MW-14D, OW-2 and MW-5. Monitoring included depth to water measurements as well as direct water quality parameters using a YSI 556 multiparameter meter and a downhole probe set at a depth of 10 feet. Water quality parameters monitored included pH, conductivity, DO, temperature, and ORP. A description of each monitoring parameter⁵ is provided below.

Groundwater Level – Measured groundwater levels are used to determine groundwater elevations and hydraulic gradient. Ideally, the injection rate should not greatly change groundwater levels to ensure contaminants are not displaced out of the treatment zone.

pH – Most chemical oxidants react differently under different pH conditions, and adjusting pH can lead to the most favorable reaction conditions. Initially, persulfate activated with sodium hydroxide (25% caustic) will increase the pH of the aquifer when injected.

Conductivity – Increases in conductivity provide evidence for oxidant dispersion. Slight increases in conductivity are frequently observed following oxidant injections. Sodium persulfate is a salt and will increase the conductivity of the aquifer when injected as a solution.

Dissolved Oxygen – DO is an indicator of organic pollutant load and oxidant movement. Increases in DO concentrations reflect oxidizing conditions and generally coincide with the oxidant movement.

Temperature – Oxidant reactions with organic matter are generally exothermic. Reaction of sodium permanganate in the presence of high concentrations of reductant also can be exothermic. Increases in temperature generally coincide with the oxidant movement.

Oxidation-Reduction Potential – ORP is a water quality parameter and oxidation pathway indicator. Application of ISCO should result in increased ORP within the affected area.

An ISCO Pilot Test Field Monitoring Data Summary is provided as **Table 12**. A description of daily pilot test activity is provided below.

November 30, 2016 - RETTEW initiated pilot testing at IP-1 in PT1 on November 30, 2016 (**Figure 16**). Downhole injection pressures were low (less than five pounds per square inch, or psi), and injection flow rates were lower than expected. Due to the low flow rates, an additional DPT (IP-3) was installed to inject the target volume in each interval. Surfacing (i.e., water table mounding) occurred at OW-1 and MW-4. Due to surfacing, the monitoring points had to be capped, which precluded further water quality monitoring. Injection rates were maintained at approximately one gallon per minute (gpm). As indicated on **Table 11**, a total of 725 gallons were injected in the seven to nine and nine to 11 feet bgs intervals.

December 1, 2016 - Testing continued at IP-1 and IP-3 in PT1 on December 1, 2016 in the nine to 11 and 11 to 13 feet bgs intervals, but was terminated after the injection of 406 gallons and daylighting along the

⁵ Contaminated Site Cleanup Information, United States Department of Environmental Protection, available online at https://clu-in.org/techfocus/default.focus/sec/In_Situ_Oxidation/cat/Guidance/#3, accessed March 6, 2017.

edge of the truck garage slab (**Figure 16**). Additional DPT points (IP-6 and IP-8) were selected in PT2 to continue injection in the seven to nine feet bgs interval away from the truck garage. Downhole injection pressures were low (less than five psi), and injection flow rates were in the 1.5 to 2.0 gpm range. Injection continued until daylighting occurred in cracks in the asphalt paving. A total of 614 gallons were injected in the seven to nine feet bgs interval at IP-6 and IP-7 as shown on **Table 11**.

December 2, 2016 - Testing was initiated in PT2 at IP-2 and IW-1 on December 2, 2016 in the eight to 10 and eight to 12 feet bgs intervals. Downhole injection pressures were low (less than five psi), and injection flow rates were in the 0.5 to 2.0 gpm range. Due to the low flow rates, an additional DPT (IP-9) was installed to inject the target volume in the eight to 10 feet bgs interval. Injection was terminated after the injection of 275 gallons when daylighting occurred along the trace of a utility trench located between IP-2 and IW-1. Additional DPT points (IP-10 and IP-11) were selected in PT2 to continue injection in the 12 to 14 feet bgs interval away from the utility trench. Downhole injection pressures were low (less than five psi), and injection flow rates were in the 2.0 to 2.5 gpm range. A total of 1,008 gallons were injected in the 12 to 14 feet bgs interval at IP-10 and IP-11.

6.1.5 Post-Pilot Test Performance Monitoring

Following the completion of pilot testing activities, groundwater samples were collected from the wells used during pilot test monitoring (OW-1, MW-4, OW-2, MW-14S, MW-14D and MW-5) at intervals of two and four weeks after the completion of testing to evaluate mass reduction. Groundwater sampling was performed by STL on December 19 and December 30, 2016. After gauging static water levels, groundwater was purged from each well with a peristaltic pump to maintain flow rates at approximately 250 ml/min with minimal drawdown in accordance with the PADEP *Groundwater Monitoring Guidance Manual* (December 2001) low-flow purging methods. Purged groundwater was routed through a flow-cell and an HI 98914 water quality meter to monitor intrinsic groundwater quality parameters including pH, conductivity, DO, TDS, temperature, and ORP. Intrinsic parameters were monitored frequently until stabilization, indicative of representative groundwater chemistry. Purged groundwater was then treated with GAC and discharged to the surface. Low flow purging and monitoring data sheets for the post-test groundwater monitoring events are included as **Appendix F**.

Upon intrinsic parameter stabilization, groundwater samples were collected from the pump discharge tubing. To reduce the likelihood of cross-contamination, new tubing was used and nitrile gloves were worn during the collection of each groundwater sample. Groundwater samples were collected in laboratory bottleware, placed in a cooler with ice, and delivered to STL for analysis of PADEP Short List of Petroleum Products for unleaded gasoline and diesel using USEPA Method 8260, and TPH-GRO and TPH-DRO using USEPA Method 8015. A summary of pilot test groundwater sample analytical data is provided as **Table 10**. Groundwater sample analytical reports are provided in **Appendix H**.

6.2 ISCO PILOT TEST FINDINGS

The data collected during the ISCO pilot test were analyzed to assess the feasibility of implementing ISCO as a remedial action at the Site. The data analysis focused on two key study areas; ISCO injectability, and the radius of influence. Injectability is demonstrated through achieving positive injection flow rates at relatively low pressures. During the pilot test, injection flow rates were achievable between 0.5 and 2.5 gpm with corresponding pressures less than five psi (minimum measurable pressure/gauge resolution); however, injection flow rates were limited by depth interval. Injection daylighting (i.e., injected materials observed breaking through the surface) and surfacing (i.e., injection short-circuiting and groundwater mounding to the surface through nearby wells) was observed during the pilot test at shallower depth

intervals between seven and nine feet bgs (and to a lesser extent between nine and 11 feet bgs) when flow rates exceeded 1 gpm (**Table 11**).

The radius of influence (ROI) of ISCO injection is determined based on the monitoring data collected at the observation wells located at various distances from each injection point. The field monitoring data collected is described in **Section 6.1.4** and is summarized in **Table 12**. The findings of pilot test field monitoring are presented below for each source area.

PT1 Injection Results – November 30 and December 1, 2016				
Monitoring Well	OW-1		MW-4	
Injection Point	IP-1	IP-3	IP-1	IP-3
Distance	10 feet	8 feet	7 feet	5 feet
Water Table Mounding	X	X	X	X
Increasing DO	X	X	X	X
Increasing ORP	X	X	X	X
Increasing Temperature	X	X	X	X
Increasing pH	X	X	X	X
Increasing Conductivity	X	X	X	X

X = Measured Effect

O = No Effect or Inconclusive

Injection at IP-1 and IP-3 resulted in evidence of oxidant transport within two hours at a distance of at least 10 feet from the injection point. Based on the monitoring data collected at OW-1, a minimum ROI of 10 feet is apparent.

PT2 Injection Results – December 1, 2016		
Monitoring Well	MW-5	
Injection Point	IP-6	IP-8
Distance	27 feet	19 feet
Water Table Mounding	X	X
Increasing DO	O	O
Increasing ORP	O	O
Increasing Temperature	O	O
Increasing pH	O	O
Increasing Conductivity	O	O

X = Measured Effect

O = No Effect or Inconclusive

Injection points IP-6 and IP-8 were located upgradient of MW-5. After approximately three hours of injection, rising water levels were noted at MW-5. No other definitive evidence of oxidant transport was observed during the test. Based on the monitoring data collected at MW-5, the maximum ROI is less than 19 feet.

PT2 Injection Results – December 2, 2016						
Monitoring Well	OW-2		MW-14S		MW-14D	
Injection Point	IP-2	IW-1	IP-2	IW-1	IP-2	IW-1
Distance	9.5 feet	5 feet	7.5 feet	12.5 feet	7.5 feet	12.5 feet
Water Table Mounding	X	X	X	X	X	X

PT2 Injection Results – December 2, 2016						
Increasing DO	O	O	O	O	X	X
Increasing ORP	X	X	O	O	O	O
Increasing Temperature	O	O	O	O	O	O
Increasing pH	X	X	X	X	O	O
Increasing Conductivity	X	X	X	X	O	O

X = Measured Effect

O = No Effect or Inconclusive

Rising water levels were noted at MW-14D, followed by an increase in DO during the pilot test. No other definitive evidence of oxidant transport was observed during the test at MW-14D; however, this well is screened from 15 to 25 feet bgs, below the eight to 12-foot interval of injection. MW-14S and OW-2 also showed evidence of rising water levels, as well as increasing pH and conductivity associated with the injected oxidant. Based on the monitoring data collected at MW-14S and OW-2, evidence of oxidant transport is apparent within two hours at a distance of at least 12 feet from the injection point. Therefore, the ROI for the pilot test ranges from a minimum distance of 10 feet to a maximum distance of less than 12 feet. For full-scale implementation design purposes, the ROI is estimated to be 10 feet. The findings of post-injection field monitoring summarized in **Table 10** and **Table 12** are presented below.

Post-Injection Field Monitoring Results						
Monitoring Well	MW-4	OW-1	MW-14S	MW-14D	OW-2	MW-5
Increasing DO	X	X	X	O	X	O
Increasing ORP	X	X	O	X	O	X
Increasing Temperature	O	O	O	O	O	O
Increasing pH	X	X	O	O	X	O
Increasing Conductivity	X	X	O	O	X	O
Mass Reduction - Benzene	O	X	X	X	X	O
Mass Reduction - GRO	O	X	X	X	X	O
Mass Reduction - DRO	O	O	X	X	X	O

X = Measured Effect

O = No Effect or Inconclusive

The findings of the post-injection field monitoring indicate evidence of oxidant transport based on the following:

- An increase in DO, ORP, pH and conductivity were observed in PT1 (MW-4 and OW-1) up to 45 days after the completion of the pilot test.
- An increase in pH and conductivity were observed in OW-2 in PT2 for at least 30 days after the completion of the pilot test.
- Contaminant mass reduction (benzene and TPH-GRO) was noted in OW-1 following the PT1 pilot test.
- Contaminant mass reduction (benzene, TPH-GRO and TPH-DRO) was noted in MW-14S, MW-14D and OW-2 following the PT2 pilot test.

7.0 REMEDIAL ACTION

This section describes the remedial action objectives and proposed remedial action scope of work.

7.1 REMEDIAL ACTION OBJECTIVES

Because petroleum impacted soil is present below the seasonally high water table (i.e., soil in the zone of groundwater saturation) and will continue to leach to groundwater, the goal of remediation will be to reduce the mass of hydrocarbons present and to meet surface water criteria. As such, remedial action objectives (RAOs) were developed to attain the Act 2 Site-Specific Standard for groundwater and include the following:

- Remediate the source of groundwater impacts to the extent technologically and economically feasible, to significantly minimize or eliminate the continued degradation of groundwater in the source area;
- Remediate regulated substances in groundwater to meet calculated remediation endpoints for benzene and MTBE;
- Demonstrate continued natural attenuation of the groundwater plume (plume stabilization/degradation); and
- Reduce dissolved benzene concentrations in groundwater at the point of groundwater discharge to concentrations below the CRL WLA surface water quality criteria.

Remediation endpoints were developed for benzene and MTBE in groundwater by updating the calibrated fate and transport models presented in the Revised SCR using current data collected during additional site characterization and pilot testing. The updated fate and transport analysis and the calculated remediation endpoints are described in the following sections.

7.1.1 UPDATED FATE AND TRANSPORT ANALYSIS

The calibrated fate and transport models presented in the Revised SCR were updated using current data collected at the Site during additional site characterization (**Section 3.0**) and pilot testing (**Section 6.0**). The calibrated models in the Revised SCR included the PADEP Quick Domenico (QD) model spreadsheet to estimate steady state concentrations of benzene and MTBE at the point of groundwater discharge (MW-11). As described in the Revised SCR, RETTEW calibrated the QD model spreadsheet following the methodologies presented in the PADEP guidance document titled *User's Manual for the Quick Domenico Groundwater Fate and Transport Model*. A systematic approach was used to calibrate the QD model by matching the model to actual field data along the centerline of the plume. A range of selected model calibration parameters were used in various combinations to identify the model(s) that closely approximates observed concentrations. This approach utilized nine combinations of parameters, referred to as Model 1 through Model 9. Model 8 was the only calibration model that achieved a centerline concentration for benzene and MTBE at MW-10 with some degree of degradation. Model 8 was selected for final calibration and was referred to as Model 10. The input parameters used for the Model 10 update and their sources are presented below.

Parameter	Symbol	Value	Comments
Source Concentration	C_o	6.470 mg/L	Maximum observed at OW-2
Source Concentration	C_o	0.705 mg/L	Average observed at OW-2
Longitudinal Dispersivity	α_x	3 feet	Variable calibration parameter scaled to plume
Transverse Dispersivity	α_y	$\alpha_x/10$	Estimate
Vertical Dispersivity	α_z	0.001 foot	Minimized for 2-D transport
Source Width	Y	35 feet	Benzene plume width at OW-2 (2,000 µg/L)
Source Depth	Z	8 feet	MIP-3 data
Hydraulic Conductivity	K	2.8 ft/day	Site characterization data
Hydraulic Gradient	i	0.018 ft/ft	Groundwater monitoring data

Parameter	Symbol	Value	Comments
Effective Porosity	n_e	0.353	75% of avg. porosity MIP-1, MIP-3, MIP-4 and MIP-7
Density	ρ	1.788 g/cm ³	Site characterization data
Organic Carbon Coefficient	K_{oc}	58 L/kg	Chapter 25 Table VA for Benzene
Organic Carbon Coefficient	K_{oc}	12 L/kg	Chapter 25 Table VA for MTBE
Fraction Organic Carbon	f_{oc}	0.0118	Site characterization data
Degradation Coefficient	λ	0.00065 day ⁻¹	Calibration parameter for MTBE
Degradation Coefficient	λ	0.00024 day ⁻¹	Calibration parameter for benzene

Notes: Shaded parameters are updated using additional site characterization data.

The source concentrations used were based on the observed benzene (6,470 µg/L) and average MTBE concentrations observed in groundwater at OW-2 on January 18, 2017. The maximum MTBE concentration observed on December 29, 2016 at OW-2 may be related to desorption following the pilot test; therefore, an average concentration (705 µg/L) was determined to be more representative of actual MTBE concentrations. The calibration process was based on the distance between OW-2 (the source) and calibration wells MW-10 and MW-11, located along the plume centerline 100 feet and 255 feet from OW-2, respectively.

The hydraulic conductivity (K) value used was based on the maximum calculated transmissivity (T) value from the aquifer testing described in the Revised SCR (28 ft²/day) and a saturated aquifer thickness of 10 feet. The upper 10 feet of the aquifer includes the zone of maximum impacts. The average porosity of the saprolite aquifer materials (0.471) was based on the geotechnical soil sample analyses described in **Section 3.1**. The effective porosity (0.353) assumes that 75% of the pore space is interconnected.

The time used in the calibration models was based on the number of elapsed days (7,173) between the discovery of contamination (May 28, 1997) and the most recent groundwater monitoring event (January 16, 2017). The model domain was set to 255 feet, equal to the distance from OW-2 to MW-11. Average centerline concentrations for MW-10 (100 feet) and MW-11 (255 feet) were used to calibrate the models by adjusting the degradation coefficients for benzene and MTBE to match centerline concentrations. The updated QD model output is attached in **Appendix I**.

7.1.2 UPDATED SURFACE WATER QUALITY STANDARDS

Groundwater impacts to surface water were evaluated using the PADEP's SWLOAD5 model spreadsheet. The SWLOAD5 model was used to develop average concentrations of benzene and MTBE in a cross-sectional flow of the plume discharging to surface water, and to estimate the mass loading of benzene and MTBE to surface water under steady state conditions. The SWLOAD5 output was then used to determine applicable surface water quality standards for benzene and MTBE using the PADEP's PENTOXSD model.

The SWLOAD5 model is based on the same assumptions and the same input parameters as the QD model. As such, the sources of the SWLOAD5 input parameters were generally taken from the updated QD models described above. Key parameter input differences between the models pertain to time, plume depth, and the "edge criterion" established for each substance at the edge of the plume as described in the *Act 2 Technical Guidance Manual* (TGM), Section IV.A.3. These SWLOAD5 input parameters are described below.

Parameter	Value	Comments
Time	1 x 10 ⁹⁹ days	Assures model output is at steady state
Benzene Plume View Width	99 feet	Variable calibration parameter
Benzene Plume View Depth	8 feet	Site characterization data (MIP-3)
Benzene Edge Criterion	5 µg/L	Per Table IV-1 of the TGM
MTBE Plume View Width	56 feet	Variable calibration parameter
MTBE Plume View Depth	8 feet	Site characterization data (MIP-3)
MTBE Edge Criterion	20 µg/L	Per Table IV-1 of the TGM

The plume view width was adjusted to match the edge criterion concentrations for each substance at the lateral bounds of each plume. The SWLOAD5 output is attached in **Appendix I** and summarized in the following table.

Substance	Highest Modeled Concentration	Average Concentration	Plume Flow
Benzene	837.7 µg/L	300.6 µg/L	0.00046 cfs
MTBE	84.6 µg/L	51.05 µg/L	0.00017 cfs

Notes:

cfs = Cubic feet per second

The PENTOXSD surface water mixing model was then updated to calculate Water Quality Based Effluent Limits (WQBELs) for the portions of the benzene and MTBE plumes that exceeded their edge criterion based on the SWLOAD5 model output. Specifically, the average groundwater concentrations and plume flow rates noted above were used as PENTOXSD input parameters. The analysis was performed for a reach of the UNT to North East Creek shown on **Figure 17**, from Node 1, located at the Stream-1 sampling point, to Node 2, located at the confluence of the UNT with North East Creek. Hydrodynamic input parameters used in the PENTOXSD model are listed in the following table.

Parameter	Node 1	Node 2	Source
River Mile Index	1.44 mi	0.0 mi	GoogleEarth measurement
Elevation	495 ft	390 ft	GoogleEarth measurement
Drainage Area	0.04 mi ²	0.98 mi ²	StreamStats
Qh Flow	0.0083 cfs	0.29 cfs	StreamStats
Q7-10Flow	0.0012 cfs	0.0059 cfs	StreamStats
Qh Width	3.3 ft	6 ft	GoogleEarth measurement
Q7-10 Width	1.5 ft	3 ft	Estimated (approx. ½ Qh width)

The PENTOXSD output and the StreamStats datasheets used in the model are attached in **Appendix I**. The WLAs calculated by PENTOXSD are provided in the following table.

Water Quality Criteria	Benzene WLAs	MTBE WLAs
Acute Fish Criterion (AFC)	2,239 µg/L	NA
Chronic Fish Criterion (CFC)	454 µg/L	NA
Threshold Human Health (THH)	NA	108.2 µg/L
Cancer Risk Level (CRL)	22.6 µg/L	NA
Governing Criteria	22.6 µg/L	108.2 µg/L

Notes: NA = Not applicable

The PENTOXSD model selects the most restrictive WLA as the Governing Criterion, which is the applicable water quality criteria. The PENTOXSD model results indicate that the maximum average benzene concentration at steady state (300.6 µg/L) exceeds the Governing Criterion (CRL – 22.6 µg/L). The maximum average MTBE concentration at steady state (84.6 µg/L) is more restrictive than any of the calculated WLAs; therefore, observed concentrations of MTBE in groundwater meet their calculated WLAs. It is noted that the maximum observed MTBE concentration in groundwater at MW-11 (137 µg/L) does not meet the calculated WLA.

7.1.3 CALCULATED REMEDIATION ENDPOINTS

The calculated Governing Criterion for benzene and MTBE were used to back calculate source concentrations that will be required to attain the selected Act 2 standard using the SWLOAD5 model and the QD model. A target remediation endpoint was calculated for the source (OW-2) by using the Governing Criterion as the average groundwater concentration input value in the SWLOAD5 back calculation as follows.

Parameter	Value	Comments
Time	1 x 10 ⁹⁹ days	Assures model output is at steady state
Average Benzene Concentration	22.6 µg/L	Governing Criterion
Benzene Plume View Width	67 feet	Adjusted to meet Edge Criterion
Benzene Plume View Depth	8 feet	Site characterization data (MIP-3)
Benzene Edge Criterion	5 µg/L	Per Table IV-1 of the TGM
Average MTBE Concentration	108.2 µg/L	Governing Criterion
MTBE Plume View Width	70 feet	Adjusted to meet Edge Criterion
MTBE Plume View Depth	8 feet	Site characterization data (MIP-3)
MTBE Edge Criterion	20 µg/L	Per Table IV-1 of the TGM
Benzene Source Concentration	332 µg/L	Calculated for OW-2
MTBE Source Concentration	1,800 µg/L	Calculated for OW-2

The SWLOAD5 back calculation models are attached in **Appendix I**. The target remedial endpoint for benzene in groundwater at OW-2 is calculated to be 332 µg/L. The target remedial endpoint for MTBE in groundwater at OW-2 is 1,800 µg/L. As a final step, the updated QD model was used to back-calculate benzene and MTBE concentrations in groundwater at downgradient monitoring wells MW-10 and MW-11.

Parameter	Value	Comments
Benzene Source Concentration	332 µg/L	SWLOAD5 back calculation
MTBE Source Concentration	1,800 µg/L	SWLOAD5 back calculation
Benzene Concentration at MW-10	155 µg/L	Calculated 100 feet from OW-2
MTBE Concentration at MW-10	818 µg/L	Calculated 100 feet from OW-2
Benzene Concentration at MW-11	14 µg/L	Calculated 255 feet from OW-2
MTBE Concentration at MW-11	216 µg/L	Calculated 255 feet from OW-2

The calculated benzene and MTBE concentrations presented above are proposed as remediation endpoints for OW-2 and to serve as target concentrations to monitor and verify remedial effectiveness at MW-10 and MW-11 for the purpose of attaining applicable surface water standards. It is noted that the fate and transport analysis presented in the Revised SCR concluded that MTBE had reached steady state and that the WLAs are met into the future. It is assumed that the recent spike in dissolved MTBE

concentrations at OW-2 occurred as the result of displacement during pilot testing; however, this condition will be monitored and re-evaluated during remediation.

7.2 REMEDIAL ACTION DESCRIPTION

The proposed remedy involves site-wide application of ISCO for the remediation of petroleum hydrocarbons in saturated soil and groundwater. Sodium persulfate activated with sodium hydroxide is the selected oxidant for ISCO in the source and plume areas because of its proven ability to achieve significant reduction of toxicity, mobility, and mass of contaminants in a short time-frame, flexibility in implementing the remedial action with limited disturbance to site operations, and ability to implement the remedial action in-situ creating a more sustainable remedial approach. Product descriptions and materials safety data sheets (MSDS) for the proposed sodium and potassium persulfate products are provided in **Appendix J**.

The remedial approach involves ISCO application using DPT injection points in the source area and groundwater plume. The proposed injection layout is shown in **Figure 18**. The design details are discussed in more detail in the following sections. The design is based on the average concentrations of compounds of concern (COCs) in the saturated soil and groundwater in three distinct areas including the area designated as the source area (referred to as Remediation Area 1 or RA1), the groundwater plume area downgradient of RA1 (referred to as Remediation Area 2 or RA2), and an area of the groundwater plume upgradient of MW-10 (referred to as Remediation Area 3 or RA3). These areas are further described in the sections below.

7.3 SITE PREPARATION WORK ACTIVITIES

The following Site preparation work activities will be completed prior to remedial action implementation.

7.3.1 MARK OUT OF INJECTION WELLS AND INJECTION POINTS

The locations of injection wells and injection points are presented in the injection layout design map (**Figure 18**). These locations will be marked in the field in accordance with the injection layout design prior to mobilization to ensure the planned layout is not obstructed by facility structures, equipment, or utilities.

7.3.2 BURIED AND OVERHEAD UTILITY MANAGEMENT

A blind utility sweep using ground-penetrating radar (GPR) was conducted in the proposed remediation area at the Site in November 2016. All identified utilities were mapped using GPS and the information is presented on all design plans. Injections will be placed a minimum lateral distance of 10 feet from any utility corridor. The PA One Call System will be contacted following injection location mark out and a minimum of 72 hours prior to any ground disturbance activities (i.e., drilling of injection wells or direct push injections) to mark subsurface public utilities (i.e., natural gas and electric service) entering the Site.

7.3.3 TEMPORARY FACILITIES

To decontaminate DPT tooling, hoses, and other injection equipment, an approximately 25-foot by 25-foot containment area will be constructed with a polyethylene liner and containment berm to contain wash water used for cleaning injection equipment. Equipment that comes into contact with impacted material or injection materials will be decontaminated prior to leaving the Site. Injection rods and equipment in direct contact with injection solutions will be cleaned daily. Decontamination will be performed within the designated containment area using Alconox or other biodegradable detergent. The

decontamination water, and any soil and liquids generated during decontamination, will be transferred to a drum or other storage container for subsequent off-site disposal as residual waste. The decontamination area will be located as shown on **Figure 18**.

The containment area will also include storage of materials needed for remediation injections including the sodium persulfate, potassium persulfate, and sodium hydroxide. The containment area will consist of secondary containment that is constructed to contain, at a minimum the volume of the largest liquids tank plus an additional 10%. The containment area will be placed at least 100 feet from wetlands or water bodies. The proposed materials storage area is shown on **Figure 18**.

Remediation equipment will include one or two direct push drill rigs and mixing/injection trailers, along with ancillary equipment including but not limited to, drill casing, hoses, piping, pumps, mixing tanks, and pressure/flow gauges. During implementation, the equipment will be moved throughout the project area for access to proposed injection points. The equipment will be stored on-site overnight in the area designated for equipment storage as shown on **Figure 18**.

If storage of materials is required beyond the duration of the remediation activities, the materials will be covered and stored on-site within a containment pad.

7.3.4 PERMITS

The Underground Injection Control (UIC) program is administered by the Environmental Protection Agency (EPA) in the Commonwealth of Pennsylvania. The EPA approved construction and remediation activities related to remediation injection at the Site by “rule authorization” in the approval letter dated November 3, 2016. The remediation injection activities covered under the “rule authorization” include the construction and operation of remediation injection wells and subsurface emplacement of sodium persulfate for the purposes of groundwater remediation. A copy of the “rule authorization” is included in **Appendix K**. No other permits associated with the proposed remedial action are required by PADEP.

7.3.5 REMEDIATION HEALTH AND SAFETY PLAN

The remediation contractor will be responsible for preparing a Health and Safety Plan (HASP) and implementing the HASP. The existing HASP prepared by RETTEW outlines all requirements necessary for compliance with Occupational Health and Safety Administration (OSHA) 1910.120 HAZWOPER regulations and any other application general construction requirements. The HASP will be updated prior to remediation implementation to include the risk identification and mitigation procedures associated with injection activities. At a minimum, the HASP will include the following:

- Conformance to Occupational Safety and Health Administration (OSHA) and other federal requirements;
- Identification of hazards likely to be present at the Site;
- MSDSs for each chemical used; and
- Policies and procedures to protect workers from the hazards.

7.3.6 AVAILABILITY AND USE OF UTILITY SERVICES

Potable water is available on-site for use during remedial implementation. The water consists of a water tap located inside the truck garage that can be fitted with a standard garden hose for use during remediation activities.

7.3.7 PROTECTION AND MAINTENANCE OF TRAFFIC AND UNAUTHORIZED PERSONNEL

The designated work area will be demarcated by the use of traffic control barriers, cones, or temporary orange plastic construction safety fencing. Signs designating the work area and warning against trespass will be placed at all sides of the work perimeters during implementation.

7.3.8 SECURITY PROVISIONS

The remediation contractor will be responsible for the security of its own equipment, materials, and supplies. The construction perimeter barriers, cones, or fencing will support deterrence of unauthorized personnel. A daily visitor's log will be maintained to document all personnel visiting the Site.

7.3.9 DISCHARGE AND SITE RUNOFF CONTROL

Ground disturbance will be minimal consisting of only the immediate injection location with the majority of the injections occurring on an asphalt paved surface. However, there is potential for surfacing of the injection solution during injection or uncontrolled release of chemicals to the ground surface that could result in runoff. The remediation contractor will prepare a spill plan to be implemented in the event of an accidental, inadvertent discharge of liquids. The plan will include management practices (BMPs) for containing and recovering inadvertent discharges, and provisions for material storage areas to be placed at least 100 feet from any wetlands or water bodies for the protection of the downgradient wetland and stream.

7.4 REMEDIAL PERFORMANCE MONITORING

Quarterly groundwater monitoring event(s) described in **Section 8.0** will be conducted as close as possible to the remediation injection date(s). The results of quarterly groundwater monitoring will be considered the groundwater baseline results. Additionally, these results will be used for confirmation of the extent and nature of COCs in the proposed remediation area. The remediation injection layout/approach may be modified to accommodate any significant observations or changes in COC characterization as a result of the baseline groundwater monitoring event. Remedial effectiveness will be evaluated based on the quarterly monitoring data collected after remediation implementation. Additionally, post remediation soil samples will be collected near soil borings SB-7/MIP-1, SB-23, and SB-24 within the intervals that exhibited maximum hydrocarbon impacts during Site characterization to evaluate mass reduction and remedial effectiveness.

7.5 ISCO IMPLEMENTATION DETAILS

The remedial injection layout is depicted on **Figure 18** and **Figure 19**. The layout presented on **Figure 18** illustrates the lateral extent of remediation influence relative to known dissolved phase impacts. The layout presented on **Figure 19** illustrates the lateral extent of remediation influence relative to known saturated soil impacts. The vertical extent of remediation treatment is illustrated on **Figure 20** and shows the remediation treatment relative to known saturated soil impacts. As shown on **Figures 18** through **20**, the remediation activities are focused on two distinct remediation target areas of the Site described as follows:

1. Remediation Area 1 (RA1) – RA1 is located adjacent to and north of the garage building. This area is considered the source area and is described with the following characteristics:
 - a. Nearest area within the groundwater plume to the area of the removed leaking USTs (i.e. the 1997 release);

- b. Exhibits the highest COC concentrations in saturated soil; and
 - c. Exhibits the largest vertical interval of impacted saturated soil.
2. Remediation Area 2 (RA2) – RA2 is primarily located adjacent to and downgradient of RA1, but also includes a small area west and north of RA1. This area is considered the primary portion of the groundwater plume and is described with the following characteristics:
 - a. Primarily downgradient of the source area (RA1);
 - b. Exhibits COC concentrations in groundwater near or above source area levels;
 - c. Exhibits COC concentrations in saturated soil, but at significantly less concentrations and smaller vertical interval than the source area (RA1); and
 - d. Downgradient portions of RA2 exhibit dissolved benzene and MTBE concentrations at similar levels as RA1, exhibit dissolved concentrations of other COCs at significantly lower concentrations than RA1, and do not contain saturated soil impacts.
3. Remediation Area2 (RA3) – RA3 is located downgradient of RA2 and upgradient of MW-10. This area is considered the downgradient portion of the groundwater plume and is described with the following characteristics:
 - a. Upgradient of MW-10 and the downgradient wetland;
 - b. Shallower depth to groundwater than RA1 and RA2;
 - c. Exhibits elevated COC concentrations in groundwater; and
 - d. Exhibits minimal to no COC concentrations in saturated soil.

The remedial injection design is customized to each remediation target area based on Site characterization information and remedial injection pilot testing. RETTEW uses this approach to optimize the design and implementation focusing on the areas (laterally and vertically) that contain the majority of the contaminant mass based on the high resolution information gathered during the course of the Site characterization work as described in previous sections of this report. The design parameters and basis for remedial design are described in the following sections.

7.5.1 RA1 DETAILS

This section provides remediation design details for RA1. Remediation injection layout is shown on **Figures 18 through 20**. Remediation design calculations are provided in **Appendix L**.

RA1 Area Design Parameters		
Area of treatment	1,035 square feet (ft ²)	Target area shown on Figures 18 – 20 based on Site characterization data.
Treatment Zone Thickness	7 feet	Treatment zone interval is 7 to 14 feet bgs and assumes top of injection interval is approximately 0.5 to 1 foot below the water table.
Treatment Groundwater Volume	25,471 gallons (GAL)	Based on a total porosity of 0.47 from Site data/geotechnical sample analysis.
Treatment Soil Mass	808,542 pounds (lbs)	Based on soil density of 111.6 pounds per cubic feet (lbs/ft ³).

RA1 Area Design Parameters		
Targeted COC Mass	2,111 lbs	Based on 100% target mass reduction in groundwater and 75% target mass reduction in soil; using average concentrations for primary COCs, GRO, and DRO.
Persulfate demand from COCs	46,439 lbs	Design persulfate dosage is 20 lb persulfate/lb COC mass (standard ranges from 10 to 30 lb/lb); calculation includes a safety factor of 1.1.
Persulfate demand from SOD	889 lbs	Persulfate demand from SOD based on 1 gram (gm) persulfate per 1 kg soil; calculation includes a safety factor of 1.1.
Total persulfate demand	47,328 lbs	Includes persulfate demand from COCs and SOD plus safety factor
Sodium hydroxide (NaOH) demand for persulfate neutralization	15,902 lbs	Based on 2 moles of NaOH to 1 mole of persulfate (33.6% of persulfate demand).
NaOH demand for soil buffering	606 lbs	Based on 3 gm 25wt% NaOH per kg of soil.
25 wt% NaOH solution needed	6,230 GAL	Based on persulfate and soil buffering demand.

RA1 Injection Point Design Parameters		
Design ROI	7.5 feet	Reduced ROI from pilot test results of 10 feet to ensure uniform distribution in RA1.
Design treatment thickness	7 feet	Targets the majority of the contaminant mass from approximately 7 to 14 feet bgs.
# of injection points needed	6 DPT points	Based on area of RA1/ROI (area).
# of injection events	3 events	Assumes three injection events needed to inject the full persulfate demand; however, subsequent injections will be reassessed based on groundwater results.
Persulfate demand per injection point	2,629 lbs	Total persulfate demand per # of events per # of injection points.
Solution volume per injection point	1,305 GAL	Based on injection into 30% of pore space.
Persulfate concentration	22%	Mass of persulfate per mass of solution.
NaOH volume per injection point	346 GAL	Total NaOH demand per # of events per # of injection points.

The current injection plan involves three injection events in RA1 to achieve 100% COC mass reduction in the groundwater and 75% COC mass reduction in the saturated soil. Following each injection event, the groundwater will be monitored quarterly and subsequent injections will be reassessed on a six- to nine-month basis. Depending on the effectiveness of the injection events, all three injection events may not be required to achieve RAOs. Additionally, alternative remediation amendments may be evaluated for ISCO and/or enhanced bioremediation following each injection event and subsequent performance monitoring.

7.5.2 RA2 DETAILS

This section provides remediation design details for RA2. Remediation injection layout is shown on **Figures 18 through 20**. Remediation design calculations are provided in **Appendix L**.

RA2 Area Design Parameters		
Area of treatment	3,802 square feet	Target area shown on Figures 18 – 20 based on Site characterization data.
Treatment Zone Thickness	5 feet	Treatment zone interval is 7 to 12 feet bgs and assumes top of injection interval is approximately 0.5 to 1 foot below the water table.
Treatment Groundwater Volume	66,832 GAL	Based on a total porosity of 0.47 from Site data/geotechnical sample analysis.
Treatment Soil Mass	2,121,516 lbs	Based on soil density of 111.6 lbs/ft ³ .
Targeted COC Mass	427 lbs	Based on 100% target mass reduction in groundwater and soil; using average concentrations for primary COCs, GRO, and DRO.
Persulfate demand from COCs	13,670 lbs	Design persulfate dosage is 20 lb persulfate/lb COC mass (standard ranges from 10 to 30 lb/lb); includes safety factor of 1.6.
Persulfate demand from SOD	3,394 lbs	Persulfate demand from SOD based on 1 gm persulfate per 1 kg soil; includes safety factor of 1.6.
Total persulfate demand	17,065 lbs	Includes persulfate demand from COCs and SOD plus safety factor.
NaOH demand for persulfate neutralization	5,733 lbs	Based on 2 moles of NaOH to 1 mole of persulfate (33.6% of persulfate demand).
NaOH demand for soil buffering	1,591 lbs	Based on 3 gm 25wt% NaOH per kg of soil.
25 wt% NaOH solution needed	2,764 GAL	Based on persulfate and soil buffering demand.

RA2 Injection Point Design Parameters		
Design ROI	10 feet	Design ROI is based on pilot test result of 10 feet.
Design treatment thickness	5 feet	Targets the majority of the contaminant mass from approximately 7 to 12 feet bgs.
# of injection points needed	14 DPT points	Based on area of RA2/ROI (area) (assumes 15% injection overlap)
# of injection events	1 event	One injection event is required; additional targeted injections may be evaluated based on performance monitoring results.
Persulfate demand per injection point	1,219 lbs	Total persulfate demand per # of events per # of injection points.
Solution volume per injection point	1,105 GAL	Based on injection into 20% of pore space.
Persulfate concentration	12.2%	Mass of persulfate per mass of solution.
NaOH volume per injection point	197 GAL	Total NaOH demand per # of events per # of injection points.

The current injection plan involves one injection event in RA2 to achieve 100% COC mass reduction in the groundwater and saturated soil. Following the injection event, the groundwater will be monitored

quarterly and subsequent targeted injections may be reassessed based on the performance monitoring results.

7.5.3 RA3 DETAILS

This section provides remediation design details for RA3. Remediation injection layout is shown on **Figures 18 through 20**. Remediation design calculations are provided in **Appendix L**.

RA3 Area Design Parameters		
Area of treatment	2,312 square feet	Target area shown on Figures 18 – 20 based on Site characterization data.
Treatment Zone Thickness	4 feet	Treatment zone interval is 6 to 10 feet bgs and assumes top of injection interval is approximately 0.5 to 1 foot below the water table.
Treatment Groundwater Volume	32,512 GAL	Based on a total porosity of 0.47 from Site data/geotechnical sample analysis.
Treatment Soil Mass	1,032,077 lbs	Based on soil density of 111.6 lbs/ft ³ .
Targeted COC Mass	106 lbs	Based on 100% target mass reduction in groundwater and soil; using average concentrations for primary COCs, GRO, and DRO.
Persulfate demand from COCs	4,429 lbs	Design persulfate dosage is 20 lb persulfate/lb COC mass (standard ranges from 10 to 30 lb/lb); includes safety factor of 2.1.
Persulfate demand from SOD	2,167 lbs	Persulfate demand from SOD based on 1 gm persulfate per 1 kg soil; includes safety factor of 2.1.
Total persulfate demand	6,596 lbs	Includes persulfate demand from COCs and SOD plus safety factor.
NaOH demand for persulfate neutralization	2,216 lbs	Based on 2 moles of NaOH to 1 mole of persulfate (33.6% of persulfate demand).
NaOH demand for soil buffering	774 lbs	Based on 3 gm 25wt% NaOH per kg of soil.
25 wt% NaOH solution needed	1,128 GAL	Based on persulfate and soil buffering demand.

RA3 Injection Point Design Parameters		
Design ROI	10 feet	Design ROI is based on pilot test result of 10 feet.
Design treatment thickness	4 feet	Targets the majority of the contaminant mass from approximately 6 to 10 feet bgs.
# of injection points needed	8 DPT points	Based on area of RA3/ROI (area) (assumes 10% injection overlap).
# of injection events	1 event	One injection event is required; additional targeted injections may be evaluated based on performance monitoring results.
Persulfate demand per injection point	825 lbs	Total persulfate demand per # of events per # of injection points.

RA3 Injection Point Design Parameters		
Solution volume per injection point	884 GAL	Based on injection into 20% of pore space.
Persulfate concentration	10.3%	Mass of persulfate per mass of solution.
NaOH volume per injection point	141 GAL	Total NaOH demand per # of events per # of injection points.

The current injection plan involves one injection event in RA3 to achieve 100% COC mass reduction in the groundwater and saturated soil. Following the injection event, the groundwater will be monitored quarterly and subsequent targeted injections may be reassessed based on the performance monitoring results.

7.5.4 DESIGN LIMITATIONS, CONSTRAINTS, AND CONSIDERATIONS

The following design limitations, constraints, and considerations were identified based on the pilot test results:

- Shallow depth of groundwater and vertical remedial target zones limit the ability to inject oxidants at high pressures and high flow rates due to concerns with ground uplift, oxidant surface breakthrough, and groundwater mounding. Remediation injections at depths less than nine feet bgs will maintain pressures less than five psi at corresponding flow rates less than 1.5 gpm.
- Due to the proximity to truck garage (RA1), remediation injections within 7.5 feet of the truck garage will maintain pressures less than 5 psi, corresponding flow rates less than 1.5 gpm, and a top injection interval of no less than eight feet bgs to minimize the potential for surface breakthrough near the building.
- Due to the proximity to utility corridors (RA2), remediation injections within 10 feet from utility corridors will maintain pressures less than 5 psi, corresponding flow rates less than 1.5 gpm, and a top injection interval of no less than eight feet bgs to minimize the potential for surface breakthrough into existing utility corridors.

7.6 CLEANUP AND SITE RESTORATION

The remedial injection areas will be restored to their original condition. All injection points will be backfilled to surface with bentonite. Concrete or asphalt patches depending on surface material type will be completed for each injection point. If injection activities are conducted in the grass landscaped area, then the vegetation and top soil will be segregated during drilling and will be placed back on top of injection location following bentonite application.

7.7 WASTE MANAGEMENT

Minimal soil and groundwater waste is anticipated to be generated during the remediation activities. In the event that waste is generated, it will be contained in 55-gallon drums and disposed off-site as residual waste. Groundwater investigation-derived waste (IDW) generated during quarterly groundwater monitoring is treated on-site through GAC and discharged to the surface. Construction debris such as packaging for granular materials will be disposed of on-site as municipal solid waste. The liquid materials will be procured in reusable totes that are returnable to the vendor.

7.8 DEMOBILIATION

Following completion of the remedial activities, the remediation contractor will remove all equipment, materials, supplies, debris/waste generated by the contractor's activities, temporary utilities and facilities,

and manpower from the Site. The areas of the Site utilized and/or disturbed by the contractor during the project will be left in a condition equal to, or better than pre-work conditions.

7.9 FIELD MODIFICATIONS

Minor field modifications during remediation will be managed collaboratively with involvement from the remediation contractor, field engineer, and design engineer to ensure remediation field objectives are met. Conditions that could result in field modifications include surfacing of injection products, presence of utilities, etc. All field modifications will be documented accordingly.

7.10 DESIGN MODIFICATIONS

Design modifications may occur based on the results of the initial injection event resulting in modifications to subsequent injection approaches.

8.0 GROUNDWATER MONITORING

Quarterly groundwater monitoring will continue in accordance with the corrective action regulations defined in Title 25 Pennsylvania Code Chapter 245 titled *Administration of the Storage Tank and Spill Prevention Program* (Chapter 245). Low flow groundwater purging and sampling methods will be utilized as described in **Section 3.4** in accordance with the PADEP *Groundwater Monitoring Guidance Manual* (December 2001) low-flow purging methods. Groundwater samples will be submitted for laboratory analysis of the PADEP Short List for Petroleum Products for unleaded gasoline and diesel fuel. The groundwater sample analytical results will be compared to their applicable Act 2 MSCs to monitor trends in groundwater quality.

In addition, groundwater sample analytical results will be compared to the baseline groundwater monitoring results described in **Section 7.4** and used to assess remedial performance in the proposed remediation area following each injection event. Monitoring wells located within the area of remedial treatment (MW-3, MW-4, OW-1, MW-5, MW-7, MW-14S, MW-14D, OW-2 and MW-10) will be the primary wells used for the remedial performance evaluation. The remediation injection layout/approach may be modified to accommodate any significant observations or changes in groundwater quality and optimize remedial performance. The baseline groundwater monitoring and first quarterly groundwater monitoring event following remediation will utilize groundwater monitoring wells that are currently in the groundwater monitoring program (MW-3, MW-4, OW-1, MW-5, MW-7, MW-9, MW-14S, MW-14D, OW-2, MW-10, MW-11, and MW-12).

During remediation, an evaluation of the MNA process will be performed as needed during quarterly groundwater sampling events. Groundwater samples will be collected from selected wells for laboratory analysis of chemical indicators of natural attenuation, including sulfate, nitrate, total iron and dissolved iron. Purged groundwater will be routed through a flow-cell and a water quality meter to monitor intrinsic groundwater quality parameters including pH, conductivity, DO, TDS, temperature, and ORP. The data collected will be mapped for spatial analysis and compared to groundwater quality data to identify decreasing trends of regulated substances where natural attenuation is occurring.

Herr's proposes to discontinue groundwater monitoring at Off-Site monitoring well MW-13 in addition to the former water supply well, which is recommended for proper abandonment. The list of monitoring wells selected for quarterly groundwater monitoring events will be evaluated and optimized on a quarterly basis based on the results of the remedial performance evaluation.

9.0 REPORTING

During remediation, quarterly Remedial Action Progress Reports (RAPRs) will be submitted to the PADEP in accordance with the corrective action regulations of Chapter 245.312. The RAPRs will include a summary of remediation activities conducted during the reporting period, as well as tabulated summaries of groundwater sample analytical results. The RAPRs will also include hydraulic gradient maps and contaminant distribution maps as monitoring data is collected during remediation.

The RAPRs will present the findings of the remedial performance evaluation described in **Section 7.4** and **Section 8.0**, and will include a statement regarding remedial progress toward achieving the RAOs presented in **Section 7.1.3** and attainment of the selected remediation standards presented in **Section 4.0**. The findings of additional MNA evaluations performed concurrently with remediation will also be presented. Revised fate and transport analyses will be included, as necessary, to determine when RAOs have been achieved. Additional remediation injections performed at the Site to achieve the RAOs will be described. Modifications to the remediation injection layout/approach and/or groundwater monitoring well network will be documented in the RAPR. Each RAPR will be submitted to the PADEP within 30 days following receipt of all laboratory sample analytical results. The anticipated submittal date for the first RAPR will be within 90 days of remedial implementation.

Following remediation and successful attainment demonstration, a Remedial Action Completion Report (RACR) will be prepared pursuant to Chapter 245.313 with supporting documentation and submitted to PADEP for approval. Revised fate and transport analysis will be provided to demonstrate that the RAOs have been met. An evaluation of plume stability will also be provided using a variety of qualitative and quantitative methods, such as concentration over time plots, isoconcentration maps, and statistical trend analyses of groundwater monitoring data over time. The findings of additional MNA evaluations performed concurrently with remediation will also be presented to support fate and transport analyses. The findings of the required post remediation vapor intrusion assessment will be performed as a condition of attainment demonstration in accordance with Section IV.A.4 of the TGM.

10.0 POST REMEDIATION CARE

Post-remediation monitoring may be a component of attainment demonstration of the Act 2 Site Specific Standard for soil groundwater. Post-remedial monitoring will be required to verify the findings of fate and transport analysis, and to demonstrate that the CRL for benzene in surface water will be met in the future. Other post-remedial care provisions may include the following:

- Groundwater monitoring to verify natural attenuation and that the CRL is being met;
- An activity use restriction to prohibit the use of groundwater at the Site and eliminate potential human exposure to the release;
- A land use restriction to prohibit future residential use; and
- An activity use restriction requiring worker health and safety provisions and waste handling protocols during future disturbance of the Site to eliminate potential human exposure to the release.

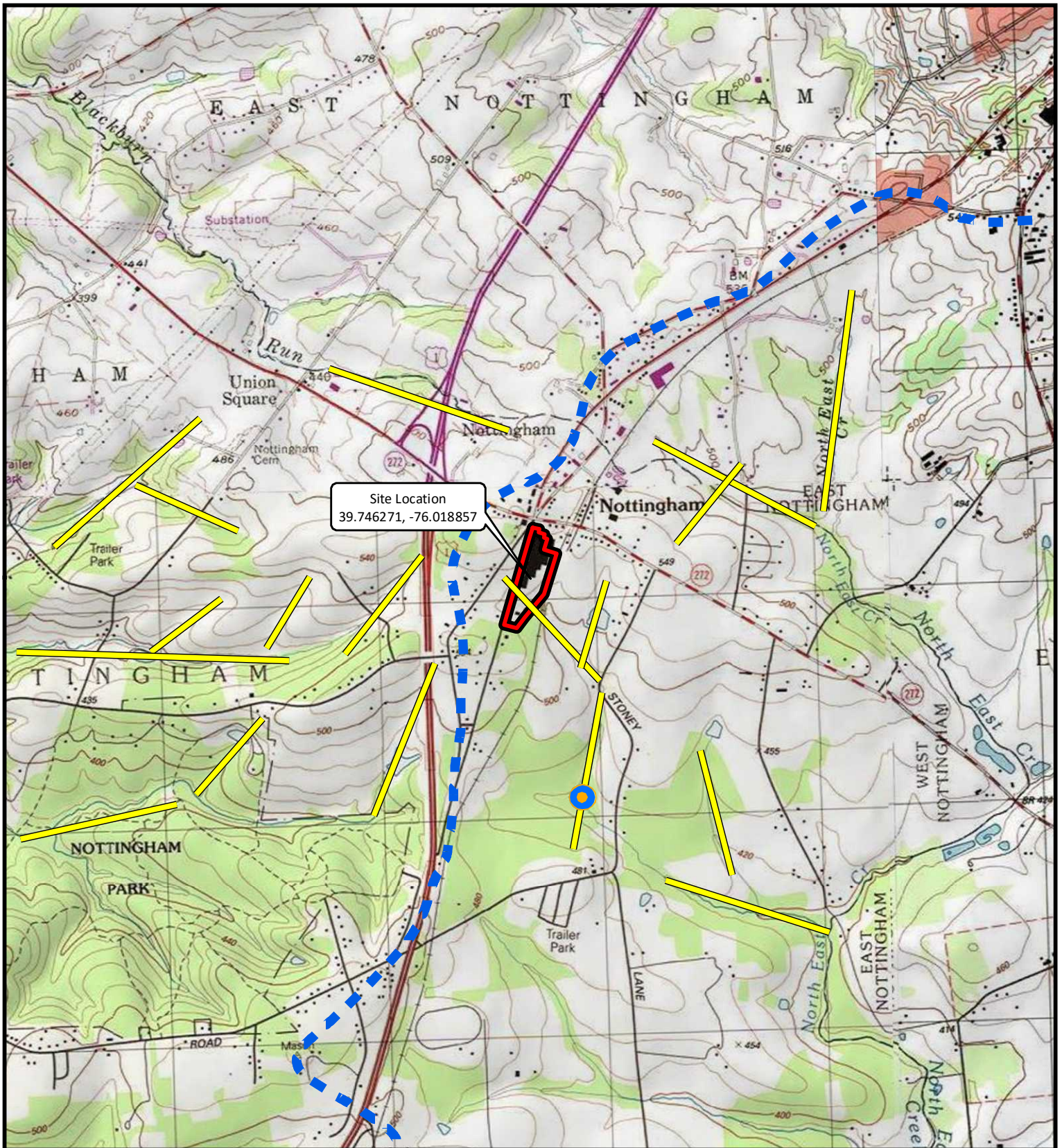
11.0 SCHEDULE

The primary tasks and schedule associated with remedial implementation are presented below. The schedule presented below is based on PADEP approval of this RAP, subcontractor coordination, and scheduling. The schedule is also based on two ISCO injection events. If additional ISCO injections are needed to achieve RAOs, the schedule will be modified accordingly and presented in the RAPR.

- Submittal of RAP to PADEP – March 2017
- Quarterly groundwater monitoring – April 2017
- PADEP Approval of the RAP – June 2017
- Baseline groundwater monitoring – July 2017
- Former water supply well abandonment – July 2017
- Remedial action implementation (1st round of injections) – August 2017
- Post remediation groundwater monitoring and natural attenuation evaluation – October 2017
- Quarterly RAPR submittal – November 2017 and 30 days following receipt of quarterly groundwater sample analytical reports for each monitoring event thereafter.
- Remedial action implementation (2nd round of injections) – December 2017
- Quarterly groundwater monitoring events – January, April, and July of 2018
- Subsequent injection events – To be determined based on remedial performance evaluation
- Vapor intrusion assessment – 4th Quarter 2018 subject to remedial effectiveness
- Anticipated Site closure and attainment demonstration – 2nd Quarter 2019

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FIGURES



Herrs Water Supply Well



Inferred Fracture Trace



Groundwater Divide



Parcel Boundary - Nottingham Plant 1

Herr Foods, Inc

Remedial Action Plan

Figure 1 - Site Location Map

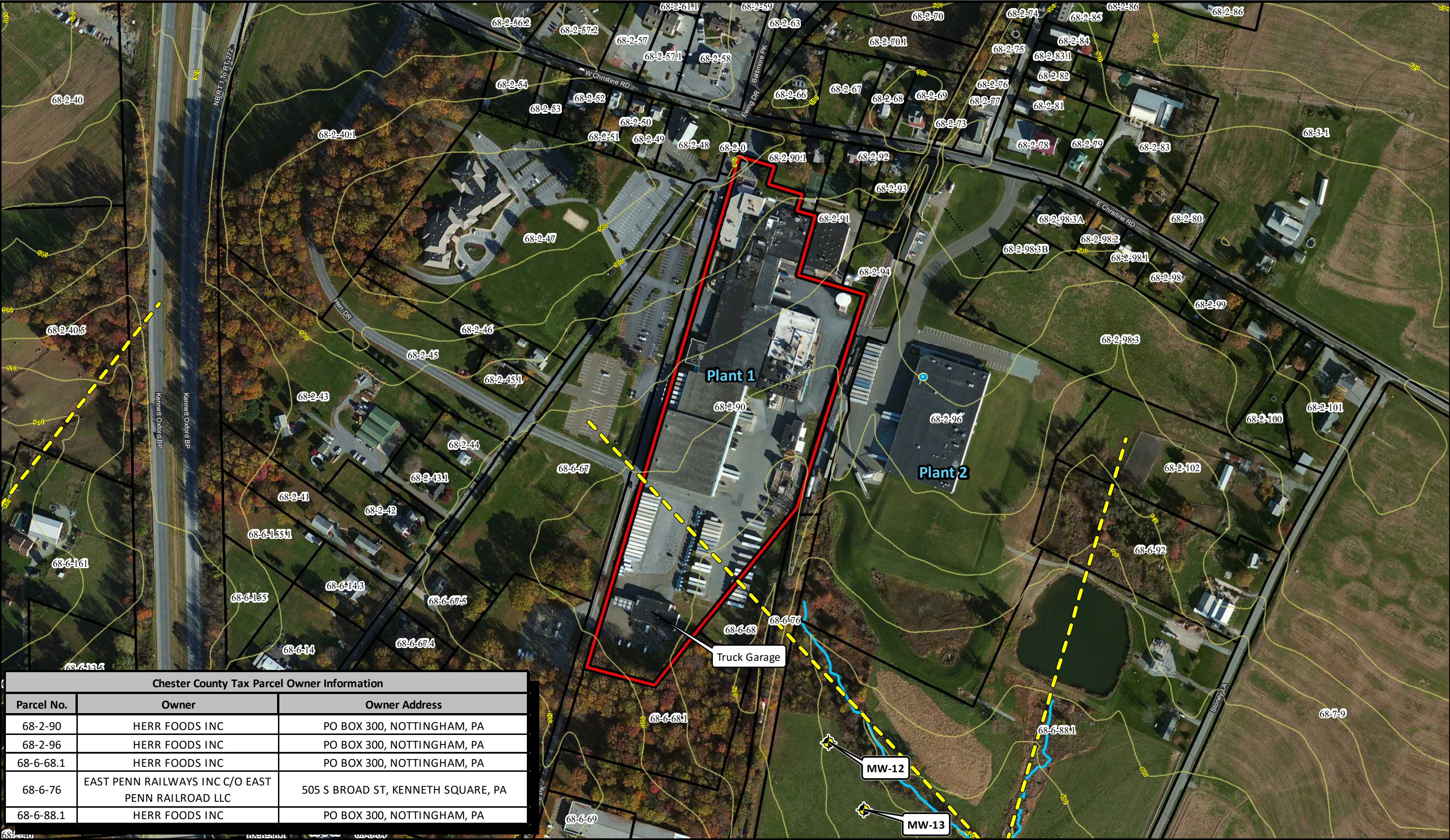
Project No. 101722001



0 1,000 2,000
Feet
1 inch = 2,000 feet

Service Layer Credits: Copyright: © 2013 National Geographic Society, I-cubed

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Chester County Tax Parcel Owner Information		
Parcel No.	Owner	Owner Address
68-2-90	HERR FOODS INC	PO BOX 300, NOTTINGHAM, PA
68-2-96	HERR FOODS INC	PO BOX 300, NOTTINGHAM, PA
68-6-68.1	HERR FOODS INC	PO BOX 300, NOTTINGHAM, PA
68-6-76	EAST PENN RAILWAYS INC C/O EAST PENN RAILROAD LLC	505 S BROAD ST, KENNETH SQUARE, PA
68-6-88.1	HERR FOODS INC	PO BOX 300, NOTTINGHAM, PA

Herr Foods, Inc
Remedial Action Plan
Figure 2 - Aerial Basemap
West Nottingham Township, Chester County, PA
Project No. 101722001

Monitoring Well

Raw Water Sample Point

Inferred Fracture Trace

UNT to North East Creek

Contour (10 ft Interval)

Parcel Boundary - Nottingham Plant 1

Parcel Boundary

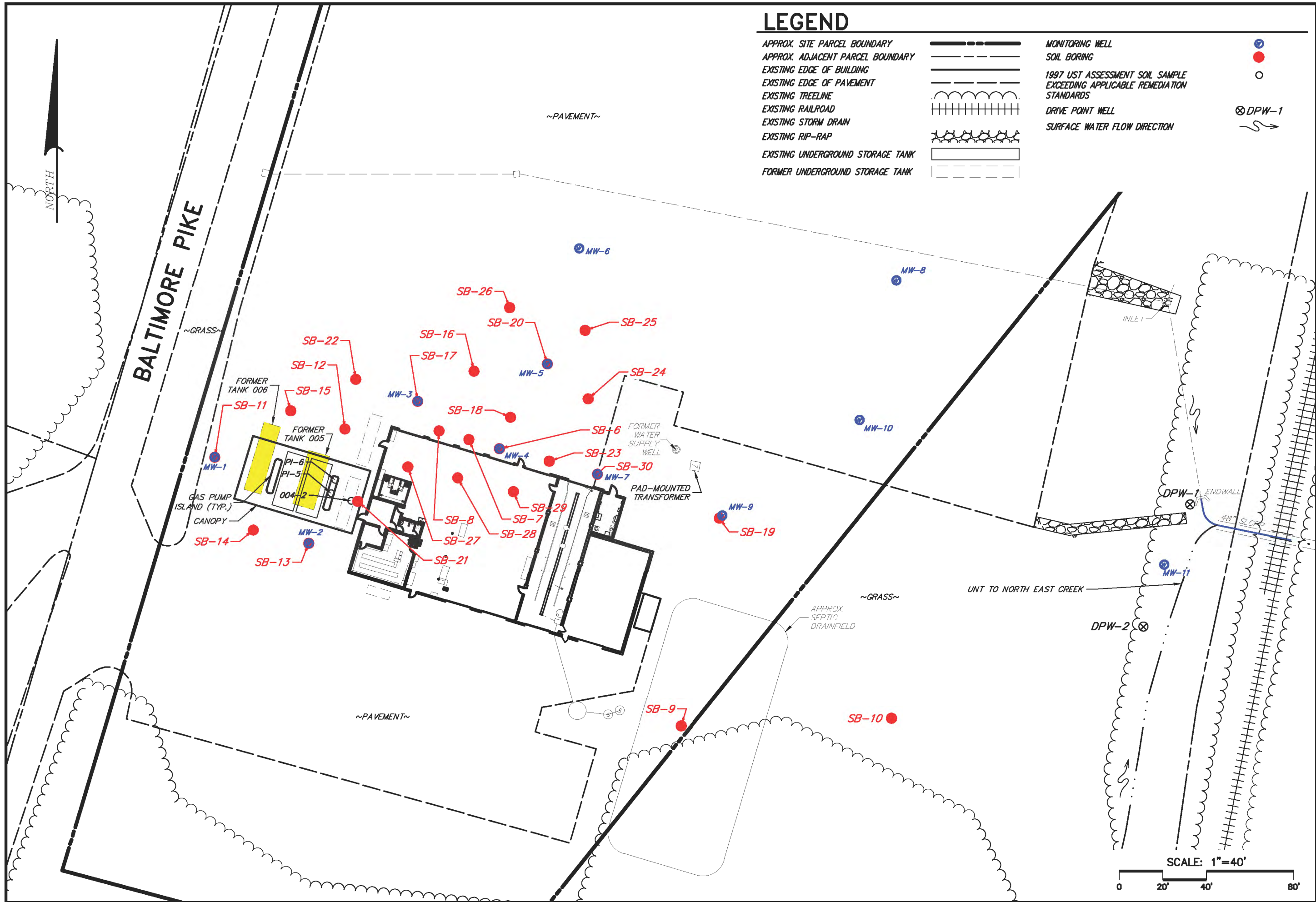
0 250
1: 1 inch = 250 feet
Service Layer Credits : Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

RETTEW

3/13/2017

Drawn By: JDD

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**FIGURE 3
SITE PLAN**

273 OLD BALTIMORE PIKE

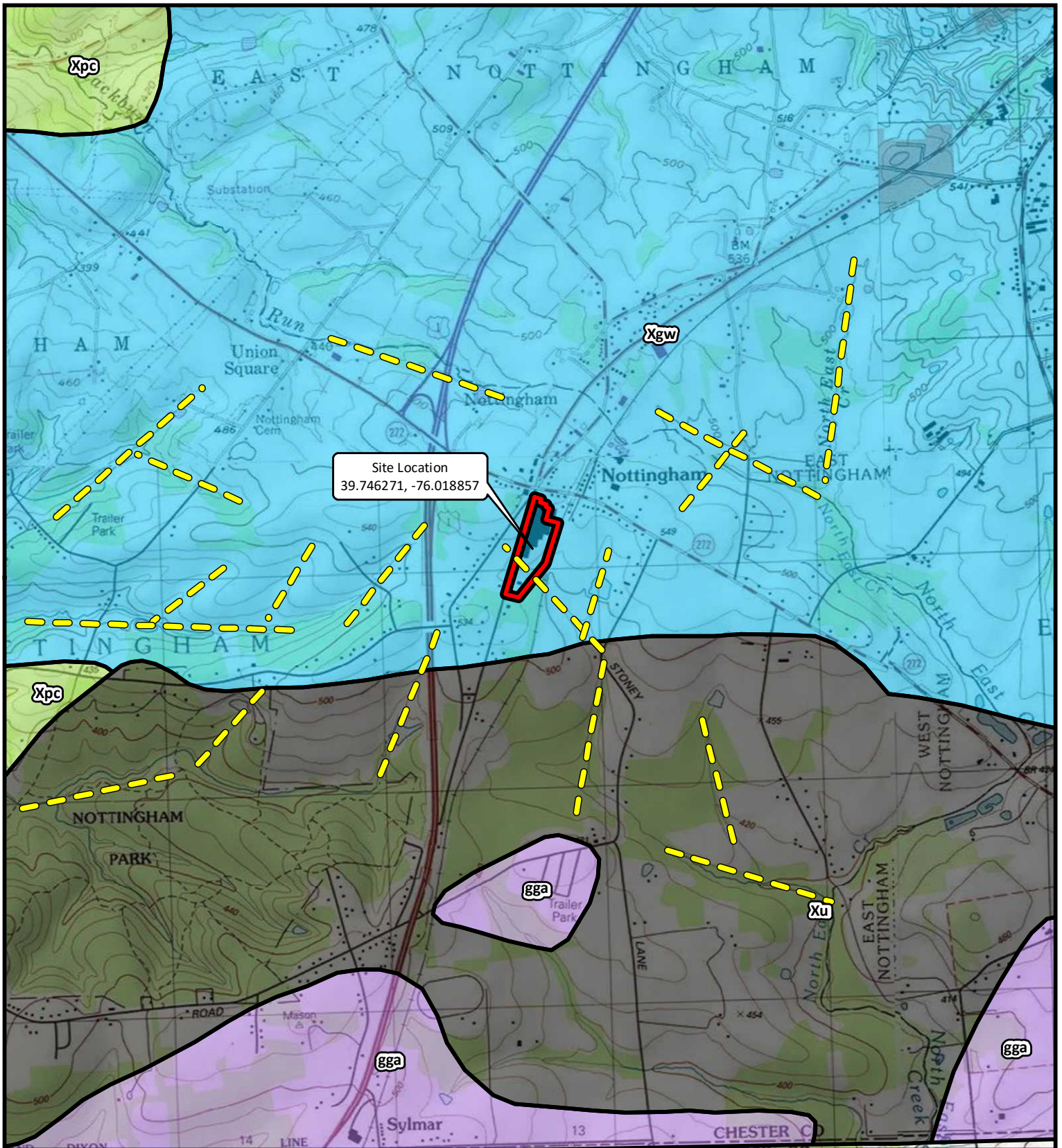
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA

DRAWN BY: JME

DATE: MAY 16, 2016

SCALE: AS NOTED

DWG. NO. 1 OF 1



— Inferred Fracture Trace

 Parcel Boundary - Nottingham Plant 1

Geologic Formation

Xgw - "Glenarm Wissahickon" formation

Xpc - Peters Creek Schist

Xu - Ultramafic rocks

gga - Banded mafic gneiss

West Nottingham Township, Chester County, PA
Rising Sun, MD/PA 7.5' USGS Topographic Quadrangle

3/13/2017

Herr Foods, Inc

Remedial Action Plan

Figure 4 - Geology Map

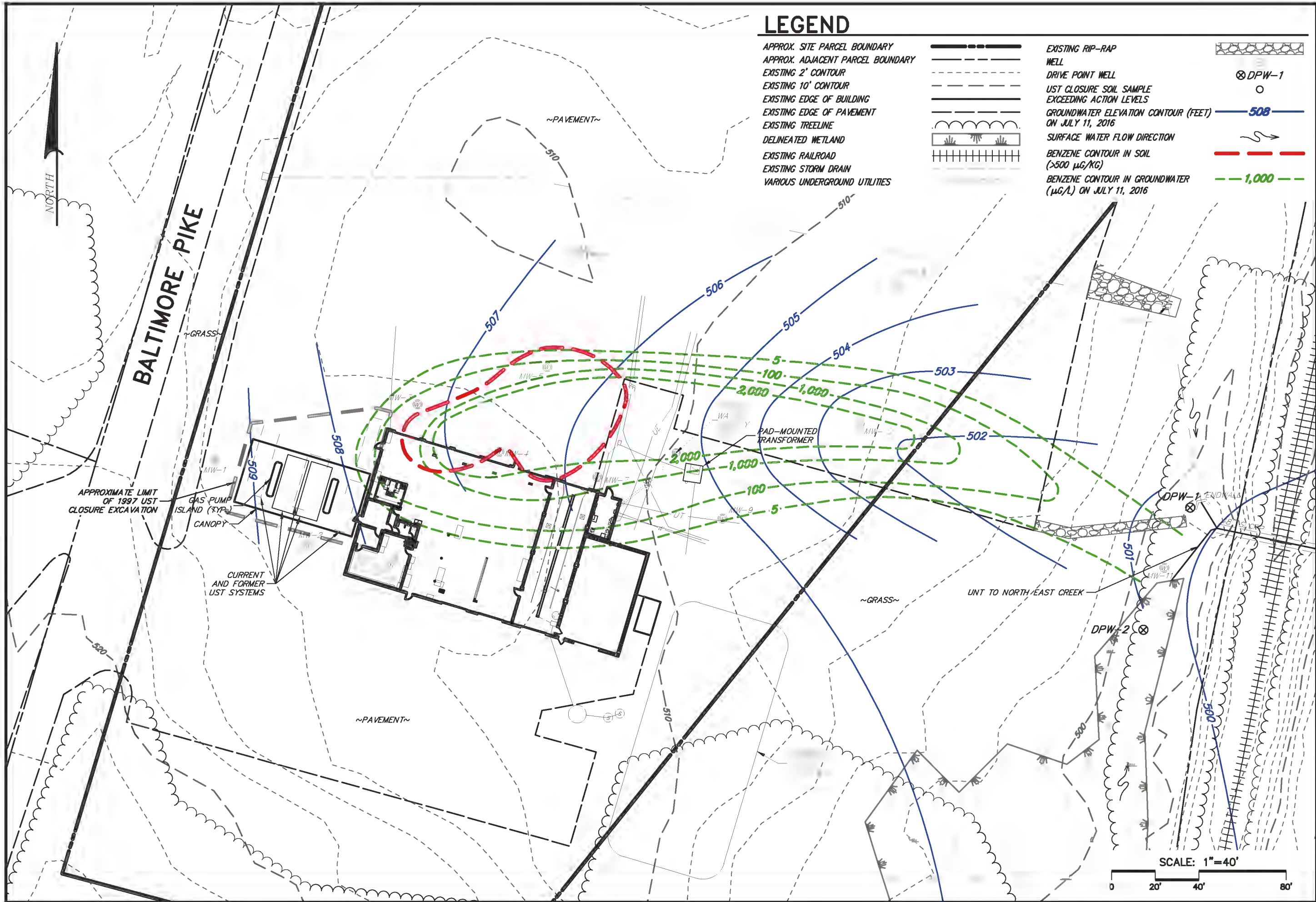
Project No: 101722001



0 1,000 2,000
Feet
1 inch = 2,000 feet

Service Layer Credits: Copyright: © 2013 National Geographic
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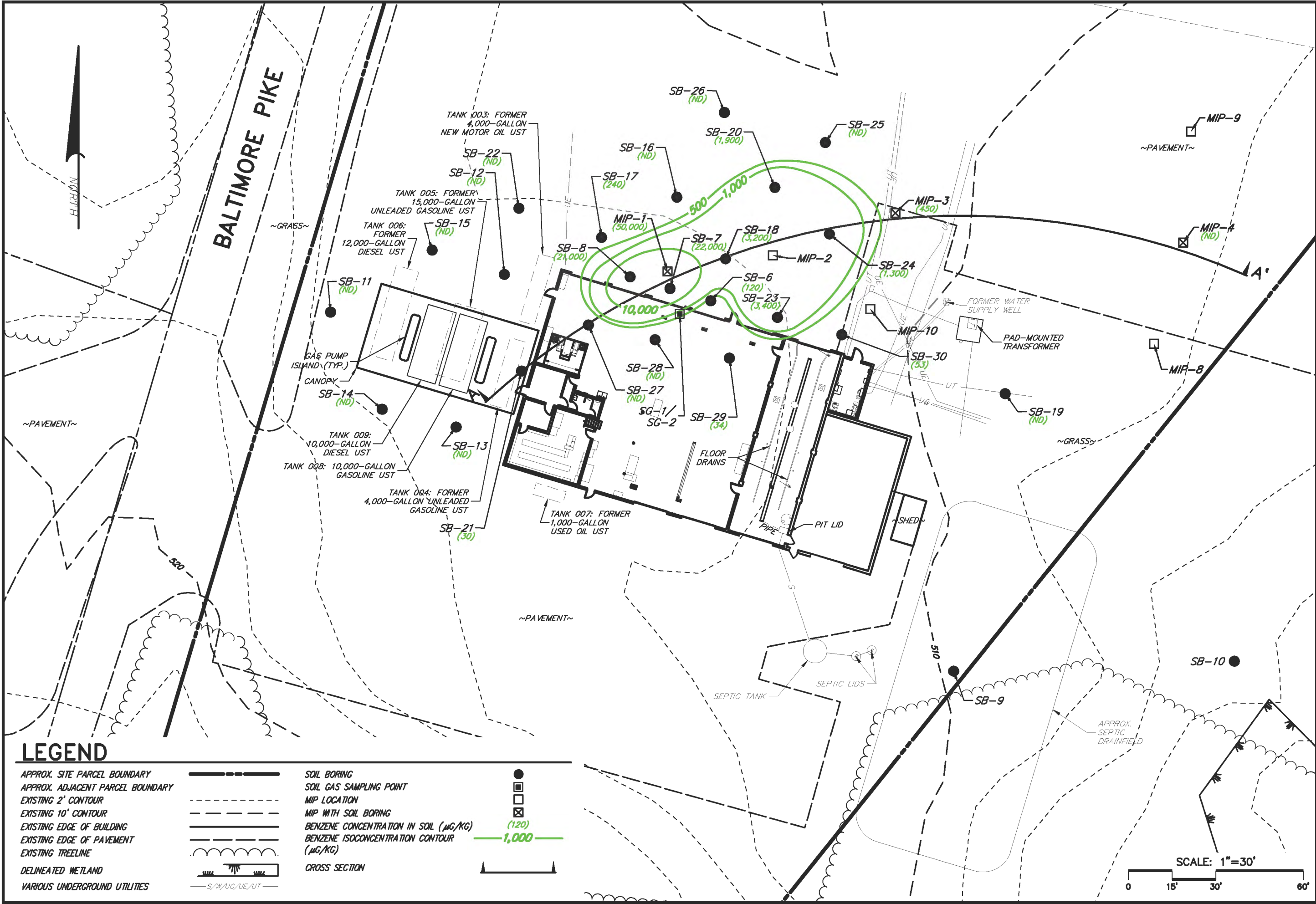
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FIGURE 5
CONCEPTUAL SITE MODEL
273 OLD BALTIMORE PIKE
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA

DRAWN BY: JME
DATE: MARCH 10, 2017
SCALE: AS NOTED
DWG. NO. 1 OF 1

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FIGURE 7

BENZENE DISTRIBUTION IN SOIL

273 OLD BALTIMORE PIKE

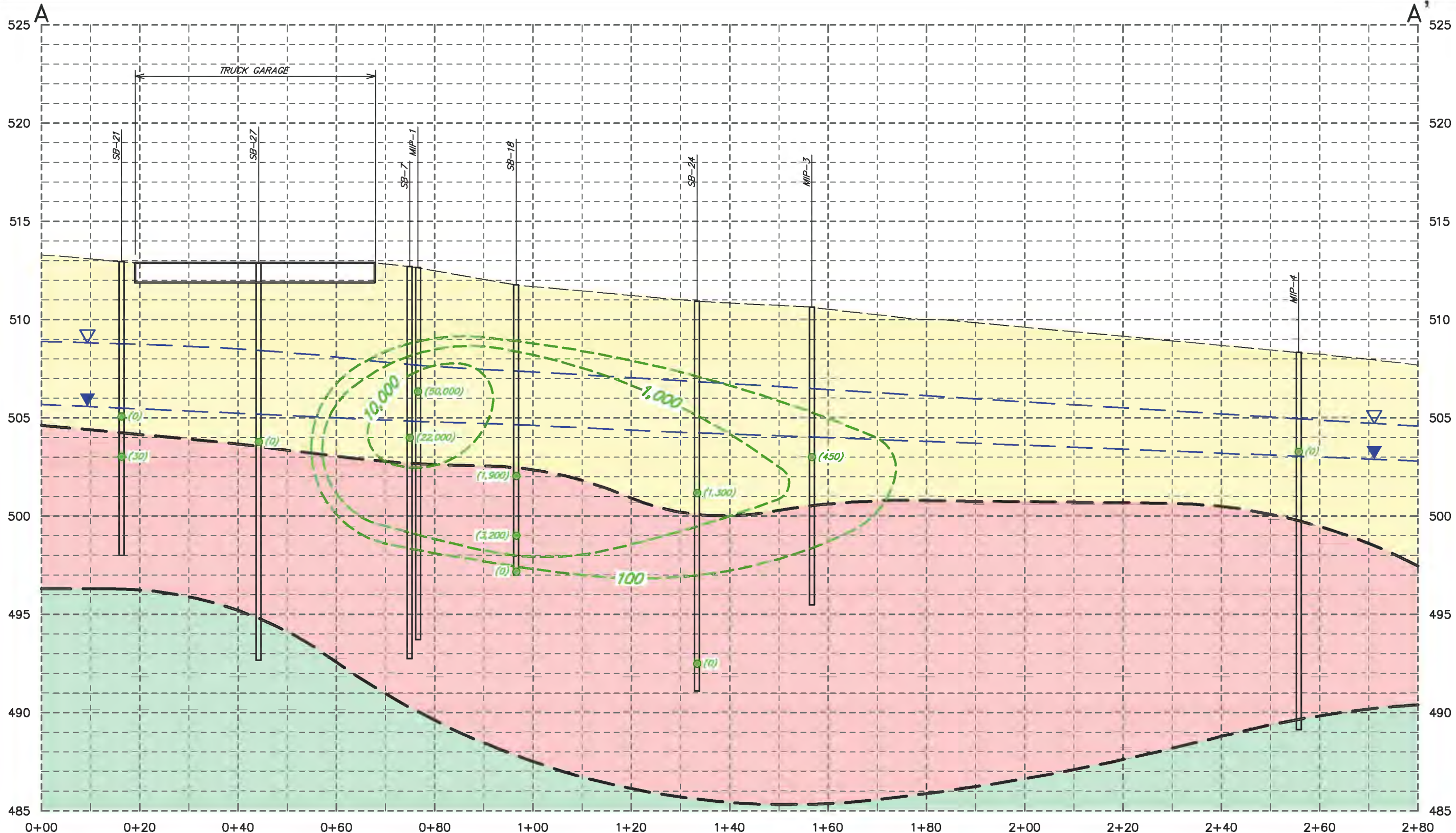
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA

DRAWN BY: JME

DATE: MARCH 10, 2017

SCALE: AS NOTED

DWG. NO. 1 OF 1



LEGEND

- | | | | |
|---------------------------------------|-----------------------|--|---------------------------|
| EXISTING GRADE | — — — — — | BENZENE ISOCONCENTRATION CONTOUR | — — — — — 1,000 — — — — — |
| JULY 9, 2015 GROUNDWATER LEVEL | — — — — — ▽ — — — — — | (µG/KG) | |
| JANUARY 16, 2017 GROUNDWATER LEVEL | — — — — — ▽ — — — — — | INFERRED GEOLOGIC BOUNDARY | — — — — — |
| SOIL BORING/WELL LOCATION | □ | MICACEOUS SILTY SAND | ■ |
| SAMPLE LOCATION WITHIN SOIL BORING | ● | COMPLETELY DECOMPOSED SCHIST SAPROLITE | ■ |
| BENZENE CONCENTRATION IN SOIL (µG/KG) | (1,580) | WEATHERED SCHIST BEDROCK | ■ |

HORIZONTAL SCALE: 1"=20'

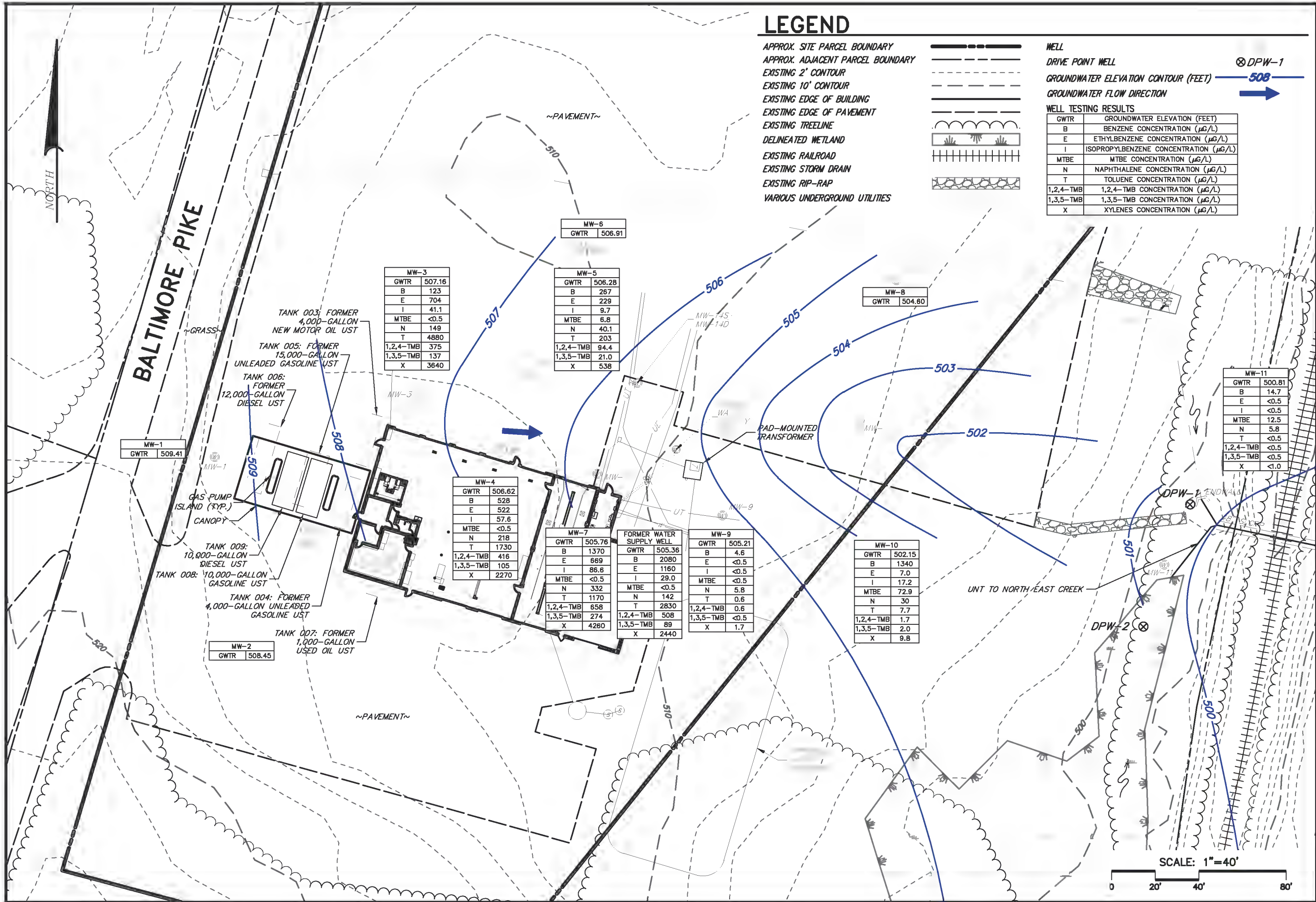
VERTICAL SCALE: 1"=5'

FIGURE 8
CROSS SECTION—BENZENE DISTRIBUTION IN SOIL
273 OLD BALTIMORE PIKE
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA

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DRAWN BY: JME
DATE: MARCH 10, 2017
SCALE: AS NOTED
DWG. NO. 1 OF 1

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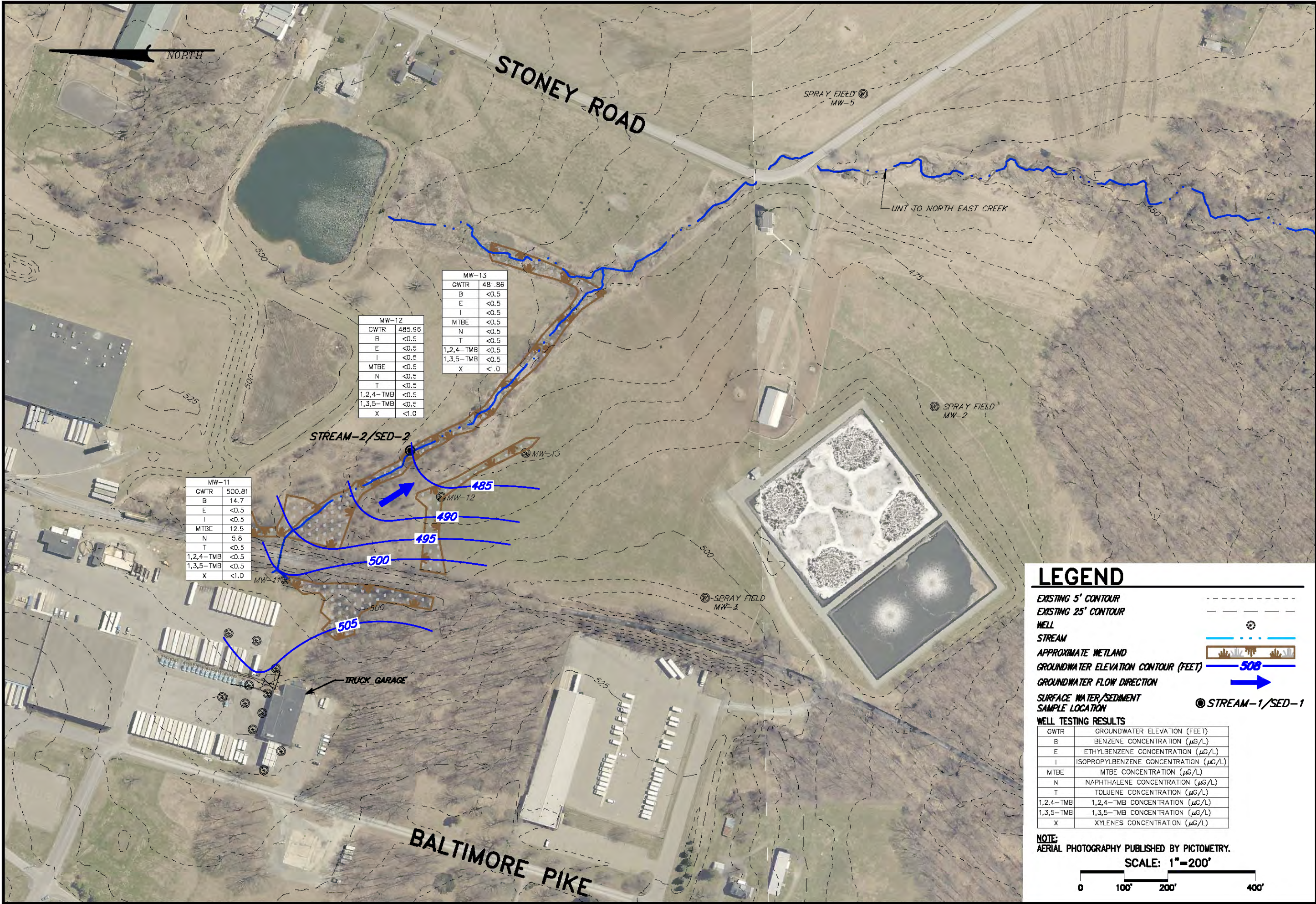


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FIGURE 9
GROUNDWATER ELEVATION CONTOUR MAP—
JULY 11, 2016
273 OLD BALTIMORE PIKE
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA

DRAWN BY: JME
DATE: MARCH 15, 2017
SCALE: AS NOTED
DWG. NO. 1 OF 1



MW-11	
GWTR	500.81
B	14.7
E	<0.5
I	<0.5
MTBE	12.5
N	5.8
T	<0.5
1,2,4-TMB	<0.5
1,3,5-TMB	<0.5
X	<1.0

MW-12	
GWTR	485.96
B	<0.5
E	<0.5
I	<0.5
MTBE	<0.5
N	<0.5
T	<0.5
1,2,4-TMB	<0.5
1,3,5-TMB	<0.5
X	<1.0

MW-13	
GWTR	481.86
B	<0.5
E	<0.5
I	<0.5
MTBE	<0.5
N	<0.5
T	<0.5
1,2,4-TMB	<0.5
1,3,5-TMB	<0.5
X	<1.0

LEGEND

- EXISTING 5' CONTOUR
- EXISTING 25' CONTOUR
- WELL
- STREAM
- APPROXIMATE WETLAND
- GROUNDWATER ELEVATION CONTOUR (FEET)
- GROUNDWATER FLOW DIRECTION
- SURFACE WATER/SEDIMENT
- SAMPLE LOCATION
- WELL TESTING RESULTS

GWTR	GROUNDWATER ELEVATION (FEET)
B	BENZENE CONCENTRATION (µG/L)
E	ETHYLBENZENE CONCENTRATION (µG/L)
I	ISOPROPYLBENZENE CONCENTRATION (µG/L)
MTBE	MTBE CONCENTRATION (µG/L)
N	NAPHTHALENE CONCENTRATION (µG/L)
T	TOLUENE CONCENTRATION (µG/L)
1,2,4-TMB	1,2,4-TMB CONCENTRATION (µG/L)
1,3,5-TMB	1,3,5-TMB CONCENTRATION (µG/L)
X	XYLENES CONCENTRATION (µG/L)

NOTE:
AERIAL PHOTOGRAPHY PUBLISHED BY PICTOMETRY.

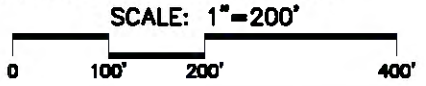
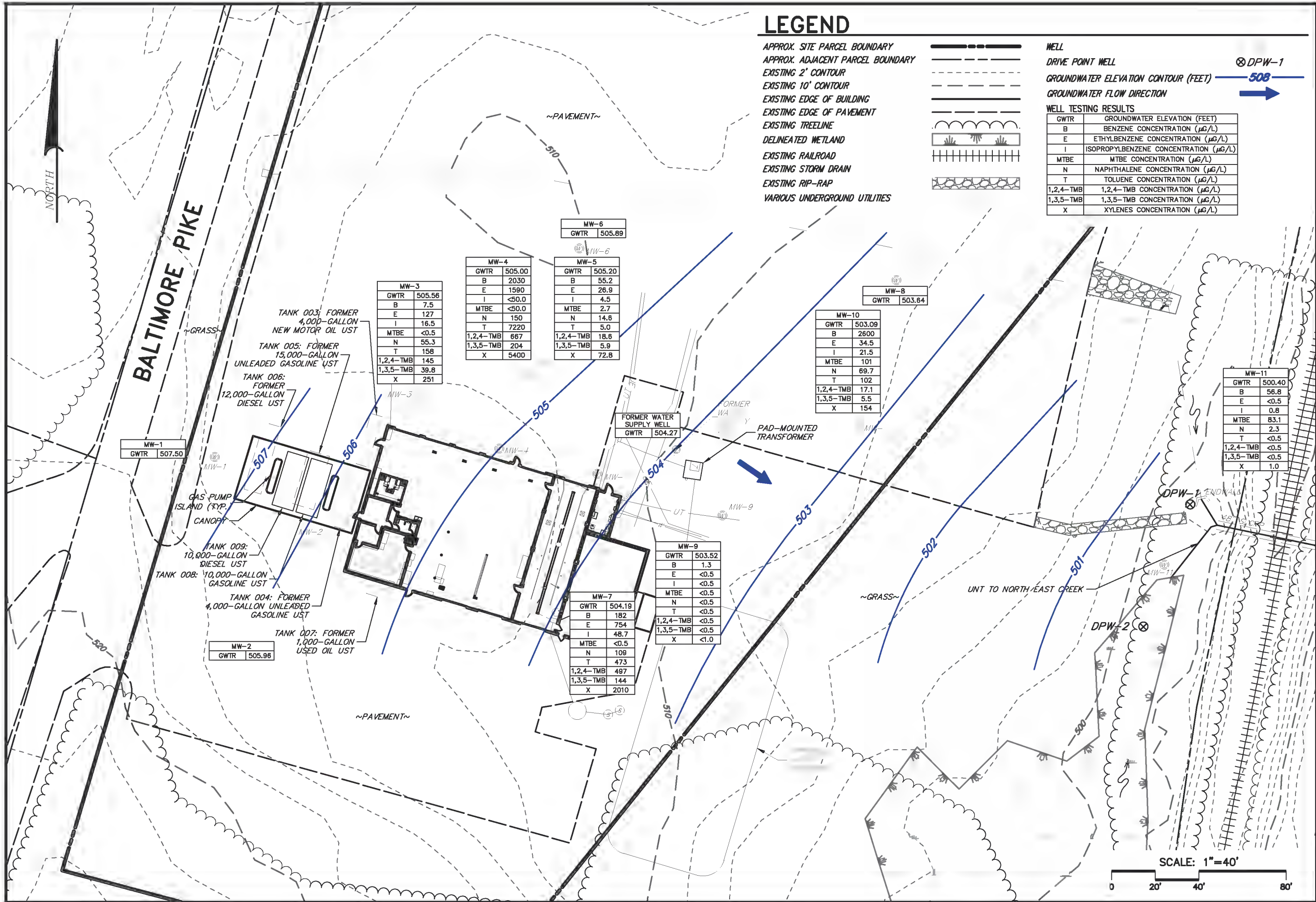


FIGURE 10
REGIONAL GROUNDWATER ELEVATION
CONTOUR MAP - JULY 11, 2016
273 OLD BALTIMORE PIKE
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA

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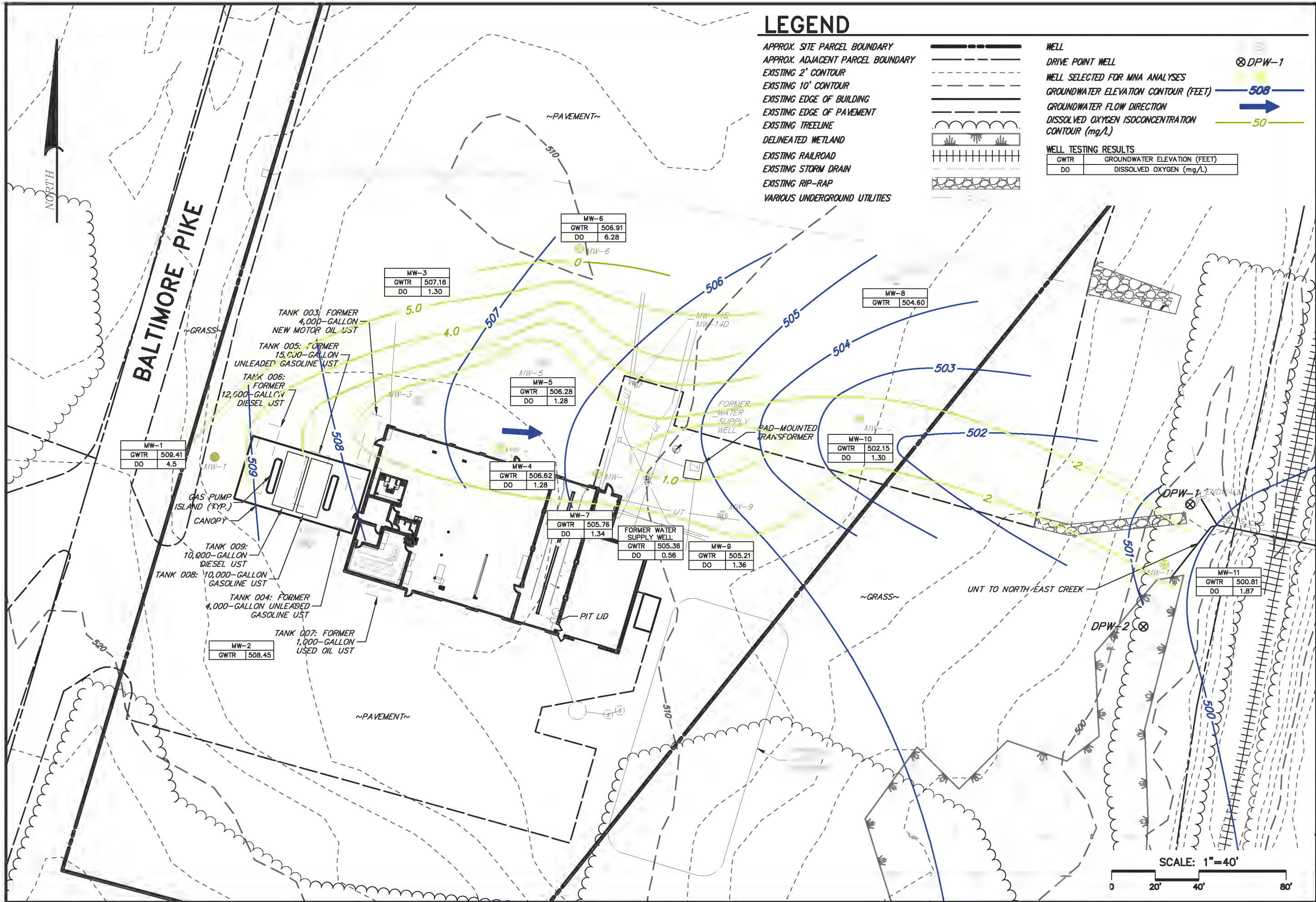


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FIGURE 11
GROUNDWATER ELEVATION CONTOUR MAP—
OCTOBER 3, 2016
273 OLD BALTIMORE PIKE
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA

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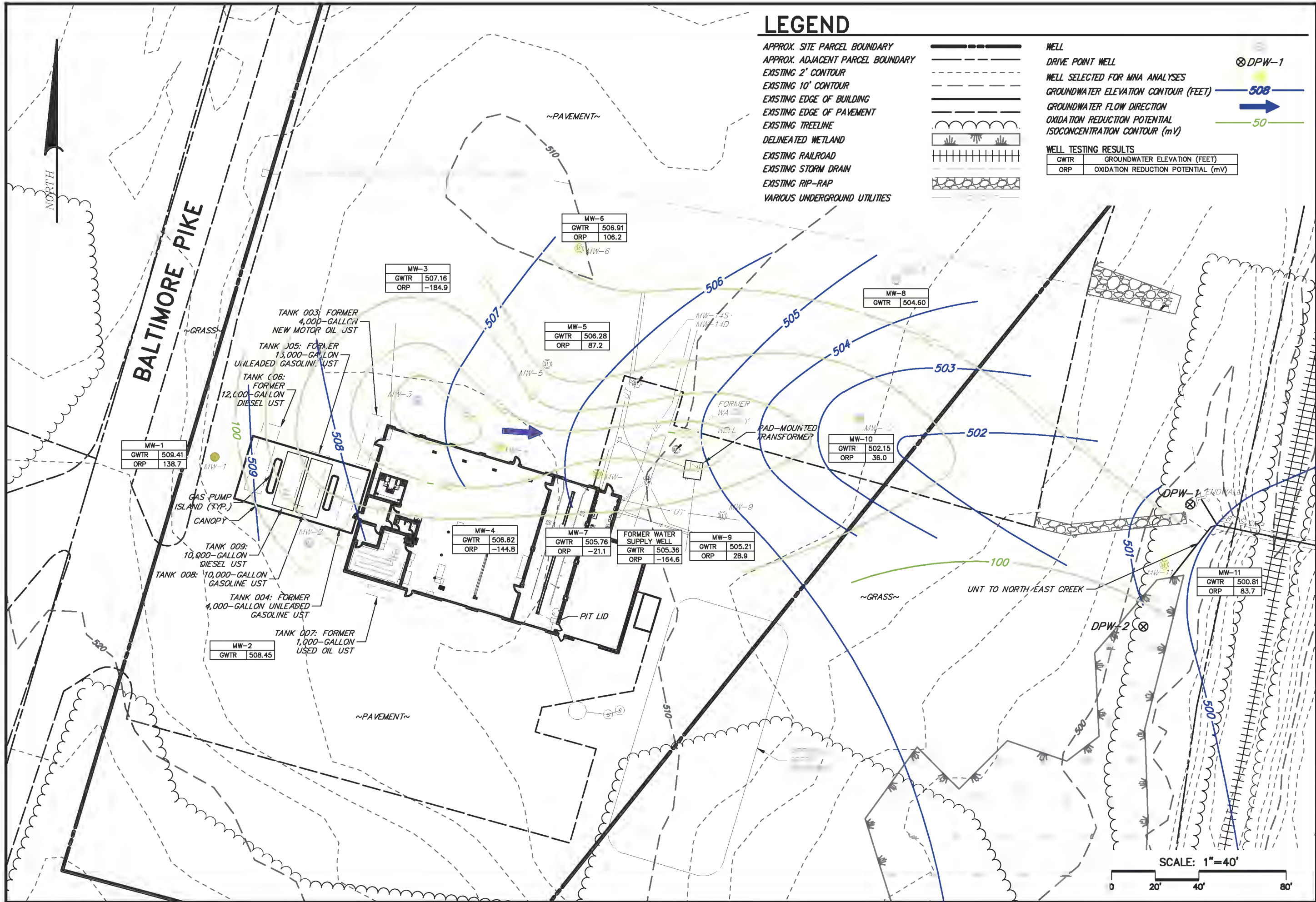


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FIGURE 13
DISSOLVED OXYGEN MAP—
JULY 11, 2016
273 OLD BALTIMORE PIKE
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA

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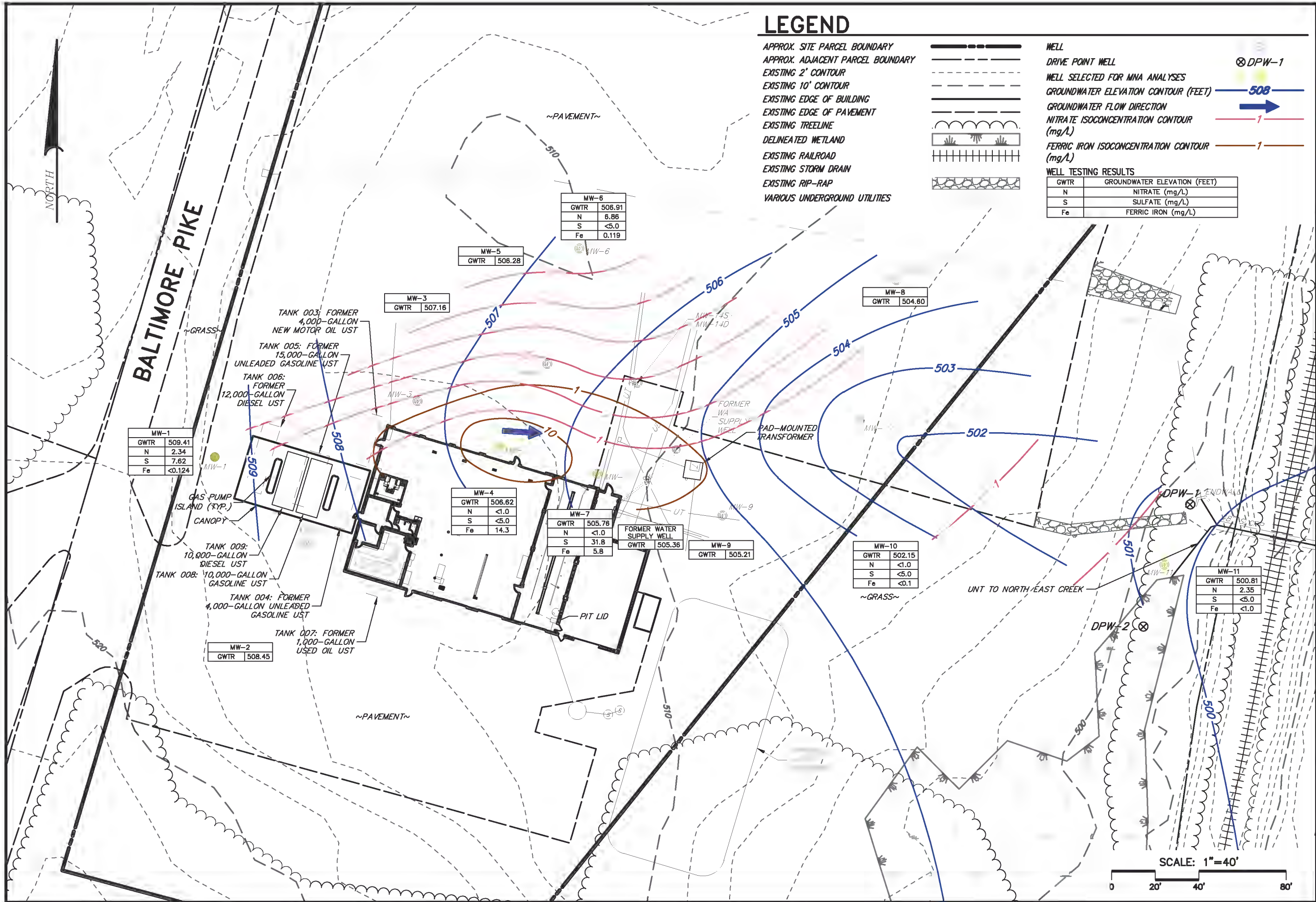


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FIGURE 14
OXIDATION REDUCTION POTENTIAL MAP—
JULY 11, 2016
273 OLD BALTIMORE PIKE
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA

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FIGURE 15
ELECTRON ACCEPTORS MAP—
JULY 11, 2016
273 OLD BALTIMORE PIKE

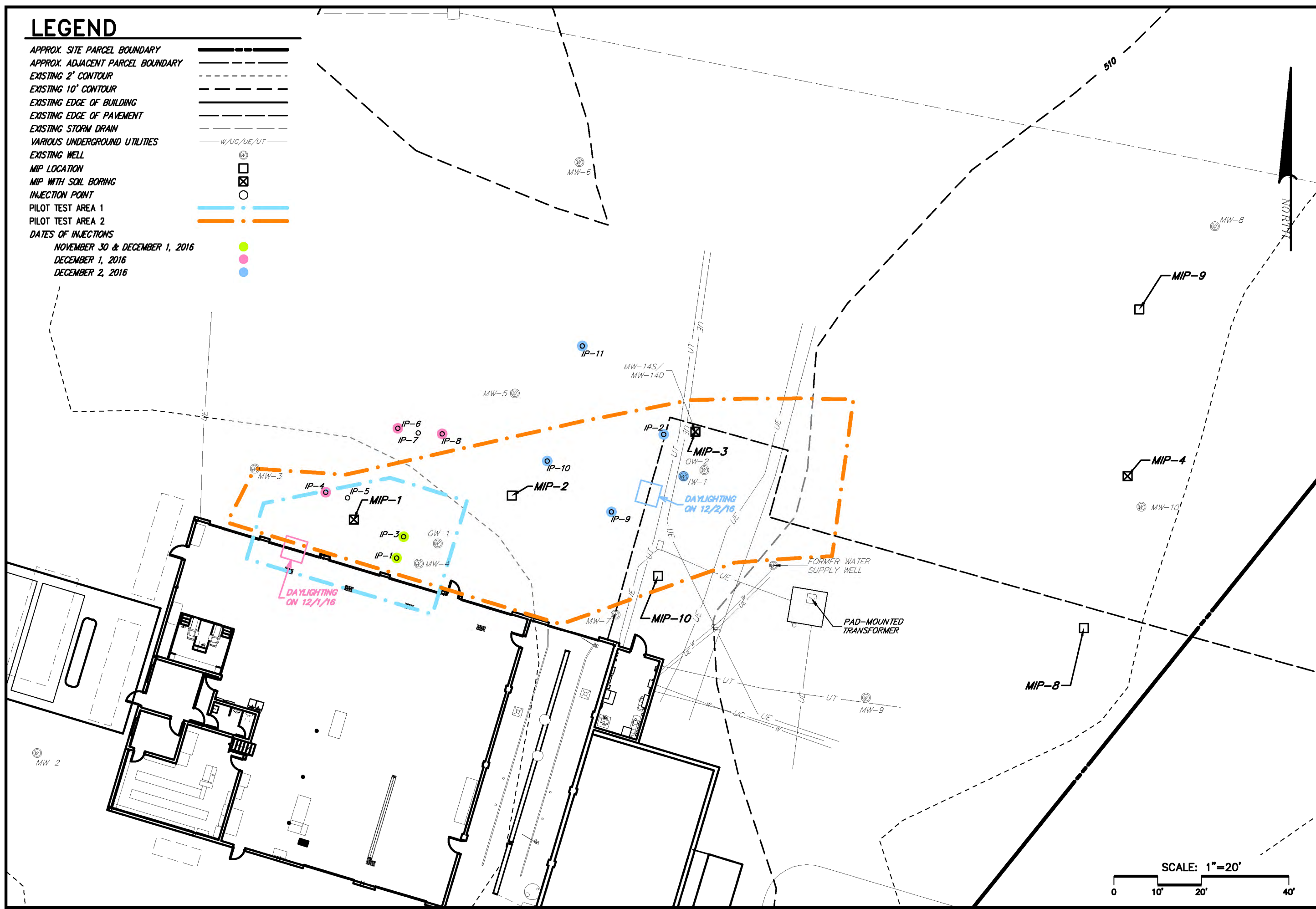
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA

DRAWN BY: JME
DATE: MARCH 10, 2017
SCALE: AS NOTED
DWG. NO. 1 OF 1

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LEGEND

- APPROX. SITE PARCEL BOUNDARY
- APPROX. ADJACENT PARCEL BOUNDARY
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- EXISTING EDGE OF BUILDING
- EXISTING EDGE OF PAVEMENT
- EXISTING STORM DRAIN
- VARIOUS UNDERGROUND UTILITIES
- EXISTING WELL
- MIP LOCATION
- MIP WITH SOIL BORING
- INJECTION POINT
- PILOT TEST AREA 1
- PILOT TEST AREA 2
- DATES OF INJECTIONS
- NOVEMBER 30 & DECEMBER 1, 2016
- DECEMBER 1, 2016
- DECEMBER 2, 2016



SCALE: 1"=20'

FIGURE 16

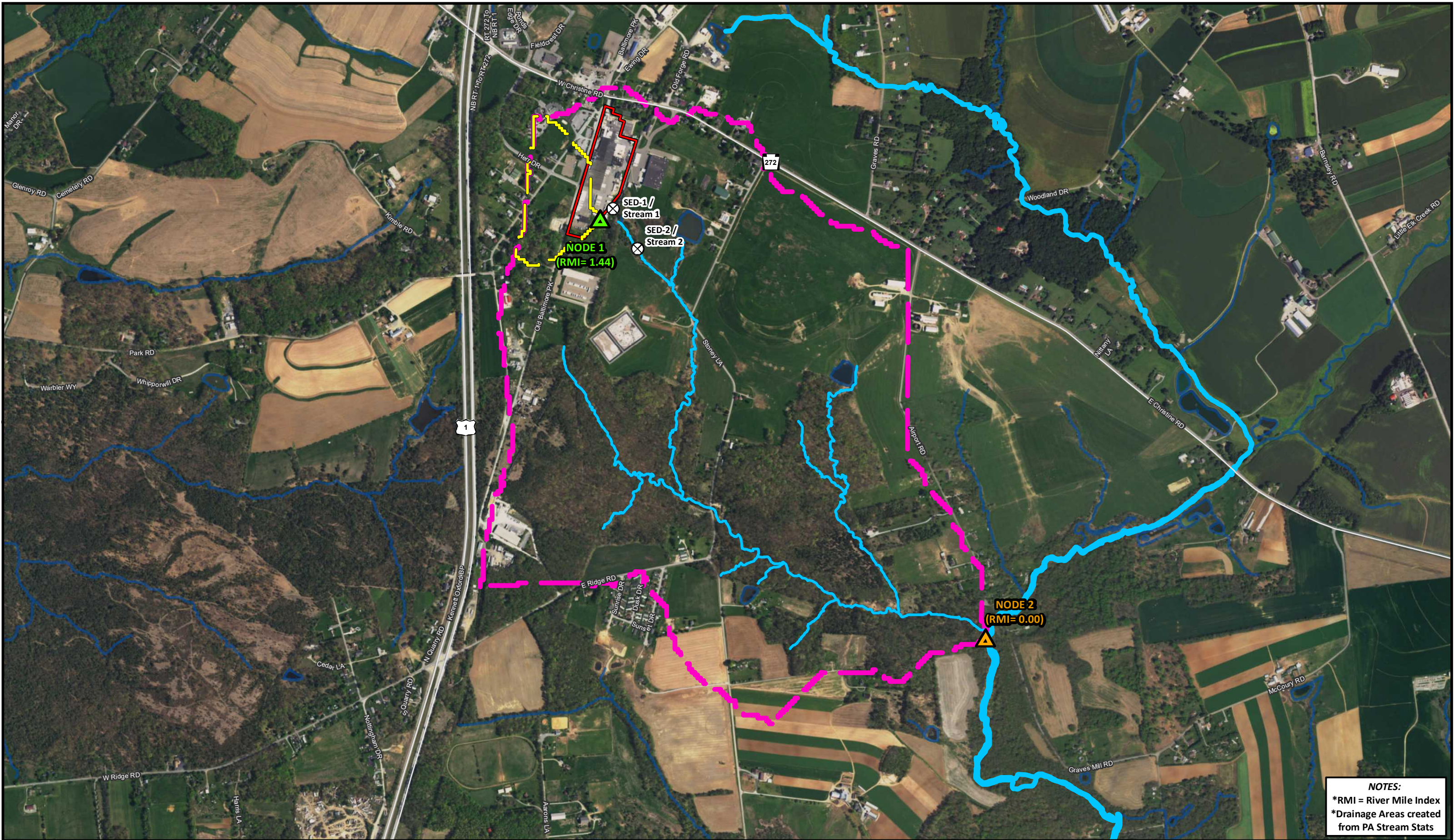
PILOT TEST INJECTION LOCATIONS
273 OLD BALTIMORE PIKE
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA



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NOTES:
*RMI = River Mile Index
*Drainage Areas created from PA Stream Stats

Herr Foods, Inc Remedial Action Plan Figure 17 - Surface Water Drainage Area Map West Nottingham Township, Chester County, PA Project No. 101722001	Node 1	Stream/Sediment Sample	Stream	Node 2 Drainage Area	 0 1,000 Feet 1 inch = 1,000 feet Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		3/13/2017	Drawn By: JDD
	Node 2	UNT To North East Creek	Major Route	Parcel Boundary - Nottingham Plant 1				

APPROX. SITE PARCEL BOUNDARY
EXISTING 2' CONTOUR
EXISTING 10' CONTOUR
EXISTING EDGE OF BUILDING
EXISTING EDGE OF PAVEMENT
EXISTING STORM DRAIN
VARIOUS UNDERGROUND UTILITIES
EXISTING WELL
MIP LOCATION
MIP WITH SOIL BORING
GROUNDWATER ELEVATION CONTOUR
ON JANUARY 16, 2017
BENZENE CONTOUR IN GROUNDWATER
($\mu\text{G/L}$) ON JANUARY 16, 2017

- REMEDIATION AREA 1
REMEDIATION AREA 2
REMEDIATION AREA 3
PROPOSED INJECTION POINT

DESIGN RADIUS OF INFLUENCE

NOTES:

- NOTES:**
1. REMEDIATION AREA 1: INJECTION INTERVAL = 7-14' BELOW GROUND SURFACE (BGS)
 2. REMEDIATION AREA 2: INJECTION INTERVAL = 7-12' BGS
 3. REMEDIATION AREA 3: INJECTION INTERVAL = 6-10' BGS
 4. INJECTIONS AT DEPTHS LESS THAN 8' BGS SHALL BE LOW FLOW (<1.5 GPM) OR GRAVITY FED.

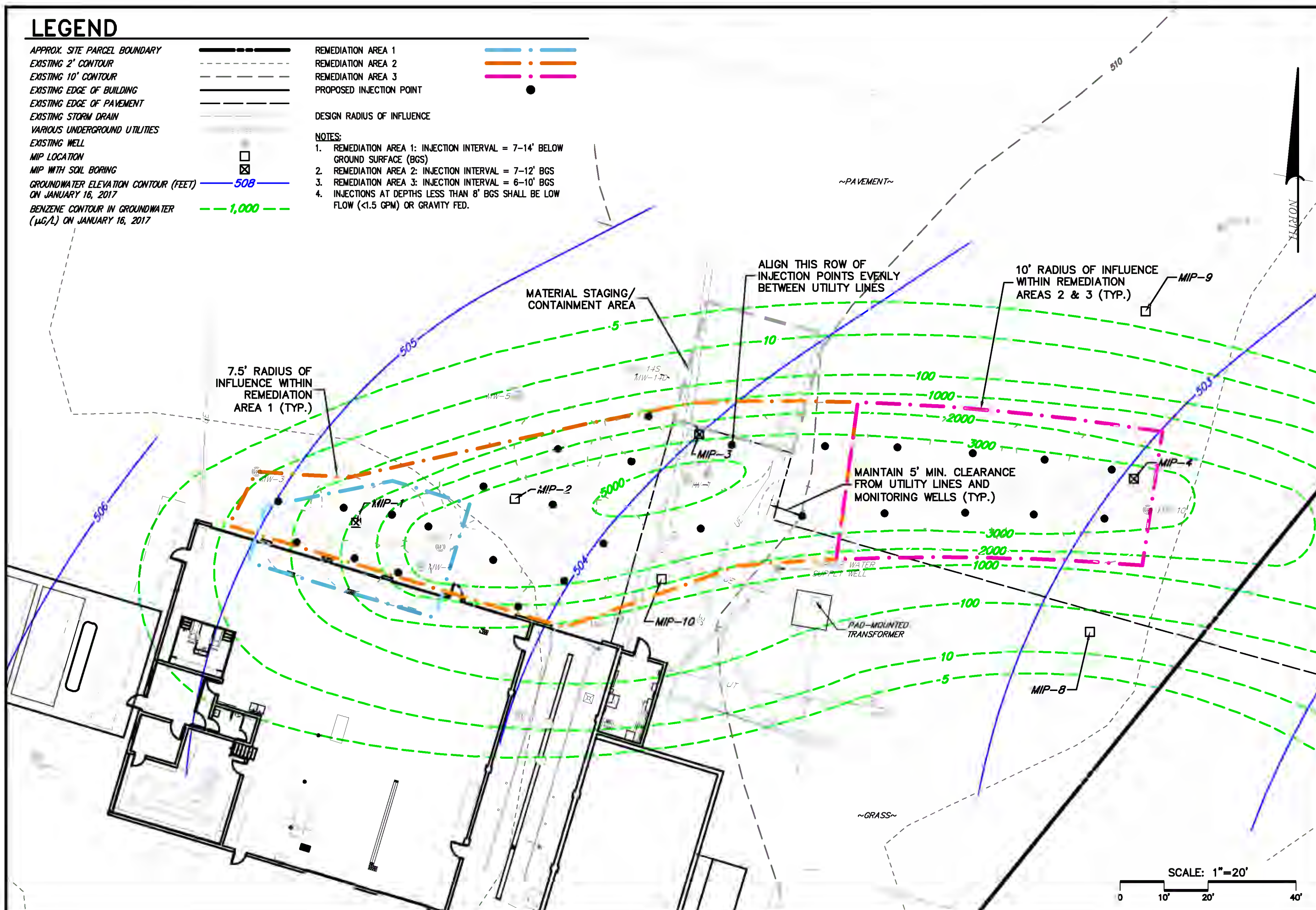


FIGURE 18

FIGURE 18
REMEDATION INJECTION LAYOUT
OVERLYING GROUNDWATER INFORMATION
273 OLD BALTIMORE PIKE

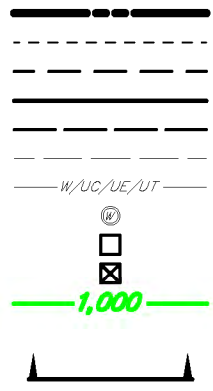
REVIEW

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LEGEND

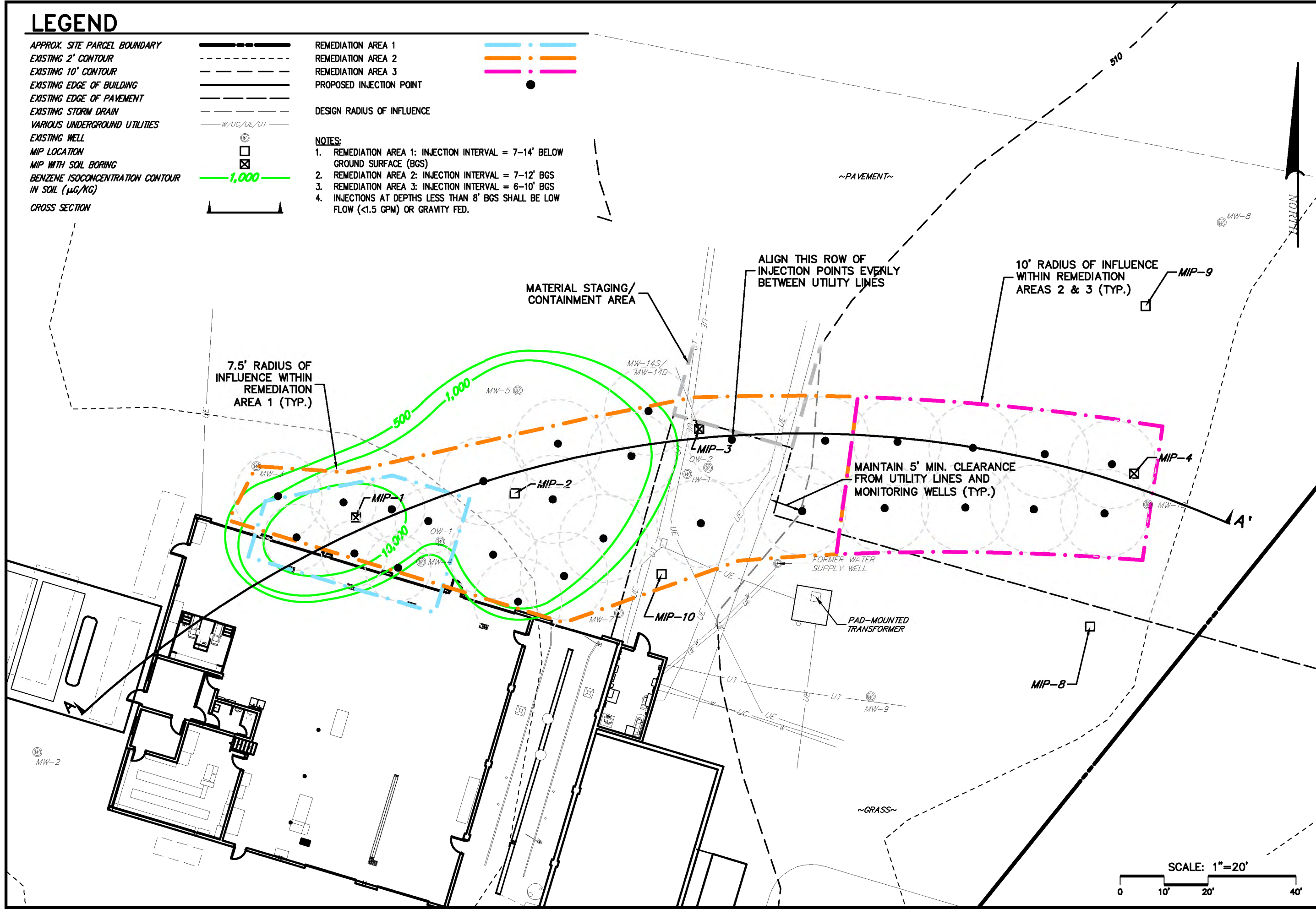
- APPROX. SITE PARCEL BOUNDARY
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- EXISTING EDGE OF BUILDING
- EXISTING EDGE OF PAVEMENT
- EXISTING STORM DRAIN
- VARIOUS UNDERGROUND UTILITIES
- EXISTING WELL
- MIP LOCATION
- MIP WITH SOIL BORING
- BENZENE ISOCONCENTRATION CONTOUR IN SOIL (µG/KG)
- CROSS SECTION



- REMEDIATION AREA 1
- REMEDIATION AREA 2
- REMEDIATION AREA 3
- PROPOSED INJECTION POINT
- DESIGN RADIUS OF INFLUENCE



- NOTES:
1. REMEDIATION AREA 1: INJECTION INTERVAL = 7-14' BELOW GROUND SURFACE (BGS)
 2. REMEDIATION AREA 2: INJECTION INTERVAL = 7-12' BGS
 3. REMEDIATION AREA 3: INJECTION INTERVAL = 6-10' BGS
 4. INJECTIONS AT DEPTHS LESS THAN 8' BGS SHALL BE LOW FLOW (<1.5 GPM) OR GRAVITY FED.

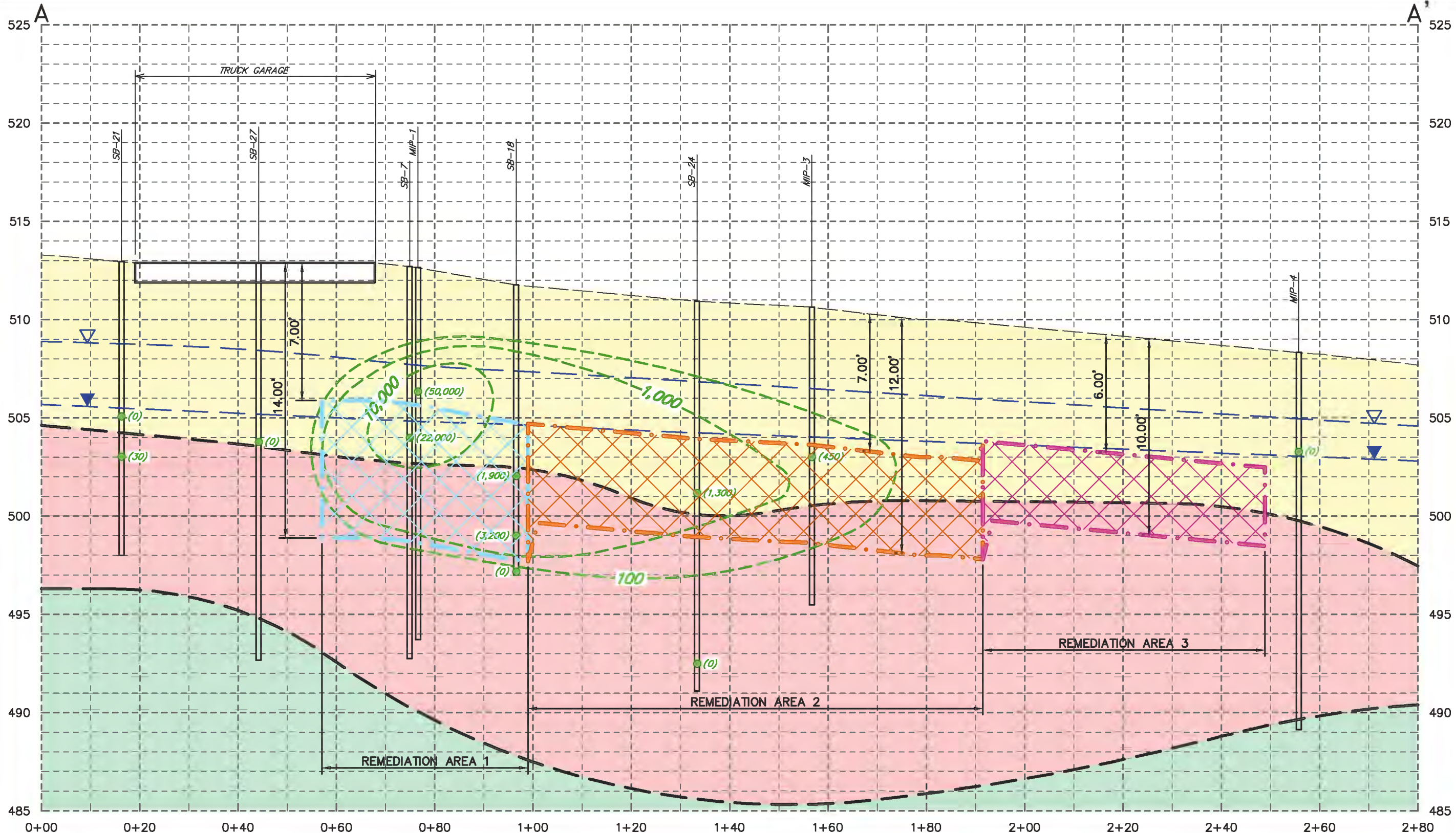


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FIGURE 19
REMEDATION INJECTION LAYOUT
OVERLYING SOIL COC INFORMATION
273 OLD BALTIMORE PIKE
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA



LEGEND

- EXISTING GRADE

JULY 9, 2015 GROUNDWATER LEVEL

JANUARY 16, 2017 GROUNDWATER LEVEL

SOIL BORING/WELL LOCATION

SAMPLE LOCATION WITHIN SOIL BORING
BENZENE CONCENTRATION IN SOIL (µG/KG)
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—
- BENZENE ISOCONCENTRATION CONTOUR
(µG/KG)

INFERRED GEOLOGIC BOUNDARY

MICACEOUS SILTY SAND

COMPLETELY DECOMPOSED SCHIST SAPROLITE

WEATHERED SCHIST BEDROCK
- —

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- —

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REMEDATION AREA 1

REMEDATION AREA 2

REMEDATION AREA 3



HORIZONTAL SCALE: 1"=20'

VERTICAL SCALE: 1"=5'

FIGURE 20
REMEDATION INJECTION CROSS SECTION
273 OLD BALTIMORE PIKE
WEST NOTTINGHAM TOWNSHIP CHESTER COUNTY, PA

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TABLES

Table 1
Phase II ESA Soil Sample Analytical Data Summary
Herr Foods, Inc. - 273 Old Baltimore Pike, Nottingham, Pennsylvania
RETTEW Project No. 101722001

PADEP Short List Petroleum Products for Lubricating Oils and Fluids	Act 2 Statewide Health Standard Medium Specific Concentrations (MSCs)											
	Soil to Groundwater (Used Aquifers)				Direct Contact							
	TDS ≤ 2500				Residential 0-15 feet	Non-Residential						
	Residential		Non-residential			Surface Soil	Subsurface Soil					
	100 X GW MSC	1/10 Generic Value	100 X GW MSC	1/10 Generic Value								
									SB-6 10 ft.	SB-7 8 ft.	SB-8 7 ft.	SB-9 10 ft.
BENZENE	500	13	500	13	57,000	290,000	330,000	120	22,000	21,000	< 0.6	8
ETHYLBENZENE	70,000	4,600	70,000	4,600	180,000	890,000	1,000,000	6,500	85,000	120,000	NA	NA
NAPHTHALENE	10,000	2,500	10,000	2,500	160,000	760,000	190,000,000	1,500	18,000	30,000	< 5	< 45
TOLUENE	100,000	4,400	100,000	4,400	10,000,000	10,000,000	10,000,000	2,600	270,000	450,000	NA	NA
XYLENES	1,000,000	99,000	1,000,000	99,000	1,900,000	8,000,000	9,100,000	28,000	390,000	560,000	NA	NA
ANTHRACENE	6,600	35,000	6,600	35,000	66,000,000	190,000,000	190,000,000	< 4	29	29	< 5	< 45
BENZO(A)ANTHRACENE	32	2,800	490	430,000	6,000	130,000	190,000,000	< 4	10 J	10 J	< 5	< 45
BENZO(A)PYRENE	20	4,600	20	4,600	580	12,000	190,000,000	< 4	6 J	< 4	< 5	< 45
BENZO(B)FLUORANTHENE	19	2,600	120	17,000	3,500	76,000	190,000,000	< 4	< 4	< 4	< 5	< 45
BENZO(G,H,I)PERYLENE	26	18,000	26	18,000	13,000,000	190,000,000	190,000,000	< 4	8 J	< 4	< 5	< 45
CHRYSENE	190	23,000	190	23,000	35,000	760,000	190,000,000	< 4	11 J	10 J	< 5	< 45
FLOURENE	170,000	340,000	190,000	380,000	8,800,000	130,000,000	190,000,000	7 J	92	89	< 5	< 45
PHENANTHRENE	110,000	1,000,000	110,000	1,000,000	66,000,000	190,000,000	190,000,000	11 J	150	150	< 5	< 45
PYRENE	13,000	220,000	13,000	220,000	6,600,000	96,000,000	190,000,000	5 J	49	45	< 5	< 45

Notes:

- 1) All units in milligrams per kilogram (ug/kg)
- 2) Bold & shaded MSCs represent the applicable Act 2 non-residential Statewide Health Standard.
- 3) Shaded results represent an exceedence of the applicable non-residential Statewide Health Standard.
- 4) Soil samples were collected on October 6, 2014.
- 5) PADEP Short List petroleum products in *italics* are COPIACs.
- 6) NA = Not analyzed.
- 7) 1/10 of the Soil to Groundwater Generic Value used for soil in the zone of groundwater saturation below a depth of two feet.

Table 2
Soil Sample Analytical Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

PADEP Short List Petroleum Products for Diesel Fuel and Unleaded Gasoline	Act 2 Statewide Health Standard Medium Specific Concentrations (MSCs)							Soil Sample Identifications (Depth in feet below grade below sample I.D.)									
	Soil to Groundwater (Used Aquifers)				Direct Contact												
	TDS ≤ 2500				Residential	Non-Residential											
	Residential		Non-residential			Surface	Subsurface										
	100 X	1/10 Generic	100 X	1/10 Generic		Soil	Soil										
	GW MSC	Value	GW MSC	Value	0-15 feet	0-2 feet	2-15 feet	SB-11	SB-12	SB-12	SB-12	SB-12	SB-13	SB-14	SB-15	SB-16	SB-17
									14 ft.	5 ft.	8 ft.	12 ft.	18 ft.	10 ft.	11 ft.	11 ft.	12 ft.
BENZENE	500	13	500	13	5,700	290,000	330,000	< 29	< 29	< 58	< 29	< 30	< 30	< 29	< 28	< 28	< 27
ETHYLBENZENE	70,000	4,600	70,000	4,600	180,000	890,000	1,000,000	< 57	480	16,000	3,800	< 61	< 60	< 58	< 56	< 56	100
ISOPROPYLBENZENE	84,000	60,000	350,000	250,000	7,700,000	10,000,000	10,000,000	< 57	250 J	5,200	2,200	< 61	< 60	< 58	< 56	< 56	< 54
METHYL TERT BUTYL ETHER	2,000	28	2,000	28	1,700,000	8,600,000	9,900,000	< 29	< 29	< 58	< 29	< 30	< 30	< 29	< 28	< 28	< 27
NAPHTHALENE	10,000	2,500	10,000	2,500	160,000	760,000	190,000,000	< 57	880	9,000	2,400	100 J	< 60	< 58	< 56	< 56	350
TOLUENE	100,000	4,400	100,000	4,400	10,000,000	10,000,000	10,000,000	< 57	< 57	< 120	< 58	< 61	< 60	< 58	< 56	< 56	1,100
1,2,4-TRIMETHYLBENZENE	1,500	840	6,200	3,500	130,000	560,000	640,000	79 J	6,600	120,000	68,000	500	< 60	< 58	< 56	< 56	450
1,3,5-TRIMETHYLBENZENE	42,000	7,400	120,000	21,000	2,200,000	10,000,000	10,000,000	< 57	2,600	39,000	15,000	190 J	< 60	< 58	< 56	< 56	250 J
XYLENES	1,000,000	99,000	1,000,000	99,000	1,900,000	8,000,000	190,000,000	< 57	1,100	34,000	8,900	< 61	< 60	< 58	< 56	< 56	1,100
MOISTURE (%)	No Standard							15.4	18.7	20.0	27.3	16.6	19.4	22.9	28.2	27.9	17.6

Notes:

- 1) All units in milligrams per kilogram (ug/kg)
- 2) Bold & shaded MSCs represent the applicable Act 2 non-residential Statewide Health Standard.
- 3) Shaded results represent an exceedence of the applicable non-residential Statewide Health Standard.
- 4) Soil samples were collected from SB-11 through SB-21 on February 5, 2015.
- 5) PADEP Short List petroleum products in *italics* are COPIACs.
- 6) 1/10 of the Soil to Groundwater Generic Value used for soil in the zone of groundwater saturation below a depth of two feet.

Table 2
Soil Sample Analytical Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

PADEP Short List Petroleum Products for Diesel Fuel and Unleaded Gasoline	Act 2 Statewide Health Standard Medium Specific Concentrations (MSCs)							Sample Identifications (Depth in feet below grade below sample I.D.)									
	Soil to Groundwater (Used Aquifers)				Direct Contact												
	TDS ≤ 2500				Residential	Non-Residential											
	Residential		Non-residential			Surface	Subsurface										
	100 X	1/10 Generic	100 X	1/10 Generic		Soil	Soil										
	GW MSC	Value	GW MSC	Value	0-15 feet	0-2 feet	2-15 feet	SB-17	SB-17	SB-18	SB-18	SB-18	SB-19	SB-20	SB-20	SB-20	SB-21
									11 ft.	15 ft.	10 ft.	13 ft.	15 ft.	10 ft.	8 ft.	11 ft.	15 ft.
BENZENE	500	13	500	13	5,700	290,000	330,000	240 J	< 25	1,900	3,200	< 30	< 25	1,300	1,900	< 26	< 33
ETHYLBENZENE	70,000	4,600	70,000	4,600	180,000	890,000	1,000,000	130,000	< 51	710	810	< 59	< 49	630	680	< 53	< 66
ISOPROPYLBENZENE	84,000	60,000	350,000	250,000	7,700,000	10,000,000	10,000,000	7,400	< 51	< 56	< 59	< 59	< 49	< 55	< 61	< 53	< 66
METHYL TERT BUTYL ETHER	2,000	28	2,000	28	1,700,000	8,600,000	9,900,000	< 60	< 25	260 J	31 J	< 30	< 25	< 28	< 31	< 26	< 33
NAPHTHALENE	10,000	2,500	10,000	2,500	160,000	760,000	190,000,000	120	< 51	160 J	120 J	< 59	< 49	130 J	93 J	< 53	76 J
TOLUENE	100,000	4,400	100,000	4,400	10,000,000	10,000,000	10,000,000	12,000	< 51	280	9,500	< 59	< 49	4,500	5,000	< 53	< 66
1,2,4-TRIMETHYLBENZENE	1,500	840	6,200	3,500	130,000	560,000	640,000	1,200	< 51	990	890	< 59	230 J	590	500	< 53	< 66
1,3,5-TRIMETHYLBENZENE	42,000	7,400	120,000	21,000	2,200,000	10,000,000	10,000,000	1,200	< 51	300	290 J	< 59	89 J	180 J	150 J	< 53	< 66
XYLENES	1,000,000	99,000	1,000,000	99,000	1,900,000	8,000,000	190,000,000	1,200	< 51	3,500	3,800	< 59	< 49	2,500	2,900	< 53	< 66
MOISTURE (%)	No Standard							26.2	16.0	22.4	25.2	15.7	18.7	21.4	24.2	12.3	22.2

Notes:

- 1) All units in milligrams per kilogram (ug/kg)
- 2) Bold & shaded MSCs represent the applicable Act 2 non-residential Statewide Health Standard.
- 3) Shaded results represent an exceedence of the applicable non-residential Statewide Health Standard.
- 4) Soil samples were collected from SB-11 through SB-21 on February 5, 2015.
- 5) PADEP Short List petroleum products in *italics* are COPIACs.
- 6) 1/10 of the Soil to Groundwater Generic Value used for soil in the zone of groundwater saturation below a depth of two feet.

Table 2
Soil Sample Analytical Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

PADEP Short List Petroleum Products for Diesel Fuel and Unleaded Gasoline	Act 2 Statewide Health Standard Medium Specific Concentrations (MSCs)							Sample Identifications (Depth in feet below grade below sample I.D.)									
	Soil to Groundwater (Used Aquifers)				Direct Contact												
	TDS ≤ 2500				Residential	Non-Residential											
	Residential		Non-residential			Surface	Subsurface										
	100 X	1/10 Generic	100 X	1/10 Generic		Soil	Soil										
	GW MSC	Value	GW MSC	Value	0-15 feet	0-2 feet	2-15 feet	SB-21	SB-22	SB-22	SB-23	SB-23	SB-24	SB-24	SB-25	SB-25	SB-26
								10 ft.	7 ft.	19 ft.	8 ft.	15 ft.	10 ft.	19 ft.	9 ft.	15 ft.	10 ft.
BENZENE	500	13	500	13	5,700	290,000	330,000	30 J	< 29	< 25	3,400	< 29	1,300	< 21	< 31	< 29	< 31
ETHYLBENZENE	70,000	4,600	70,000	4,600	180,000	890,000	1,000,000	180 J	< 58	< 50	50,000	< 57	200	< 42	< 62	< 57	< 62
ISOPROPYLBENZENE	84,000	60,000	350,000	250,000	7,700,000	10,000,000	10,000,000	< 51	< 58	< 50	3,400	< 57	< 58	< 42	< 62	< 57	< 62
METHYL TERT BUTYL ETHER	2,000	28	2,000	28	1,700,000	8,600,000	9,900,000	< 26	< 29	< 25	< 120	< 29	< 29	< 21	< 31	< 29	< 31
NAPHTHALENE	10,000	2,500	10,000	2,500	160,000	760,000	190,000,000	< 51	< 58	< 50	9,700	< 57	< 58	< 42	< 62	< 57	< 62
TOLUENE	100,000	4,400	100,000	4,400	10,000,000	10,000,000	10,000,000	270	< 58	< 50	100,000	< 57	3,300	< 42	< 62	< 57	< 62
1,2,4-TRIMETHYLBENZENE	1,500	840	6,200	3,500	130,000	560,000	640,000	670	< 58	< 50	90,000	59 J	120 J	< 42	< 62	< 57	< 62
1,3,5-TRIMETHYLBENZENE	42,000	7,400	120,000	21,000	2,200,000	10,000,000	10,000,000	240	< 58	< 50	28,000	< 57	< 58	< 42	< 62	< 57	< 62
XYLENES	1,000,000	99,000	1,000,000	99,000	1,900,000	8,000,000	190,000,000	1,100	< 58	< 50	220,000	72 J	1,000	< 42	< 62	< 57	< 62
MOISTURE (%)	No Standard							10.6	22.3	13.7	21.8	18.6	21.8	13.1	27.6	16.6	18.7

Notes:

- 1) All units in milligrams per kilogram (ug/kg)
- 2) Bold & shaded MSCs represent the applicable Act 2 non-residential Statewide Health Standard.
- 3) Shaded results represent an exceedence of the applicable non-residential Statewide Health Standard.
- 4) Soil samples were collected from SB-11 through SB-21 on February 5, 2015.
- 5) PADEP Short List petroleum products in *italics* are COPIACs.
- 6) 1/10 of the Soil to Groundwater Generic Value used for soil in the zone of groundwater saturation below a depth of two feet.

Table 2
Soil Sample Analytical Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

PADEP Short List Petroleum Products for Diesel Fuel and Unleaded Gasoline	Act 2 Statewide Health Standard Medium Specific Concentrations (MSCs)							Sample Identifications (Depth in feet below grade below sample I.D.)									
	Soil to Groundwater (Used Aquifers)				Direct Contact												
	TDS ≤ 2500				Residential	Non-Residential											
	Residential		Non-residential			Surface	Subsurface										
	100 X	1/10 Generic	100 X	1/10 Generic		Soil	Soil										
	GW MSC	Value	GW MSC	Value	0-15 feet	0-2 feet	2-15 feet	SB-26	SB-27	SB-27	SB-28	SB-28	SB-29	SB-29	SB-30	SB-30	
BENZENE	500	13	500	13	5,700	290,000	330,000	< 28	< 29	< 28	< 29	< 25	34 J	< 24	53 J	< 27	
ETHYLBENZENE	70,000	4,600	70,000	4,600	180,000	890,000	1,000,000	< 57	2,000	< 57	< 58	< 51	7,700	< 49	< 56	< 55	
ISOPROPYLBENZENE	84,000	60,000	350,000	250,000	7,700,000	10,000,000	10,000,000	< 57	730	< 57	< 58	< 51	1,400	< 49	< 56	< 55	
METHYL TERT BUTYL ETHER	2,000	28	2,000	28	1,700,000	8,600,000	9,900,000	< 28	< 29	< 28	< 29	< 25	< 29	< 24	< 28	< 27	
NAPHTHALENE	10,000	2,500	10,000	2,500	160,000	760,000	190,000,000	< 57	1,300	< 57	< 58	< 51	3,700	< 49	< 56	< 55	
TOLUENE	100,000	4,400	100,000	4,400	10,000,000	10,000,000	10,000,000	< 57	< 58	< 57	< 58	< 51	< 57	< 49	< 56	< 55	
1,2,4-TRIMETHYLBENZENE	1,500	840	6,200	3,500	130,000	560,000	640,000	< 57	20,000	< 57	< 58	< 51	49,000	< 49	510	< 55	
1,3,5-TRIMETHYLBENZENE	42,000	7,400	120,000	21,000	2,200,000	10,000,000	10,000,000	< 57	6,700	< 57	< 58	< 51	16,000	< 49	200 J	< 55	
XYLENES	1,000,000	99,000	1,000,000	99,000	1,900,000	8,000,000	190,000,000	< 57	6,400	< 57	< 58	< 51	28,000	< 49	440	< 55	
MOISTURE (%)	No Standard							13.7	16.1	16.7	15.2	14.9	22.2	14.4	22.0	14.6	

Notes:

- 1) All units in milligrams per kilogram (ug/kg)
- 2) Bold & shaded MSCs represent the applicable Act 2 non-residential Statewide Health Standard.
- 3) Shaded results represent an exceedence of the applicable non-residential Statewide Health Standard.
- 4) Soil samples were collected from SB-11 through SB-21 on February 5, 2015.
- 5) PADEP Short List petroleum products in *italics* are COPIACs.
- 6) 1/10 of the Soil to Groundwater Generic Value used for soil in the zone of groundwater saturation below a depth of two feet.

Table 3
Groundwater Sample Analytical Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

Well	TOC Elev. (feet)	Date	Depth to SPL (feet)	Depth to Water (feet)	SPL Thickness (feet)	Water Table Elev. (feet)	Adj. Water Table Elev. (feet)	Benzene	Ethylbenzene	Isopropylbenzene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	Xylenes
MW-1	512.95	3/9/2015	0.00	2.20	0.00	510.75	510.75	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5
		4/1/2015	0.00	1.39	0.00	511.56	511.56	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5
		6/25/2015	0.00	2.96	0.00	509.99	509.99	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/9/2015	0.00	2.85	0.00	510.10	510.10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
		9/10/2015	0.00	4.94	0.00	508.01	508.01	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/6/2015	0.00	4.79	0.00	508.16	508.16	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
		1/14/2016	0.00	3.84	0.00	509.11	509.11	NS	NS	NS	NS	NS	NS	NS	NS	NS
		4/6/2016	0.00	3.24	0.00	509.71	509.71	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/11/2016	0.00	3.54	0.00	509.41	509.41	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/3/2016	0.00	5.45	0.00	507.50	507.50	NS	NS	NS	NS	NS	NS	NS	NS	NS
		1/16/2017	0.00	5.84	0.00	507.11	507.11	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-2	512.64	3/9/2015	0.00	2.96	0.00	509.68	509.68	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5
		4/1/2015	0.00	2.18	0.00	510.46	510.46	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5
		6/25/2015	0.00	3.08	0.00	509.56	509.56	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/9/2015	0.00	3.21	0.00	509.43	509.43	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
		9/10/2015	0.00	5.28	0.00	507.36	507.36	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/6/2015	0.00	5.62	0.00	507.02	507.02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
		1/14/2016	0.00	5.24	0.00	507.40	507.40	NS	NS	NS	NS	NS	NS	NS	NS	NS
		4/6/2016	0.00	2.45	0.00	510.19	510.19	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/11/2016	0.00	4.19	0.00	508.45	508.45	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/3/2016	0.00	6.68	0.00	505.96	505.96	NS	NS	NS	NS	NS	NS	NS	NS	NS
		1/16/2017	0.00	7.14	0.00	505.50	505.50	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-3	511.61	3/9/2015	0.00	3.38	0.00	508.23	508.23	180	1,100	33 J	< 25	140 J	14,000	670	180	6,500
		4/1/2015	0.00	2.96	0.00	508.65	508.65	270	1,600	49.0	<5	240	17,000	1100	310	9,000
		6/25/2015	0.00	3.44	0.00	508.17	508.17	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/9/2015	0.00	3.61	0.00	508.00	508.00	141	1,400	50.8	< 5.0	254	11,100	866	252	6,840
		9/10/2015	0.00	5.34	0.00	506.27	506.27	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/6/2015	0.00	5.26	0.00	506.35	506.35	42.7	430	21.5	< 5.0	88.7	3,890	292	111	1,610
		1/14/2016	0.00	4.91	0.00	506.70	506.70	88.5	802	20.8	< 0.5	116	6,550	337	93.3	4,020
		4/6/2016	0.00	2.55	0.00	509.06	509.06	160	1,110	42.8	1.3	196	8,400	514	197	4,750
		7/11/2016	0.00	4.45	0.00	507.16	507.16	123	704	41.1	< 0.5	149	4,880	375	137	3,640
		10/3/2016	0.00	6.05	0.00	505.56	505.56	7.5	127	16.5	< 0.5	55.3	158	145	39.8	251
		1/16/2017	0.00	6.55	0.00	505.06	505.06	12.6	82.0	8.2	< 0.5	11.5	70.0	32.6	7.4	88.4
MW-4	511.96	3/9/2015	0.00	3.94	0.00	508.02	508.02	580	2,500	63.0	< 5.0	310	7,300	1,400	400	9,900
		4/1/2015	0.00	3.37	0.00	508.59	508.59	1,000	2,200	67.0	< 5.0	310	9,000	1,500	440	9,200
		6/25/2015	4.07	4.22	0.15	507.74	507.64	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/9/2015	4.25	4.37	0.12	507.59	507.51	237	1,330	65.8	< 5.0	346	2,280	1,550	406	7,320
		9/10/2015	0.00	6.27	0.00	505.69	505.69	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/6/2015	0.00	6.04	0.00	505.92	505.92	1,760	1,600	68.1	< 5.0	199	8,610	857	228	6,180
		1/14/2016	0.00	5.81	0.00	506.15	506.15	1,790	1,290	36.5	< 0.5	129	8,710	725	220	5,860
		4/6/2016	0.00	3.08	0.00	508.88	508.88	1,170	2,820	79.5	1.9	313	4,870	1,970	2,180	9,430
		7/11/2016	0.00	5.34	0.00	506.62	506.62	528	522	57.6	< 0.5	218	1,730	416	105	2,270
		10/3/2016	0.00	6.96	0.00	505.00	505.00	2,030	1,590	< 50.0	< 50.0	150	7,220	667	204	5,400
		1/16/2017	0.00	7.62	0.00	504.34	504.34	1,180	917	54.8	< 10.0	229	3,240	1,070	147	6,430

Table 3
Groundwater Sample Analytical Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

Well	TOC Elev. (feet)	Date	Depth to SPL (feet)	Depth to Water (feet)	SPL Thickness (feet)	Water Table Elev. (feet)	Adj. Water Table Elev. (feet)	Benzene	ethylbenzene	isopropylbenzene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	Xylenes
MW-5	510.57	3/9/2015	0.00	3.44	0.00	507.13	507.13	1,100	740	25 J	15 J	100	1,900	280	68	1,600
		4/1/2015	0.00	2.94	0.00	507.63	507.63	1,700	1300	42	21	190	3,500	500	130	3,000
		6/25/2015	0.00	3.37	0.00	507.20	507.20	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/9/2015	0.00	3.54	0.00	507.03	507.03	2,620	1,580	58.2	< 5.0	306	9,020	1,090	284	8,260
		9/10/2015	0.00	5.09	0.00	505.48	505.48	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/6/2015	0.00	4.86	0.00	505.71	505.71	1,040	694	21.7	9.0	86.8	1,550	299	77.3	1,650
		1/14/2016	0.00	4.60	0.00	505.97	505.97	187	94.7	5.6	4.1	21.8	6.4	56.8	17.9	151
		4/6/2016	0.00	4.61	0.00	505.96	505.96	594	304	12.5	10.6	36.7	155	156	35.2	643
		7/11/2016	0.00	4.29	0.00	506.28	506.28	267	229	9.7	6.8	40.1	203	94.4	21	538
		10/3/2016	0.00	5.37	0.00	505.20	505.20	55.2	26.9	4.5	2.7	14.6	5	18.6	5.9	73
		1/16/2017	0.00	6.07	0.00	504.50	504.50	10.7	4.4	3.0	< 0.5	5.7	1.4	10.6	2.6	43.5
MW-6	509.57	6/25/2015	0.00	2.00	0.00	507.57	507.57	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/9/2015	0.00	1.90	0.00	507.67	507.67	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
		9/10/2015	0.00	3.90	0.00	505.67	505.67	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/6/2015	0.00	3.42	0.00	506.15	506.15	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
		1/14/2016	0.00	2.70	0.00	506.87	506.87	NS	NS	NS	NS	NS	NS	NS	NS	NS
		4/6/2016	0.00	4.54	0.00	505.03	505.03	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/11/2016	0.00	2.66	0.00	506.91	506.91	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/3/2016	0.00	3.68	0.00	505.89	505.89	NS	NS	NS	NS	NS	NS	NS	NS	NS
		1/16/2017	0.00	4.25	0.00	505.32	505.32	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-7	511.31	6/25/2015	0.00	4.37	0.00	506.94	506.94	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/9/2015	0.00	4.47	0.00	506.84	506.84	1,820	1,300	59.3	< 0.5	352	3,200	1,060	275	7,940
		9/10/2015	0.00	6.55	0.00	504.76	504.76	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/6/2015	0.00	6.20	0.00	505.11	505.11	514	728	53.4	< 0.5	240	741	622	169	3,050
		1/14/2016	0.00	5.96	0.00	505.35	505.35	692	681	50.0	< 0.5	171	784	623	167	3,760
		4/6/2016	0.00	4.33	0.00	506.98	506.98	2,770	2,050	91.4	0.9	389	< 0.5	1,680	373	10,300
		7/11/2016	0.00	5.55	0.00	505.76	505.76	1,370	669	86.6	< 0.5	332	1,170	658	274	4,260
		10/3/2016	0.00	7.12	0.00	504.19	504.19	182	754	48.7	< 0.5	109	473	497	144	2,010
		1/16/2017	0.00	7.45	0.00	503.86	503.86	510	972	57.2	< 2.5	222	897	760	224	3,210
MW-8	508.04	6/25/2015	0.00	2.86	0.00	505.18	505.18	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/9/2015	0.00	2.89	0.00	505.15	505.15	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
		9/10/2015	0.00	4.15	0.00	503.89	503.89	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/6/2015	0.00	3.84	0.00	504.20	504.20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
		1/14/2016	0.00	3.23	0.00	504.81	504.81	NS	NS	NS	NS	NS	NS	NS	NS	NS
		4/6/2016	0.00	3.70	0.00	504.34	504.34	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/11/2016	0.00	3.44	0.00	504.60	504.60	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/3/2016	0.00	4.40	0.00	503.64	503.64	NS	NS	NS	NS	NS	NS	NS	NS	NS
		1/16/2017	0.00	4.70	0.00	503.34	503.34	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	508.62	6/25/2015	0.00	2.31	0.00	506.31	506.31	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/9/2015	0.00	2.55	0.00	506.07	506.07	4.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.4	< 0.5	2
		9/10/2015	0.00	4.49	0.00	504.13	504.13	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/6/2015	0.00	4.16	0.00	504.46	504.46	2.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
		1/14/2016	0.00	3.94	0.00	504.68	504.68	5.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.7	< 0.5	< 1.0
		4/6/2016	0.00	2.05	0.00	506.57	506.57	5.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
		7/11/2016	0.00	3.41	0.00	505.21	505.21	4.6	< 0.5	< 0.5	< 0.5	5.8	0.6	0.6	< 0.5	1.7
		10/3/2016	0.00	5.10	0.00	503.52	503.52	1.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
		1/16/2017	0.00	5.25	0.00	503.37	503.37	3.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.6	< 1.0
MW-10	508.03	6/25/2015	0.00	4.22	0.00	503.81	503.81	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/9/2015	0.00	3.05	0.00	504.98	504.98	1,450	23	13.2	122	59.1	11	0.7	0.8	17
		9/10/2015	0.00	5.51	0.00	502.52	502.52	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/6/2015	0.00	4.88	0.00	503.15	503.15	2,040	< 50	< 50	91	< 50	< 50	< 50	< 50	< 100
		1/14/2016	0.00	4.01	0.00	504.02	504.02	2,190	13.6	22.6	114	75.4	43.6	3.9	3.2	42.2
		4/6/2016	0.00	3.63	0.00	504.40	504.40	2,050	10.4	28	122	62.6	22.3	3.0	4	23.9
		7/11/2016	0.00	5.88	0.00	502.15	502.15	1,340	7.0	17.2	72.9	30	7.7	1.7	2	9.8
		10/3/2016	0.00	4.94	0.00	503.09	503.09	2,600	34.5	21.5	101	69.7	102.0	17.1	5.5	154.0
		1/16/2017	0.00	5.15	0.00	502.88	502.88	3,030	96.4	28.9	211	101	160	43.0	11.6	372

Table 3
Groundwater Sample Analytical Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

Well	TOC Elev. (feet)	Date	Depth to SPL (feet)	Depth to Water (feet)	SPL Thickness (feet)	Water Table Elev. (feet)	Adj. Water Table Elev. (feet)	Benzene	Ethylbenzene	Isopropylbenzene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	Xylenes	
MW-11	500.78	1/14/2016	0.00	0.24	0.00	500.54	500.54	0.9	<0.5	<0.5	137	<0.5	0.6	<0.5	<0.5	<1.0	
		4/6/2016	0.00	0.34*	0.00	501.31	501.31	19.4	<0.5	<0.5	19.4	0.7	<0.5	<0.5	<0.5	<1.0	
		7/11/2016	0.00	0.84*	0.00	500.81	500.81	14.7	<0.5	<0.5	12.5	5.8	<0.5	<0.5	<0.5	<1.0	
		10/3/2016	0.00	0.38	0.00	500.40	500.40	56.8	<0.5	0.8	83.1	2.3	<0.5	<0.5	<0.5	1.0	
		1/16/2017	0.00	0.39	0.00	500.39	500.39	46.8	<0.5	0.6	85.4	1.6	<0.5	<0.5	<0.5	<1.0	
MW-12	489.67	1/14/2016	0.00	2.20	0.00	487.47	487.47	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
		4/6/2016	0.00	2.09	0.00	487.58	487.58	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
		7/11/2016	0.00	3.71	0.00	485.96	485.96	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
		10/3/2016	0.00	5.48	0.00	484.19	484.19	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
		1/16/2017	0.00	4.16	0.00	485.51	485.51	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
MW-13	486.88	1/14/2016	0.00	3.41	0.00	483.47	483.47	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
		4/6/2016	0.00	3.98	0.00	482.90	482.90	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
		7/11/2016	0.00	5.02	0.00	481.86	481.86	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
		10/3/2016	0.00	6.63	0.00	480.25	481.86	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
		1/16/2017	0.00	5.92	0.00	480.96	481.86	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
MW-14S	510.2	8/19/2016	0.00	5.12	0.00	505.08	505.08	4,900	2,700	86	200	350	12,000	1,800	500	12,000	
		9/16/2016	0.00	6.13	0.00	504.07	504.07	4,700	2,700	57	170	320	13,000	1,300	360	11,000	
		10/3/2016	0.00	5.71	0.00	504.49	504.49	6,760	3,380	98	180	271	14,400	1,780	544	13,600	
		1/16/2017	0.00	6.20	0.00	504.00	504.00	2,570	2,060	97	184	279	11,900	1,230	337	12,400	
MW-14D	510.48	8/19/2016	0.00	5.40	0.00	505.08	505.08	660	270	33	38	130	1,500	120	32	820	
		9/16/2016	0.00	6.21	0.00	504.27	504.27	250	89	35	38	120	37	25	7	140	
		10/3/2016	0.00	6.41	0.00	504.07	504.07	335	80.2	47.3	46	164	10.3	19.5	6.2	96.1	
		1/16/2017	0.00	6.49	0.00	503.99	503.99	211	27.2	40.0	<0.5	137	5.8	4.7	2.8	48.0	
OW-1	511.85	1/16/2017	0.00	7.48	0.00	504.37	504.37	3,240	369	<25.0	<25.0	78	3,020	48	<25	494	
OW-2	510.73	1/16/2017	0.00	6.84	0.00	503.89	503.89	6,470	956	61	124	241	10,200	819	214	6,420	
Former Supply Well	511.21	6/25/2015	0.00	5.08	0.00	506.13	506.13	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		7/9/2015	0.00	5.19	0.00	506.02	506.02	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		9/10/2015	0.00	6.61	0.00	504.60	504.60	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		10/6/2015	0.00	6.28	0.00	504.93	504.93	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		1/14/2016	0.00	5.09	0.00	506.12	506.12	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		4/6/2016	0.00	5.31	0.00	505.90	505.90	2,310	1,280	33.4	47.5	118	4,730	518	120	3,160	
		7/11/2016	0.00	5.85	0.00	505.36	505.36	2,080	1,160	29	<0.5	142	2,830	508	88.6	2,440	
		10/3/2016	0.00	6.94	0.00	504.27	504.27	<0.5	1	0.6	<0.5	1.2	<0.5	1	0.7	2	
End Wall (Stream)	499.32	1/16/2017	0.00	7.55	0.00	503.66	503.66	2	0.6	<0.5	<0.5	<0.5	3	0.6	<0.5	2.2	
		6/25/2015	0.00	3.55	0.00	495.77	495.77	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		7/9/2015	0.00	3.53	0.00	495.79	495.79	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		9/10/2015	0.00	3.44	0.00	495.88	495.88	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		10/6/2015	0.00	3.57	0.00	495.75	495.75	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		1/14/2016	0.00	5.39	0.00	493.93	493.93	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		4/6/2016	0.00	3.66	0.00	495.66	495.66	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		7/11/2016	0.00	3.56	0.00	495.76	495.76	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		10/3/2016	0.00	3.55	0.00	495.77	495.77	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Act 2 Statewide Health Standards for Used, Non-Residential Aquifers								5	700	3,500	20	100	1,000	62	1,200	10,000	

Notes:
1) TOC = Top of casing.
2) SPL = Separate phase liquid.
3) All units in micrograms per liter (ug/l).
4) Shaded results represent an exceedence of the applicable non-residential Statewide Health Standard.
5) PADEP Short List petroleum products in italics are COPIACS.
6) J = Estimated concentration detected between the method detection limit and the limit of quantitation.
7) NS = Not sampled.
8) Adjusted water table elevation based on an assumed SPL specific gravity of 0.68.
* Water level measured from the top of the protective casing (elevation 501.65) due to static water above TOC.

Table 4
Conceptual Site Model
Herr Foods, Inc., Nottingham Plant
RETTEW Project No. 101722001

SOURCE	MIGRATION PATHWAY	AFFECTED MEDIA	EXPOSURE PATHWAY	POTENTIAL RECEPTORS					
				Construction Worker	Indoor Worker	Outdoor Worker	Utility Worker	Wader	Ecological
Former UST Systems Containing Gasoline and Diesel	Groundwater Flow Through Source Area	Saturated Soil	Incidental Ingestion	X	O	O	O	O	O
			Dermal Contact	O	O	O	O	O	O
		Groundwater	Incidental Ingestion	X	O	O	O	O	O
			Dermal Contact	X	O	O	O	O	O
	Groundwater Volatilization	Indoor Air	Inhalation	X	X	O	X	O	O
	Offsite Groundwater Discharge	Offsite Surface Water	Incidental Ingestion	O	O	O	O	X	X
			Dermal Contact	O	O	O	O	X	X

Notes:

X = Complete exposure pathway

O = Incomplete exposure pathway

Table 5
Remedial Optimization Data - Soil Sample Analytical Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

Parameter	Units	Boring and Depth			
		MIP-1 5.5 ft.	MIP-3 7.5 ft.	MIP-4 4.75 ft.	MIP-7 7.5 ft.
Benzene	µg/kg	50,000	450	< 0.5	< 0.3
Ethylbenzene	µg/kg	120,000	46,000	< 1.0	< 0.6
Isopropylbenzene	µg/kg	7,200	3,100	< 1.0	< 0.6
MTBE	µg/kg	< 510	< 130	< 0.5	9
Naphthalene	µg/kg	23,000	8,900	< 1.0	< 0.6
Toluene	µg/kg	450,000	67,000	< 1.0	< 0.6
1,2,4-TMB	µg/kg	170,000	67,000	< 1.0	< 0.6
1,3,5-TMB	µg/kg	56,000	22,000	< 1.0	< 0.6
Xylenes	µg/kg	530,000	210,000	< 1.0	< 0.6
TPH-GRO	mg/kg	5,300	110	0.2	< 0.2
TPH-DRO	mg/kg	1,300	220	25	27
TOC	mg/kg	1,410	< 183	2,380	15,200

Notes:

1) Soil samples were collected on July 29, 2016.

Table 6
Remedial Optimization Data - Groundwater Sample Analytical Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

Parameter	Units	Well and Date						
		MIP-1 7/29/2016	MIP-3 7/29/2016	MIP-4 7/29/2016	MIP-7 7/29/2016	MW-4 7/11/2016	MW-10 7/11/2016	MW-11 7/11/2016
Benzene	µg/l	3,400	220	< 5	< 5	528	1,340	14.7
Ethylbenzene	µg/l	1,600	490	< 5	< 5	522	7.0	< 0.5
Isopropylbenzene	µg/l	62	14	< 5	< 5	57.6	17.2	< 0.5
MTBE	µg/l	21	120	< 5	< 5	< 0.5	72.9	12.5
Naphthalene	µg/l	230	23	< 10	< 1	218	30	5.8
Toluene	µg/l	14,000	1,500	< 5	< 5	1,730	7.7	< 0.5
1,2,4-TMB	µg/l	1,600	160	< 5	< 5	416	1.7	< 0.5
1,3,5-TMB	µg/l	490	59	< 5	< 5	105	2.0	< 0.5
Xylenes	µg/l	7,500	1,800	< 5	< 5	2,270	9.8	< 1.0
TPH-GRO	µg/l	71,000	12,000	< 200	21	NA	NA	NA
TPH-DRO	µg/l	3,900	1,400	140	8,800	NA	NA	NA
TOC	mg/l	34.5	72.7	257.0	48.3	9.79	5.29	0.831
COD	mg/l	NA	NA	NA	NA	50	47	< 5.00

Notes:

µg/l = Micrograms per liter

mg/l = Milligrams per liter

Table 7
Former Supply Well Packer Testing - Groundwater Sample Analytical Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

Test No.	Packer Depth	Benzene	Ethylbenzene	Isopropylbenzene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	Xylenes	Comments
1	70 feet	1,900	1,200	34	8 J	200	3,300	520	140	2,500	Pump set above packer at 70 feet within the casing.
2	80 feet	170	36	4 J	6	9 J	7	12	3 J	38	Pump set below packer at 80 feet within the open rock interval of well.
3	30 feet	2,700	1,700	49	6 J	260	5,600	730	200	4,100	Pump set above packer at 30 feet within the casing.
Act 2 Statewide Health Standards		5	700	3,500	20	100	1,000	62	53	10,000	

Notes:

- 1) All units in micrograms per liter (ug/l).
- 2) Shaded results represent an exceedence of the applicable non-residential Statewide Health Standard.
- 3) J = Estimated concentration detected between the method detection limit and the limit of quantitation.
- 4) Act 2 Statewide Health Standards are for Used, Non-Residential Aquifers.

Table 8
Monitored Natural Attenuation Data Summary - July 11, 2016
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

Well	Date	pH (SU)	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	TDS (g/L)	Temperature (°C)	Nitrate (mg/L)	Sulfate (mg/L)	Total Iron (mg/L)	Dissolved Iron (mg/L)	Ferric Iron (mg/L)
MW-1	7/11/2016	6.85	0.130	138.7	4.51	0.065	15.96	2.34	7.62	0.124	< 0.100	< 0.124
MW-3	7/11/2016	8.75	1.520	-184.9	1.30	0.761	18.57	NA	NA	NA	NA	NA
MW-4	7/11/2016	7.58	0.842	-144.8	1.28	0.421	18.94	< 1.00	< 5.00	47.60	33.30	14.3
MW-5	7/11/2016	5.23	1.231	87.2	1.28	0.615	20.01	NA	NA	NA	NA	NA
MW-6	7/11/2016	6.32	0.129	106.2	6.28	0.065	19.39	6.86	< 5.00	0.261	0.142	0.119
MW-7	7/11/2016	6.89	0.398	-21.1	1.34	0.199	17.64	< 1.00	31.80	22.10	30.90	8.80
MW-9	7/11/2016	6.22	1.839	28.9	1.36	0.924	15.52	NA	NA	NA	NA	NA
MW-10	7/11/2016	5.48	1.433	36.0	1.30	0.716	19.28	< 1.00	< 5.00	16.90	17.30	< 0.100
MW-11	7/11/2016	6.11	0.535	83.7	1.87	0.269	15.63	2.35	< 5.00	< 0.100	< 0.100	< 0.100
MW-12	7/11/2016	5.55	0.076	195.7	2.32	0.038	16.14	3.74	< 5.00	0.117	< 0.100	< 0.117
MW-13	7/11/2016	5.03	0.264	215.6	6.29	0.132	15.61	NA	NA	NA	NA	NA
SW	7/11/2016	7.55	0.799	-164.6	0.56	0.400	15.79	NA	NA	NA	NA	NA

Notes:

- 1) SU = Standard Units.
- 2) mS/cm = Millisiemens.
- 3) mg/L = Milligrams per liter.
- 4) mV = Millivolts.
- 5) g/L = Grams per liter.
- 6) °C = Degrees Celcius
- 7) NA = Not analyzed.
- 8) Total Iron - Dissolved Iron = Ferric Iron

Table 9
Remedial Alternatives Analysis
Herr Foods, Inc. - 273 Old Baltimore Pike, Nottingham, Pennsylvania
RETTEW Project No. 101722001

Remedial Options Alternatives											
	Technology Description	Stream Protection	Source (SPL and Residual Soil Impacts) Remediation and Longevity Reduction	Protect Groundwater Users	Remediate Groundwater to CRLs	Innovative or Established Technology	Applicable to Site Characteristics	Applicable to Site Contaminants	Implementability (Reduced Infrastructure, Equipment, and OM&M Needs)	Technology Retained for Further Consideration	Comments
Source Area											
MNA	Passive					Established	X	X	X	X	To be considered as combination with active technologies
Groundwater Pump and Treat	Active			X		Established		X			Not considered due to extent of residual source and concern for dewatering wetlands & stream, and capital/OM&M costs
Air Sparge	Active			X		Established		X			Not considered further due to extent of residual source, soil type, vertical extent of impacts, and capital/OM&M costs
Multiphase Extraction	Active		X	X		Established		X			Although MPE could be considered for targeting impacts beneath the garage, it is not considered further due to shallow residual soil impacts, potential for short circuiting of high-vacuum extraction, and difficulty in capturing less volatile compounds in the vapor phase.
In-situ Chemical Oxidation (ISCO)	Active		X	X	X	Established	X	X	X	X	Considered for further evaluation based on constituent type, accessibility to impact zones, and compatibility with facility operations.
Enhanced Bioremediation	Active			X		Established	X	X	X		Not considered for source removal due to extent of source impacts, potential for SPL, and extent of petroleum hydrocarbons in saturated soil matrix
Excavation (Saturated Soil)	Active		X	X	X	Established	X	X	X	X	Considered for further evaluation based on accessibility of source area impacts (shallow). However, excavation could require combination with other active groundwater treatments such as ISCO or enhanced bioremediation.
Groundwater Plume											
MNA	Passive					Established	X	X	X	X	To be considered as combination with active technologies
Groundwater Pump and Treat	Active	X	X - limited effectiveness in areas of high residual soil impacts	X		Established	X	X			Not considered due to concern for dewatering wetlands & stream, and capital/OM&M requirements
Air Sparge	Active	X	X - limited effectiveness in areas of high residual soil impacts	X	X	Established		X			Not considered due to soil type, vertical extent of impacts, and capital/OM&M requirements.
ISCO	Active	X	X	X	X	Established	X	X	X	X	This is considered a primary plume remediation technology - need to consider application method (DPT injection requires low pressure/low flow due to shallow depth of water table resulting in potential for short-circuiting), emplacement by trench is feasible.
Enhanced Bioremediation	Active	X	X - limited effectiveness in areas of high residual soil impacts	X	X	Established	X	X	X	X	This is not considered a primary plume remediation technology due to residual soil impacts and elevated dissolved concentrations (benzene) that exceed levels required for optimal treatment effectiveness. Additionally, enhanced bioremediation is a secondary effect of chemical oxidation. However, this technology could be considered for future application after source area and groundwater plume reduction has occurred.
Surface Water / Wetland Protection											
MNA	Passive	X	N/A	X	X	Established	X	X	X	X	This is considered the primary remediation technology for surface water/wetland protection based on successful source area and groundwater plume treatment.
Groundwater Pump and Treat	Active	X	N/A	X	X	Established		X			Not considered due to concern for dewatering wetlands & stream, and capital/OM&M requirements
Air Sparge	Active	X	N/A	X	X	Established		X			Not considered due to soil type, vertical extent of impacts, and capital/OM&M requirements.
ISCO	Active	X	N/A	X	X	Established		X			Direct application of chemical oxidation is not considered within the wetland or surface water due to potential for adverse impacts.
Enhanced Bioremediation	Active	X	N/A	X	X	Established		X			Direct application of enhanced bioremediation is not considered within the wetland or surface water due to potential for adverse impacts.
Permeable Reactive Barrier	Passive	X	N/A	X	X	Established	X	X	X		This is an application method for chemical oxidation and enhanced bioremediation and is considered for future evaluation if warranted following source area and groundwater plume treatment. Application would be considered immediately upgradient of the wetland area through trenching or direct push technology.
Sheet Pile Wall	Passive	X	N/A	X	X	Established	X	X			Not considered due to potential impacts to wetland and stream.
Engineered Wetland	Passive	X	N/A	X	X	Established		X			Not considered due to vertical extent of impacts.

Notes: CRL=cancer risk level; ISCO=in-situ chemical oxidation; N/A=not applicable; OM&M=operation, monitoring, and maintenance; SPL=separate phase liquid

Table 10
ISCO Pilot Test Groundwater Sample Analytical Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

Well	TOC Elev. (feet)	Date	Depth to Water (feet)	Water Table Elev. (feet)	TPH-GRO	TPH - DRO	Benzene	Ethylbenzene	Isopropylbenzene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	Xylenes
MW-4	511.96	11/29/2016	8.39	503.57	20,000	4,700	740	590	27	< 10	100	2,200	540	180	2,200
		12/19/2016	7.70	504.26	28,000	6,600	1,510	3,250	24.1	< 0.5	2630	5,440	870	79.1	5,880
		12/30/2016	7.59	504.37	26,000	9,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1/17/2017	7.67	504.29	NA	NA	1,180	917	54.8	< 10	229	3,240	1,070	147	6,430
OW-1	511.85	11/29/2016	8.50	503.35	75,000	5,500	5,200	2,300	61	10	400	11,000	1,400	370	9,200
		12/19/2016	7.69	504.16	31,000	4,900	310	154	7.2	21.4	438	9,910	151	< 25.0	4,870
		12/30/2016	7.54	504.31	39,000	7,700	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1/17/2017	7.44	504.41	NA	NA	3,240	369	< 25	< 25	78	3,020	48	< 25	494
MW-14S	510.20	11/29/2016	ND	ND	76,000	8,500	3,500	2,600	90	210	380	11,000	2,000	560	1,000
		12/19/2016	6.30	503.90	33,000	22	2,800	1,360	66.7	153	2,050	8,980	775	2,270	6,990
		12/30/2016	6.14	504.06	41,000	4,900	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1/17/2017	6.16	504.04	NA	NA	2,570	2,060	97	184	279	11,900	1,230	337	12,400
MW-14D	510.48	11/29/2016	ND	ND	3,100	1,600	190	28	10	45	25	180	22	13	320
		12/19/2016	5.85	504.63	1,600	19	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 2
		12/30/2016	6.17	504.31	1,800	1,200	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1/17/2017	6.36	504.12	NA	NA	211	27.2	40.0	< 0.5	137	5.8	4.7	2.8	48.0
OW-2	510.73	11/29/2016	ND	ND	130,000	6,600	13,000	2,500	55	130	310	26,000	1,200	320	9,800
		12/19/2016	7.00	503.73	45,000	2,400	6,730	< 500	44.3	1,860	1,510	5,120	7,210	411	< 1,000
		12/30/2016	6.76	503.97	57,000	3,200	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1/18/2017	7.55	503.18	NA	NA	6,470	956	61	124	241	10,200	819	214	6,420
MW-5	510.57	10/3/2016	5.37	505.20	NS	NS	55.2	26.9	4.5	2.7	14.6	5.0	18.6	5.9	73
		11/29/2016	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		12/19/2016	6.86	503.71	180	18	14.1	6.1	2.3	1.9	2.5	3.5	3.4	0.9	31.2
		12/30/2016	6.17	504.40	230	< 520	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1/17/2017	6.07	504.50	NA	NA	10.0	4.4	3.0	< 0.5	5.7	1.4	10.6	2.6	43.5

Notes:

- 1) TOC = Top of casing.
- 2) All units in micrograms per liter (ug/l).
- 3) NA = Not analyzed.
- 4) NS = Not sampled.
- 5) ND = No data due to field equipment malfunction.

Table 11
ISCO Pilot Test Injection Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

Injection Point	Date	Interval (ft)	Start Time	End Time	Flow Rate (gpm)	Total (gal)	Pressure (psi)	Comments
IP-1	11/30/2016	7 to 9	9:02	11:45	1	125	< 5	Surfacing at MW-4 and OW-1. Observation points capped.
IP-3	11/30/2016	7 to 9	11:17	12:12	1	208	< 5	
IP-1	11/30/2016	9 to 11	13:40	17:30	1	392	< 5	Observation points remain capped.
IP-3	11/30/2016	9 to 11	14:00	17:30	1		< 5	
IP-1	12/1/2016	9 to 11	8:45	10:50	2	142	< 5	Terminated injection to drive DPTs to deeper interval due to daylighting at building.
IP-3	12/1/2016	9 to 11	8:45	10:50	2	132	< 5	
IP-1	12/1/2016	11 to 13	11:10	11:15	2	61	< 5	Terminated injection due to continued daylighting at building, lost DPT at IP-4 upon removal.
IP-3	12/1/2016	11 to 13	11:10	11:15	2	67	< 5	
IP-4	12/1/2016	7 to 15	11:10	11:40		4	< 5	
IP-5	12/1/2016							Not used - moved away from building.
IP-6	12/1/2016	7 to 9	13:10	16:00	2	358	< 5	Terminated injection due to daylighting in parking lot at IP-6.
IP-7	12/1/2016	7 to 9	13:10	13:25		0	< 5	Lost DPT after attempt to lift tooling and induce flow.
IP-8	12/1/2016	7 to 9	13:42	16:00	1.5	256	< 5	Terminated injection due to daylighting in parking lot at IP-6.
IW-1	12/2/2016	8 to 12	10:41	11:50	2	123	< 5	Test aborted due to daylighting along utility trenching.
IP-2	12/2/2016	8 to 10	10:41	11:50	2	120	< 5	
IP-9	12/2/2016	8 to 10	10:41	11:50	0.5	32	< 5	
IP-10	12/2/2016	12 to 14	14:00	18:22	2.5	563	< 5	
IP-11	12/2/2016	12 to 14	14:00	18:22	2	445	< 5	

NOTES:

1) Total Injection = 3,028 gallons

Table 12
ISCO Pilot Test Field Monitoring Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

MW-4								
Date	Time	DTW (feet)	DO (mg/L)	ORP (mV)	Temp. (C)	pH (SU)	Cond. (mS/cm)	Comments
11/30/2016	8:50	7.91	0.56	-87.2	18.02	6.43	0.901	Static
	9:28	7.12	0.58	-139.4	18.15	6.60	0.863	IP-1 and IP-3 injection
	9:58	< 1	0.58	290.6	13.25	13.62	236.9	
	10:35	< 1	0.99	528.9	14.48	13.83	293.2	
	11:40	No Access						
	12:12	No Access						
12/1/2016	7:40	7.57	21.22	358.9	19.55	13.14	124.9	Static
	10:50	6.50	25.91	369.1	19.42	13.60	145.0	IP-1, IP-3 and IP-4 injection
	11:10	6.45	Water Level Only					
	11:30	6.11	Water Level Only					
12/2/2016	15:10	7.59	29.14	245	19.07	13.38	100.5	
12/19/2016	10:15	7.70	2.68	103.7	17.42	12.12	26.48	Post-test monitoring
12/30/2016	10:25	7.59	28.01	124.3	17.50	10.59	23.71	Post-test monitoring
1/17/2017	12:15	7.67	10.64	61.4	16.29	8.30	24.18	Post-test monitoring

OW-1								
Date	Time	DTW (feet)	DO (mg/L)	ORP (mV)	Temp. (C)	pH (SU)	Cond. (mS/cm)	Comments
11/30/2016	8:50	8.11	5.34	35.7	18.40	6.03	0.906	Static
	9:28	7.33	5.76	21.8	18.31	6.01	0.855	IP-1 and IP-3 injection
	9:58	6.03	7.66	38.9	18.28	6.01	0.791	
	10:35	6.01	6.98	207.4	17.86	6.67	0.794	
	11:40	4.50	10.23	228.8	18.08	5.91	0.765	
	12:12	< 1	1.20	439.0	14.32	13.46	133.0	
12/1/2016	7:40	7.90	0.41	350.8	20.65	13.47	152.7	Static
	10:50	2.94	0.11	365.2	18.60	13.96	187.3	IP-1, IP-3 and IP-4 injection
	11:10	2.30	Water Level Only					
	11:30	4.09	Water Level Only					
12/19/2016	11:05	7.69	1.91	159.7	17.21	12.09	29.95	Post-test monitoring
12/30/2016	11:30	7.54	32.40	141.7	17.12	10.44	17.35	Post-test monitoring
1/17/2017	11:05	7.44	31.14	120.4	15.61	7.32	19.57	Post-test monitoring

MW-5								
Date	Time	DTW (feet)	DO (mg/L)	ORP (mV)	Temp. (C)	pH (SU)	Cond. (mS/cm)	Comments
12/1/2016	13:10	6.02	153	-45.5	19.80	5.20	1.121	Static
	14:15	4.88	1.44	-265.8	19.84	4.92	1.026	IP-6, IP-7 and IP-8 injection
	14:40	4.31	0.42	-295.6	19.95	4.95	1.042	
	15:15	3.57	1.95	-325.6	19.96	7.15	1.156	
	15:42	3.05	Water Level Only					
	16:00	2.85	0.55	-279.8	19.96	5.66	1.181	
12/19/2016	12:00	6.86	1.83	396.4	18.65	4.20	0.386	Post-test monitoring
12/30/2016	14:50	6.17	1.87	368.2	18.02	3.86	0.743	Post-test monitoring
1/17/2017	10:00	6.07	0.85	245.7	16.74	5.79	1.52	Post-test monitoring

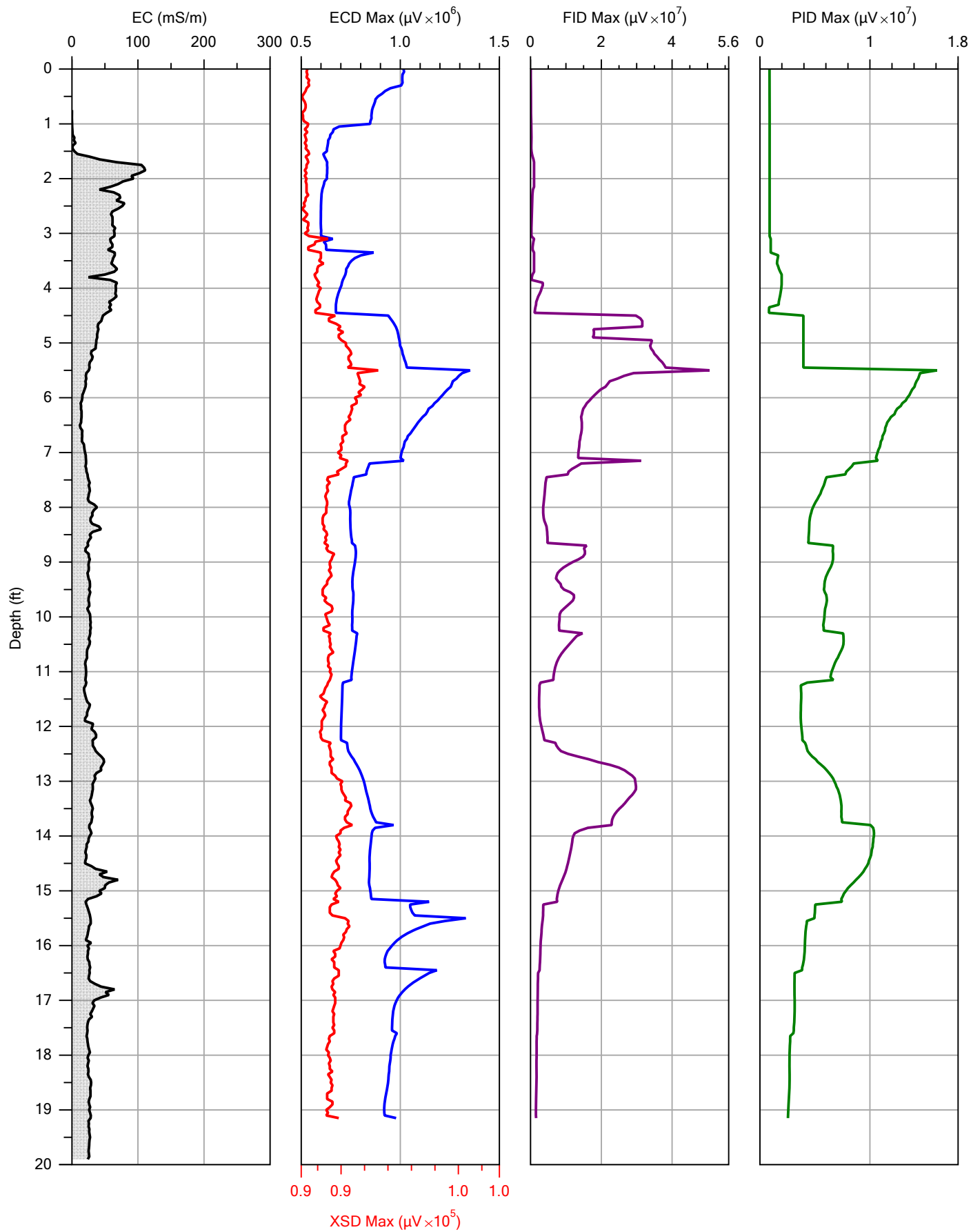
Table 12
ISCO Pilot Test Field Monitoring Data Summary
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

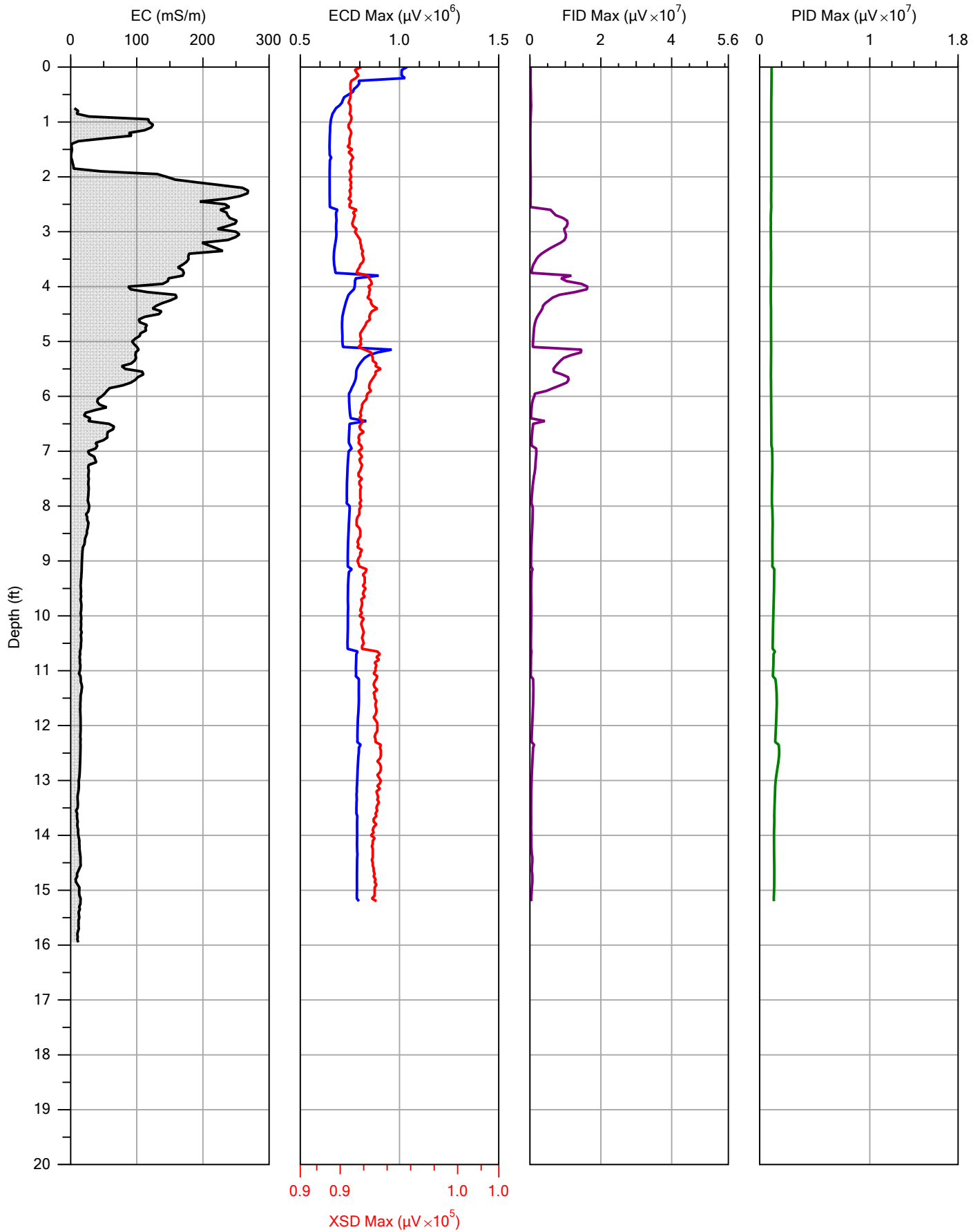
MW-14S								
Date	Time	DTW (feet)	DO (mg/L)	ORP (mV)	Temp. (C)	pH (SU)	Cond. (mS/cm)	Comments
12/1/2016	9:15	6.41	0.20	-53.2	18.55	6.98	2.501	Static
12/2/2016	9:00	6.23	0.49	-494.8	18.42	6.84	2.504	IW-1, IP-2 and IP-9 injection
	11:11	3.01	0.47	-310.8	18.42	6.32	2.865	
	11:41	1.04	0.27	-475.5	18.50	6.31	2.539	
	15:10	3.77	0.14	-220.7	18.11	9.07	9.680	
12/19/2016	13:30	6.30	1.75	37.4	16.98	5.67	3.161	Post-test monitoring
12/30/2016	14:00	6.14	1.72	-3.4	15.84	5.66	2.730	Post-test monitoring
1/17/2017	14:05	6.16	0.80	-78.4	14.53	6.49	3.675	Post-test monitoring

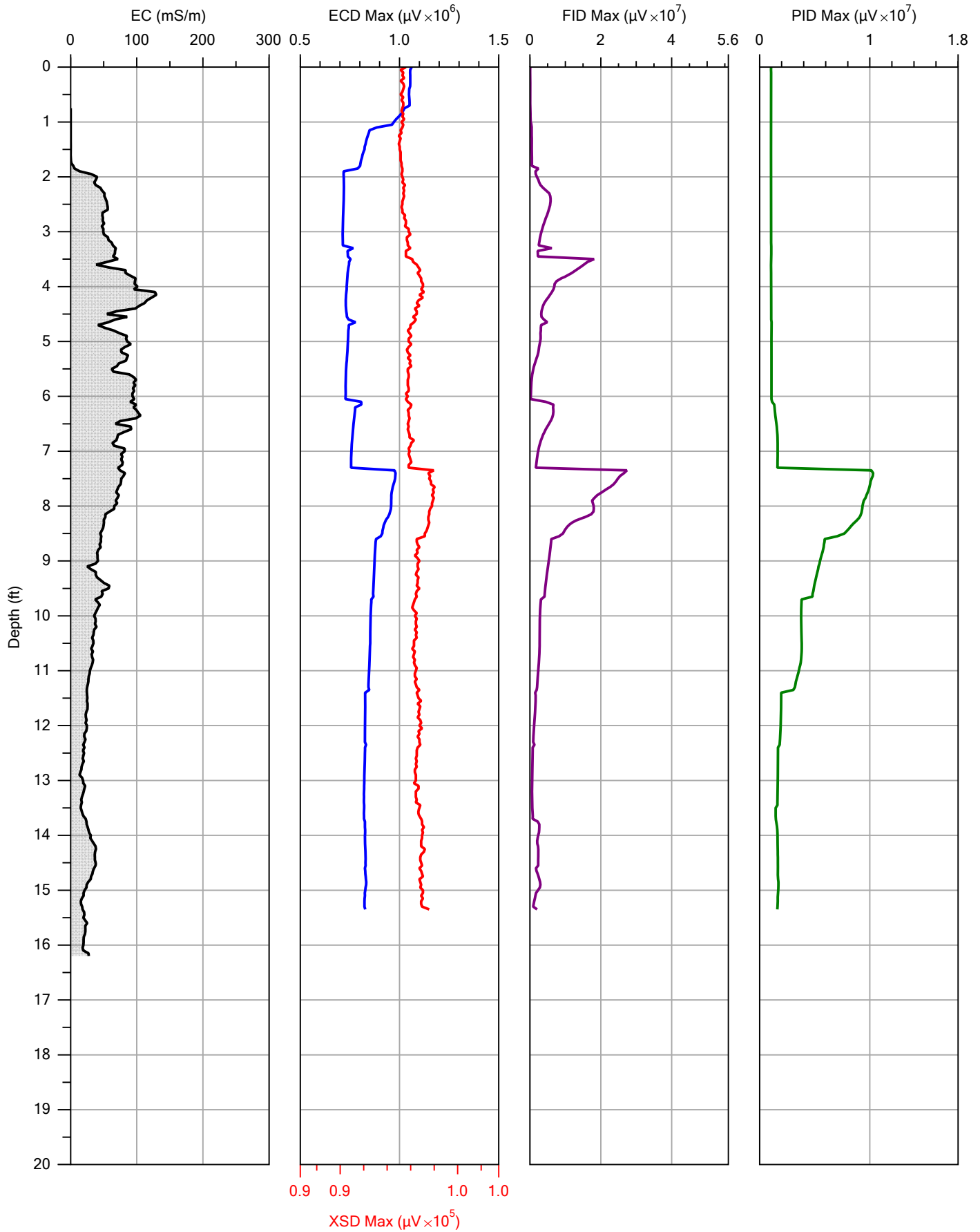
MW-14D								
Date	Time	DTW (feet)	DO (mg/L)	ORP (mV)	Temp. (C)	pH (SU)	Cond. (mS/cm)	Comments
12/1/2016	9:15	6.65	0.26	95.3	18.67	6.43	1.439	Static
12/2/2016	9:00	6.48	0.41	-449.7	18.40	6.62	1.431	IW-1, IP-2 and IP-9 injection
	11:11	5.52	0.73	-308.3	18.51	5.62	1.430	
	11:41	4.65	0.39	-17.2	18.20	5.76	1.432	
	15:10	5.15	1.30	-326.6	18.45	5.78	1.436	
12/19/2016	12:50	5.85	1.82	151.8	17.05	5.47	1.223	Post-test monitoring
12/30/2016	13:15	6.17	1.93	160.1	17.48	5.30	1.221	Post-test monitoring
1/17/2017	13:10	6.36	0.80	114.1	16.89	5.93	1.711	Post-test monitoring

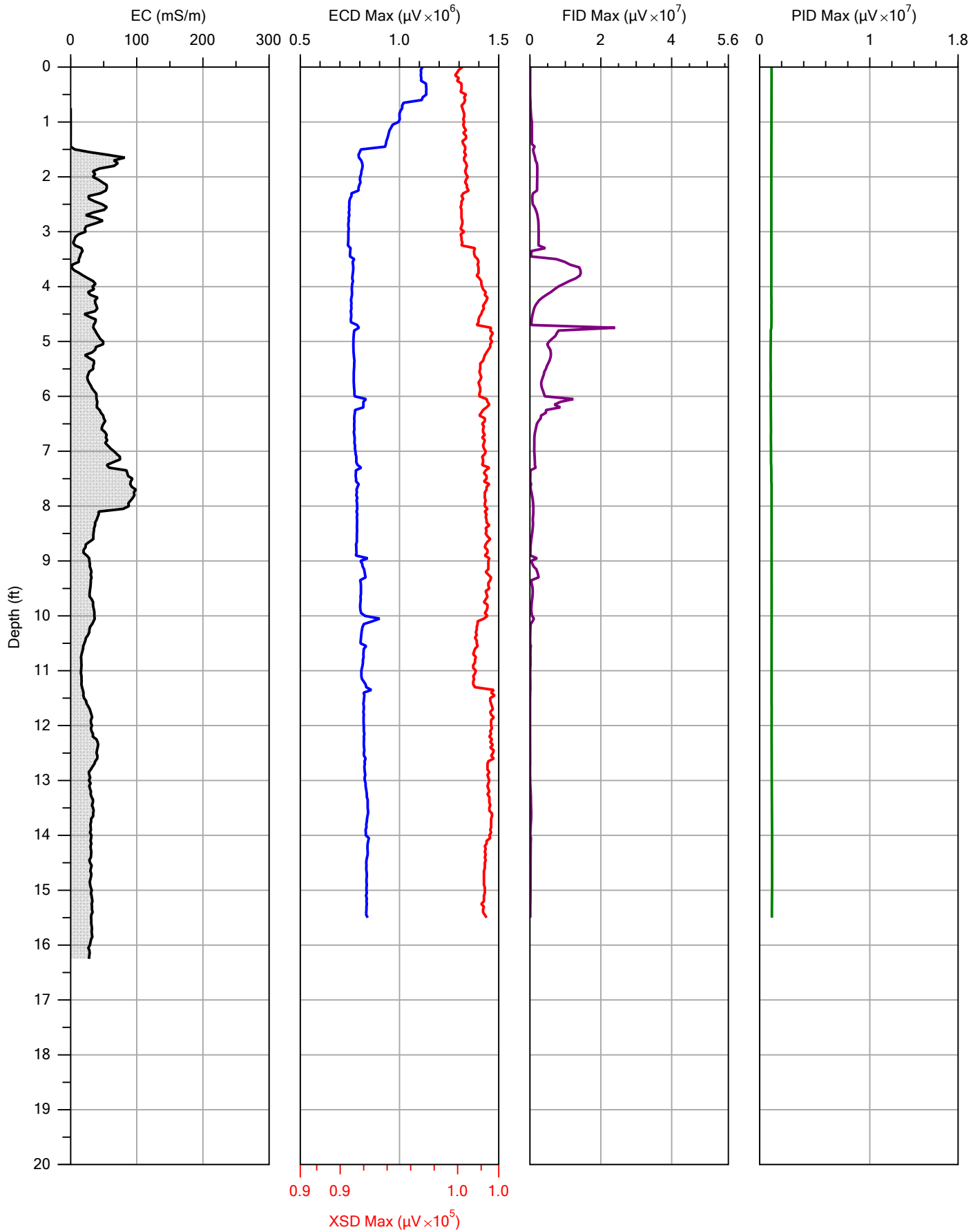
OW-2								
Date	Time	DTW (feet)	DO (mg/L)	ORP (mV)	Temp. (C)	pH (SU)	Cond. (mS/cm)	Comments
12/1/2016	9:15	7.32	1.44	45.1	18.17	6.41	1.282	Static
12/2/2016	9:00	6.85	1.6	-257.4	18.01	6.22	1.299	Static
	11:09	No Access						Capped during IW-1, IP-2 and IP-9 injection
	15:10	No Access						
	16:23	3.27	0.72	291.4	13.88	13.68	148.8	
12/19/2016	14:10	7.00	5.71	22.1	16.92	10.38	10.18	Post-test monitoring
12/30/2016	12:35	6.76	3.41	27.3	16.81	9.14	7.669	Post-test monitoring
1/18/2017	10:05	6.70	0.71	20.8	15.52	8.02	6.718	Post-test monitoring

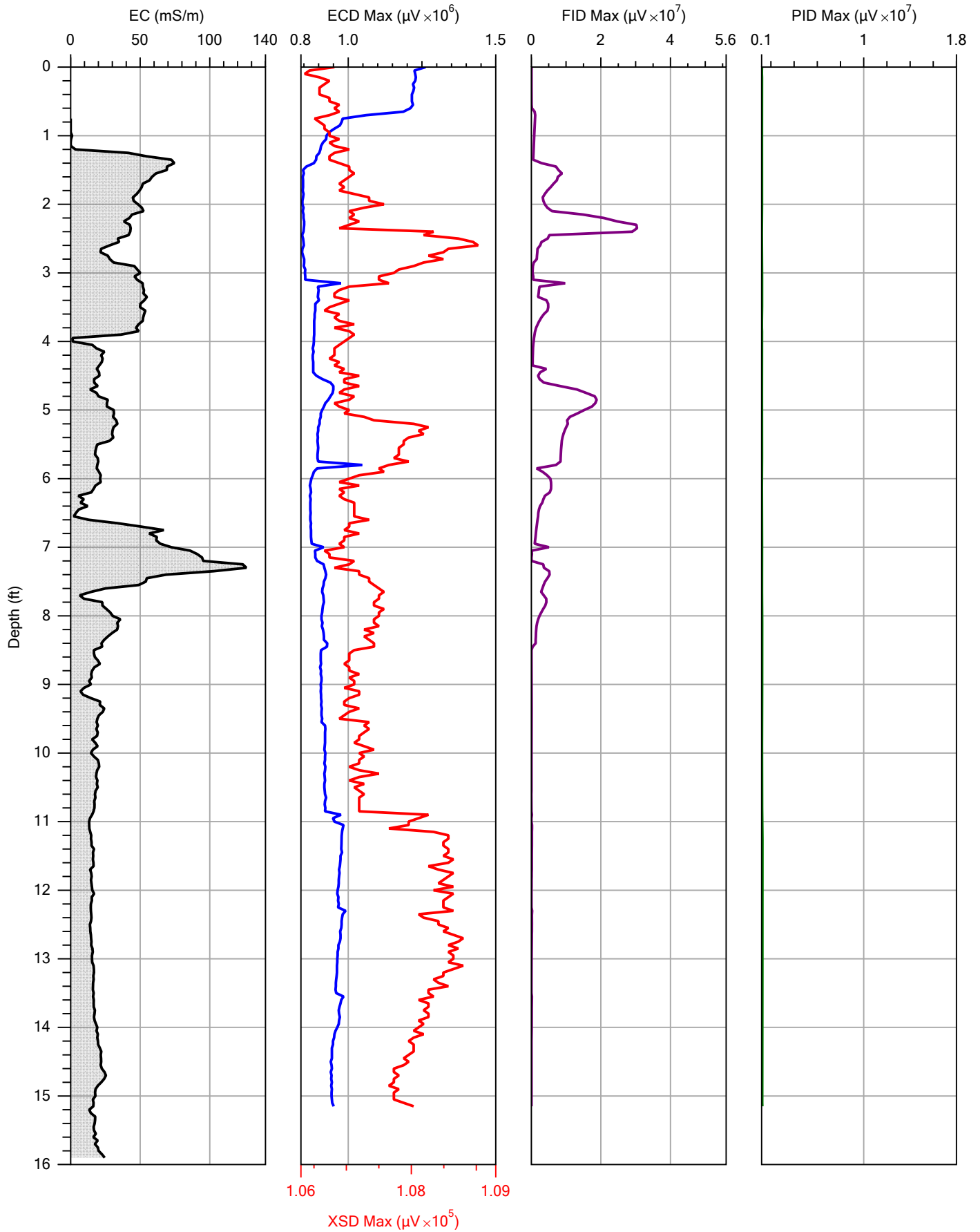
APPENDIX A
MIP Survey Data Plots

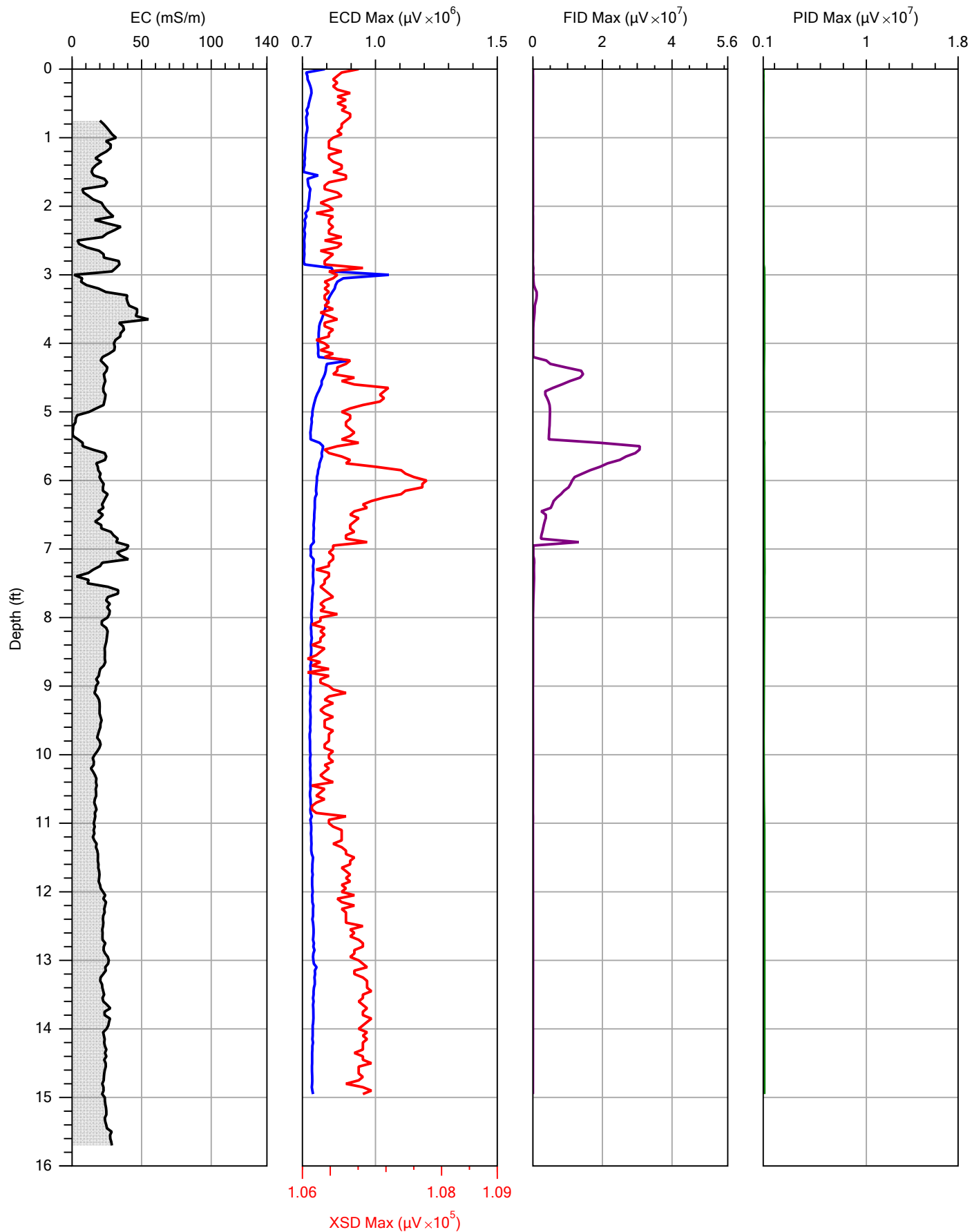


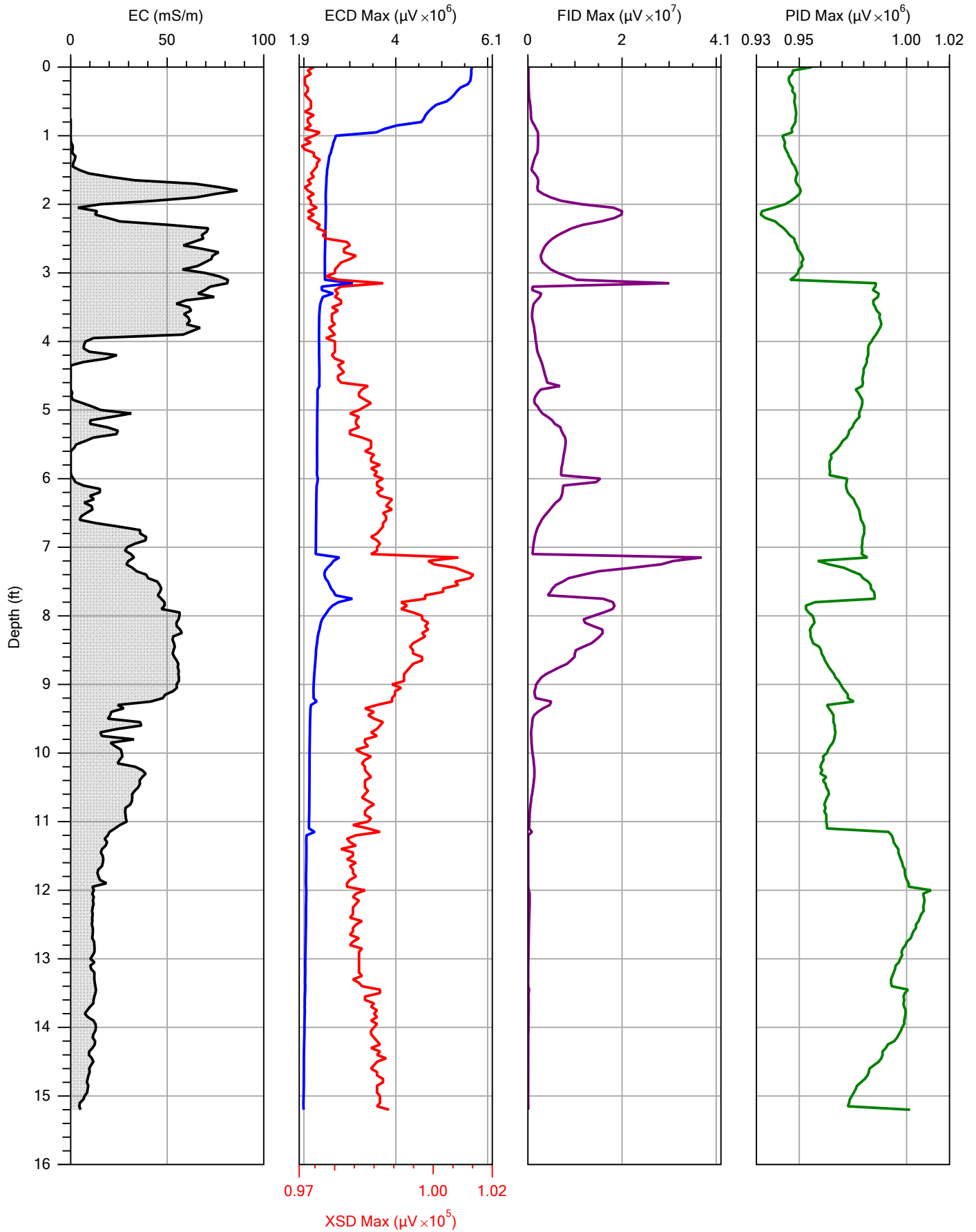


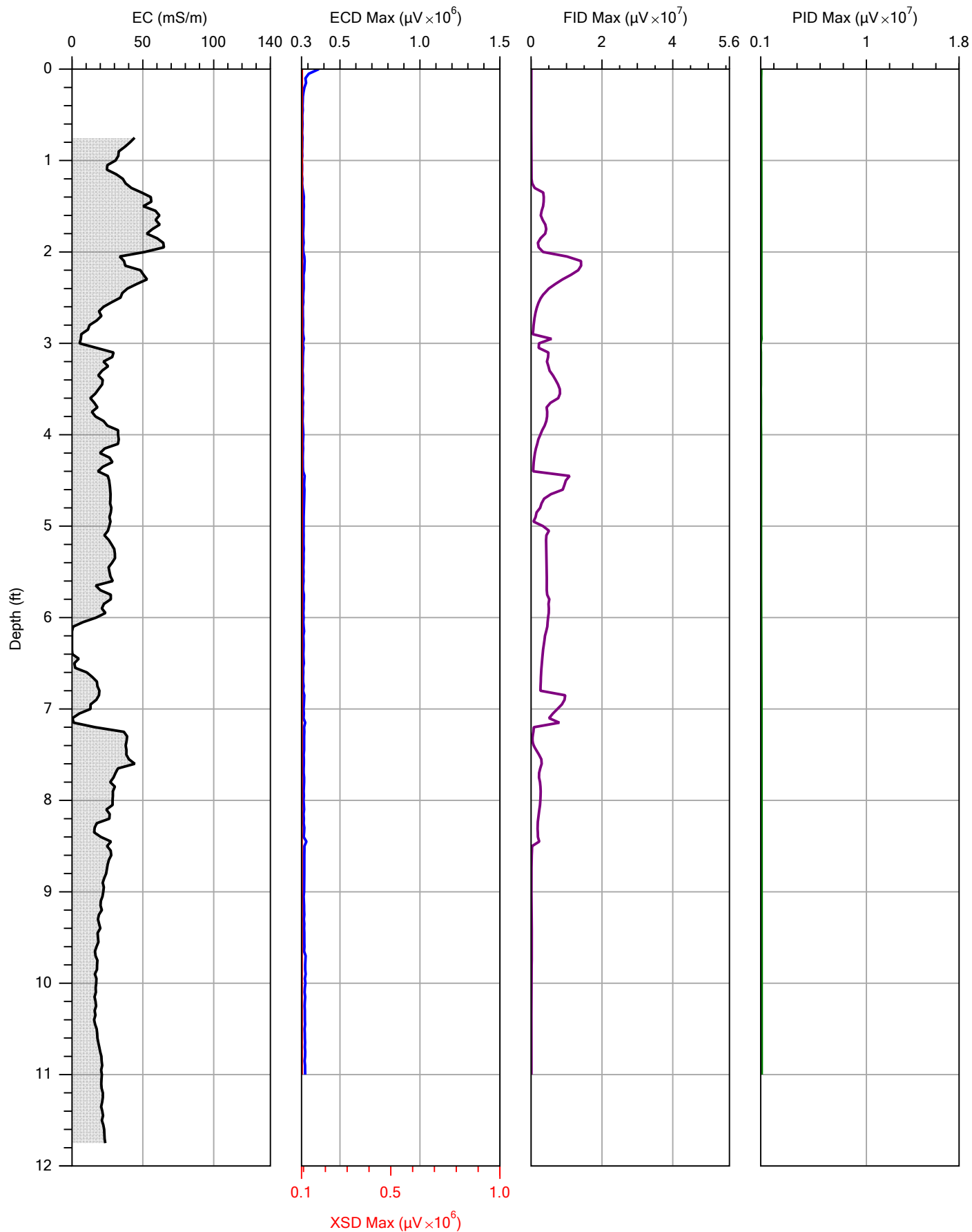


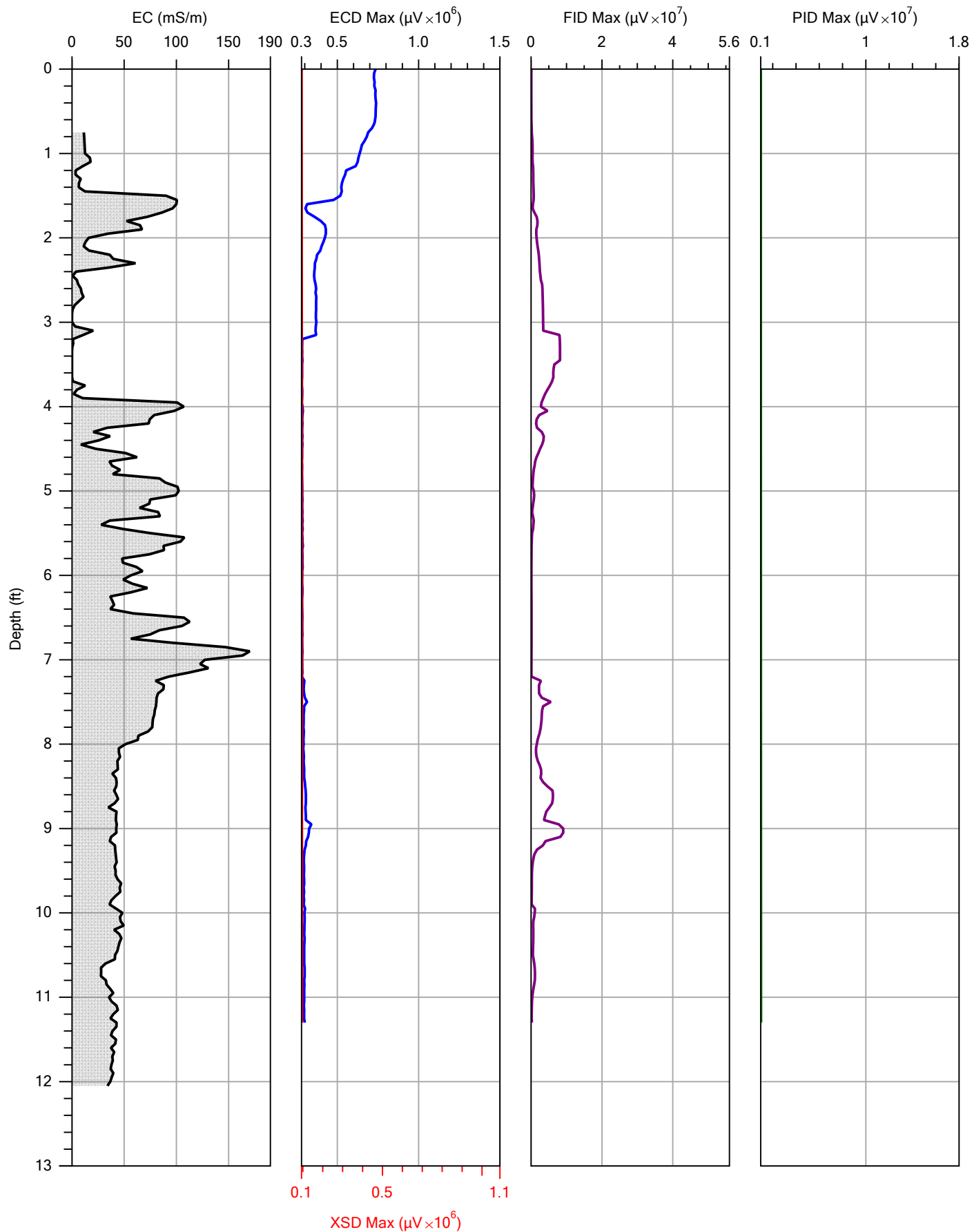


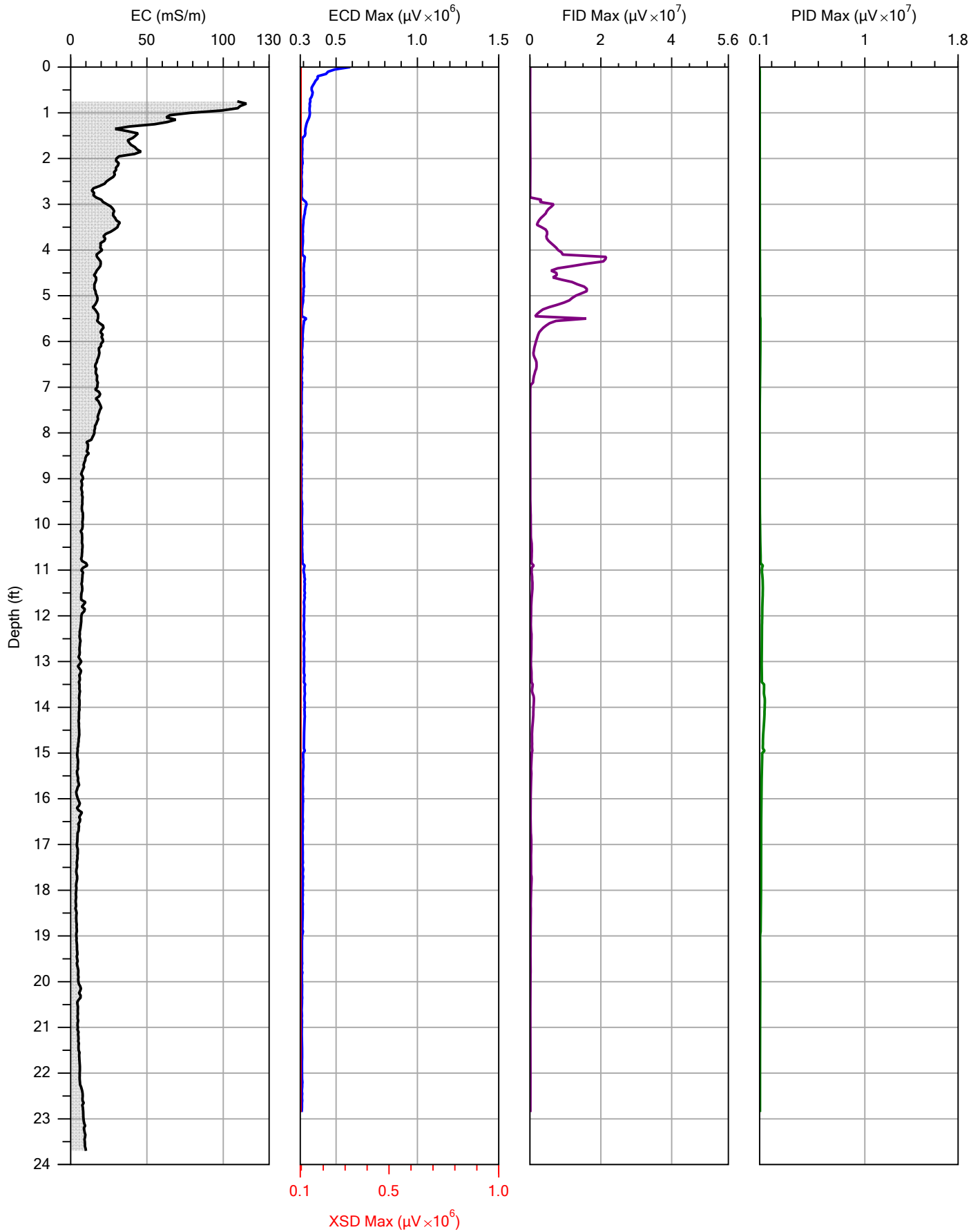












APPENDIX B
MIP Survey Laboratory Analytical Reports

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Report Date: August 18, 2016

Project: Herr Foods/101722001

Submittal Date: 07/29/2016

Group Number: 1688839

PO Number: 101722001

State of Sample Origin: PA

Client Sample DescriptionMIP-1@5.5 ft Grab Soil
MIP-1 Grab Groundwater
MIP-3@7.5 ft Grab Soil
MIP-3 Grab Groundwater
MIP-4@4.75 ft Grab Soil
MIP-4 Grab Groundwater
MIP-7@7.5 ft Grab Soil
MIP-7 Grab Groundwater
TB Water

Lancaster Labs

(LL) #8500769
8500770
8500771
8500772
8500773
8500774
8500775
8500776
8500777

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>.

Electronic Copy To Rettew Associates

Attn: Ed Dziedzic

Respectfully Submitted,


Stacy L. Hess
Project Manager

(717) 556-7236

Sample Description: MIP-1@5.5 ft Grab Soil
HERR FOODS/101722001

LL Sample # SW 8500769
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 09:30 by ED

Rettew Associates

Submitted: 07/29/2016 16:45

3020 Columbia Avenue

Reported: 08/18/2016 09:44

Lancaster PA 17603-4011

MIP1S

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B					
10237	Benzene	71-43-2	50,000	510	846.02
10237	Ethylbenzene	100-41-4	120,000	1,000	846.02
10237	Isopropylbenzene	98-82-8	7,200	1,000	846.02
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	510	846.02
10237	Naphthalene	91-20-3	23,000	1,000	846.02
10237	Toluene	108-88-3	450,000	10,000	8460.24
10237	1,2,4-Trimethylbenzene	95-63-6	170,000	1,000	846.02
10237	1,3,5-Trimethylbenzene	108-67-8	56,000	1,000	846.02
10237	Xylene (Total)	1330-20-7	530,000	1,000	846.02
GC Volatiles SW-846 8015B					
01637	TPH-GRO soil C6-C10	n.a.	5,300	160	16233.77
GC Miscellaneous SW-846 8015B					
10941	TPH-DRO soil C10-C28 microwave	n.a.	1,300	240	50
Wet Chemistry SM 5310 B modified-2000					
02079	TOC Solids/Sludges Combustion	n.a.	1,410	243	1
Wet Chemistry SM 2540 G-1997					
00111	Moisture	n.a.	17.0	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PA Unleaded/Diesel 8260B	SW-846 8260B	1	Q162151AA	08/03/2016 00:22	Stephen C Nolte	846.02
10237	PA Unleaded/Diesel 8260B	SW-846 8260B	1	Q162151AA	08/03/2016 00:45	Stephen C Nolte	8460.24
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201621142058	07/29/2016 09:30	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201621142058	07/29/2016 09:30	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201621142060	07/29/2016 09:30	Client Supplied	1

Sample Description: MIP-1@5.5 ft Grab Soil
HERR FOODS/101722001

LL Sample # SW 8500769
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 09:30 by ED

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Submitted: 07/29/2016 16:45

Reported: 08/18/2016 09:44

MIP1S

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01637	TPH-GRO soil C6-C10	SW-846 8015B	1	16216A16A	08/03/2016 22:27	Marie D Beamenderfer	16233.7
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201621142060	07/29/2016 09:30	Client Supplied	n.a.
10941	TPH-DRO soil C10-C28 microwave	SW-846 8015B	2	162220010A	08/10/2016 11:33	Thomas C Wildermuth	50
10942	Microwave Extraction-DRO soils	SW-846 3546	1	162220010A	08/10/2016 09:23	Sally L Appleyard	1
02079	TOC Solids/Sludges Combustion	SM 5310 B modified-2000	1	16229298731A	08/16/2016 19:41	Clinton M Wilson	1
00111	Moisture	SM 2540 G-1997	1	16216820009B	08/03/2016 18:27	Scott W Freisher	1

Sample Description: MIP-1 Grab Groundwater
HERR FOODS/101722001

LL Sample # WW 8500770
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 10:15 by ED

Rettew Associates

3020 Columbia Avenue

Lancaster PA 17603-4011

Submitted: 07/29/2016 16:45

Reported: 08/18/2016 09:44

MIP1W

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B					
10945	Benzene	71-43-2	3,400	50	100
10945	Ethylbenzene	100-41-4	1,600	5	10
10945	Isopropylbenzene	98-82-8	62	5	10
10945	Methyl Tertiary Butyl Ether	1634-04-4	21	5	10
10945	Naphthalene	91-20-3	230	10	10
10945	Toluene	108-88-3	14,000	50	100
10945	1,2,4-Trimethylbenzene	95-63-6	1,600	5	10
10945	1,3,5-Trimethylbenzene	108-67-8	490	5	10
10945	Xylene (Total)	1330-20-7	7,500	50	100
GC Volatiles SW-846 8015B					
01635	TPH-GRO water C6-C10	n.a.	71,000	2,000	100
GC Petroleum SW-846 8015B					
Hydrocarbons					
08269	TPH-DRO water C10-C28	n.a.	3,900	640	20
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	34.5	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162151AA	08/02/2016 15:51	Daniel H Heller	10
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162151AA	08/02/2016 16:13	Daniel H Heller	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F162151AA	08/02/2016 15:51	Daniel H Heller	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	F162151AA	08/02/2016 16:13	Daniel H Heller	100
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16214C20A	08/02/2016 16:49	Jeremy C Giffin	100
01146	GC VOA Water Prep	SW-846 5030B	1	16214C20A	08/02/2016 16:49	Jeremy C Giffin	100
08269	TPH-DRO water C10-C28	SW-846 8015B	2	162170016A	08/05/2016 21:24	Amy Lehr	20
07003	Extraction - DRO (Waters)	SW-846 3510C	1	162170016A	08/04/2016 17:30	Ryan J Dowdy	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16228049506A	08/16/2016 02:37	James S Mathiot	1

Sample Description: MIP-3@7.5 ft Grab Soil
HERR FOODS/101722001

LL Sample # SW 8500771
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 11:00 by ED

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Submitted: 07/29/2016 16:45

Reported: 08/18/2016 09:44

MIP3S

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B					
10237	Benzene	71-43-2	450 J	130	216.92
10237	Ethylbenzene	100-41-4	46,000	270	216.92
10237	Isopropylbenzene	98-82-8	3,100	270	216.92
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	130	216.92
10237	Naphthalene	91-20-3	8,900	270	216.92
10237	Toluene	108-88-3	67,000	270	216.92
10237	1,2,4-Trimethylbenzene	95-63-6	67,000	270	216.92
10237	1,3,5-Trimethylbenzene	108-67-8	22,000	270	216.92
10237	Xylene (Total)	1330-20-7	210,000	270	216.92
GC Volatiles SW-846 8015B					
01637	TPH-GRO soil C6-C10	n.a.	110	2.1	211.51
GC Miscellaneous SW-846 8015B					
10941	TPH-DRO soil C10-C28 microwave	n.a.	220	4.9	1
Wet Chemistry SM 5310 B modified-2000					
02079	TOC Solids/Sludges Combustion	n.a.	N.D.	183	1
Due to the nature of this sample matrix, the sample cup was filled to capacity with less than 1000 mg of sample being used. The lowered sample weight has resulted in a raised reporting limit.					
Wet Chemistry SM 2540 G-1997					
00111	Moisture	n.a.	19.0	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PA Unleaded/Diesel	SW-846 8260B	1	R162161AA	08/03/2016 18:05	Anita M Dale	216.92
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201621142058	07/29/2016 11:00	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201621142058	07/29/2016 11:00	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201621142060	07/29/2016 11:00	Client Supplied	1

Sample Description: MIP-3@7.5 ft Grab Soil
HERR FOODS/101722001

LL Sample # SW 8500771
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 11:00 by ED

Rettew Associates

3020 Columbia Avenue

Lancaster PA 17603-4011

Submitted: 07/29/2016 16:45

Reported: 08/18/2016 09:44

MIP3S

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01637	TPH-GRO soil C6-C10	SW-846 8015B	1	16216A16B	08/04/2016 18:17	Jeremy C Giffin	211.51
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201621142060	07/29/2016 11:00	Client Supplied	n.a.
10941	TPH-DRO soil C10-C28 microwave	SW-846 8015B	1	162220010A	08/10/2016 16:10	Thomas C Wildermuth	1
10942	Microwave Extraction-DRO soils	SW-846 3546	1	162220010A	08/10/2016 09:23	Sally L Appleyard	1
02079	TOC Solids/Sludges Combustion	SM 5310 B modified-2000	1	16229298731A	08/16/2016 19:51	Clinton M Wilson	1
00111	Moisture	SM 2540 G-1997	1	16216820009B	08/03/2016 18:27	Scott W Freisher	1

Sample Description: MIP-3 Grab Groundwater
HERR FOODS/101722001

LL Sample # WW 8500772
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 12:30 by ED

Rettew Associates

3020 Columbia Avenue

Lancaster PA 17603-4011

Submitted: 07/29/2016 16:45

Reported: 08/18/2016 09:44

MIP3W

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B ug/l					
10945	Benzene	71-43-2	220	3	5
10945	Ethylbenzene	100-41-4	490	3	5
10945	Isopropylbenzene	98-82-8	14	3	5
10945	Methyl Tertiary Butyl Ether	1634-04-4	120	3	5
10945	Naphthalene	91-20-3	23	5	5
10945	Toluene	108-88-3	1,500	25	50
10945	1,2,4-Trimethylbenzene	95-63-6	160	3	5
10945	1,3,5-Trimethylbenzene	108-67-8	59	3	5
10945	Xylene (Total)	1330-20-7	1,800	3	5
GC Volatiles SW-846 8015B ug/l					
01635	TPH-GRO water C6-C10	n.a.	12,000	400	20
GC Petroleum SW-846 8015B ug/l					
Hydrocarbons					
12858	DRO C10-C28	n.a.	1,400	45	1
The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.					
Wet Chemistry SM 5310 C-2000 mg/l					
00273	Total Organic Carbon	n.a.	72.7	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162151AA	08/02/2016 16:35	Daniel H Heller	5
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162151AA	08/02/2016 16:57	Daniel H Heller	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F162151AA	08/02/2016 16:35	Daniel H Heller	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	F162151AA	08/02/2016 16:57	Daniel H Heller	50
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16214C20A	08/02/2016 17:17	Jeremy C Giffin	20
01146	GC VOA Water Prep	SW-846 5030B	1	16214C20A	08/02/2016 17:17	Jeremy C Giffin	20
12858	DRO Microextraction Master	SW-846 8015B	1	162190011A	08/08/2016 17:38	Christine E Dolman	1
12059	Microextraction - DRO (waters)	SW-846 3511	2	162190011A	08/08/2016 08:50	Maria Davenport	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16228049506A	08/16/2016 03:03	James S Mathiot	1

Sample Description: MIP-4@4.75 ft Grab Soil
HERR FOODS/101722001

LL Sample # SW 8500773
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 13:10 by ED

Rettew Associates

Submitted: 07/29/2016 16:45

3020 Columbia Avenue

Reported: 08/18/2016 09:44

Lancaster PA 17603-4011

MIP4S

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B					
10237	Benzene	71-43-2	N.D.	ug/kg	0.82
10237	Ethylbenzene	100-41-4	N.D.	1	0.82
10237	Isopropylbenzene	98-82-8	N.D.	1	0.82
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	0.82
10237	Naphthalene	91-20-3	N.D.	1	0.82
10237	Toluene	108-88-3	N.D.	1	0.82
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.	1	0.82
10237	1,3,5-Trimethylbenzene	108-67-8	N.D.	1	0.82
10237	Xylene (Total)	1330-20-7	N.D.	1	0.82
GC Volatiles SW-846 8015B					
01637	TPH-GRO soil C6-C10	n.a.	0.2 J	mg/kg	21.29
GC Miscellaneous SW-846 8015B					
10941	TPH-DRO soil C10-C28 microwave	n.a.	25	mg/kg	1
Wet Chemistry SM 5310 B modified-2000					
02079	TOC Solids/Sludges Combustion	n.a.	2,380	mg/kg	1
Wet Chemistry SM 2540 G-1997					
00111	Moisture	n.a.	18.0	%	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PA Unleaded/Diesel	SW-846 8260B	1	X162141AA	08/01/2016 17:22	Linda C Pape	0.82
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201621142058	07/29/2016 13:10	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201621142058	07/29/2016 13:10	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201621142060	07/29/2016 13:10	Client Supplied	1
01637	TPH-GRO soil C6-C10	SW-846 8015B	1	16221A34A	08/08/2016 20:59	Marie D Beamenderfer	21.29

Sample Description: MIP-4@4.75 ft Grab Soil
HERR FOODS/101722001

LL Sample # SW 8500773
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 13:10 by ED

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Submitted: 07/29/2016 16:45

Reported: 08/18/2016 09:44

MIP4S

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201621142060	07/29/2016 13:10	Client Supplied	n.a.
10941	TPH-DRO soil C10-C28 microwave	SW-846 8015B	1	162220010A	08/10/2016 17:30	Thomas C Wildermuth	1
10942	Microwave Extraction-DRO soils	SW-846 3546	1	162220010A	08/10/2016 09:23	Sally L Appleyard	1
02079	TOC Solids/Sludges Combustion	SM 5310 B modified-2000	1	16229298731A	08/16/2016 20:38	Clinton M Wilson	1
00111	Moisture	SM 2540 G-1997	1	16216820009B	08/03/2016 18:27	Scott W Freisher	1

Sample Description: MIP-4 Grab Groundwater
HERR FOODS/101722001

LL Sample # WW 8500774
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 14:30 by ED

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Submitted: 07/29/2016 16:45

Reported: 08/18/2016 09:44

MIP4W

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B ug/l					
10945	Benzene	71-43-2	N.D.	5	10
10945	Ethylbenzene	100-41-4	N.D.	5	10
10945	Isopropylbenzene	98-82-8	N.D.	5	10
10945	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	5	10
10945	Naphthalene	91-20-3	N.D.	10	10
10945	Toluene	108-88-3	N.D.	5	10
10945	1,2,4-Trimethylbenzene	95-63-6	N.D.	5	10
10945	1,3,5-Trimethylbenzene	108-67-8	N.D.	5	10
10945	Xylene (Total)	1330-20-7	N.D.	5	10
Reporting limits were raised due to sample foaming.					
GC Volatiles SW-846 8015B ug/l					
01635	TPH-GRO water C6-C10	n.a.	N.D.	200	10
Reporting limits were raised due to sample foaming.					
GC Petroleum SW-846 8015B ug/l					
Hydrocarbons					
12858	DRO C10-C28	n.a.	140	45	1
Wet Chemistry SM 5310 C-2000 mg/l					
00273	Total Organic Carbon	n.a.	257	2.5	5

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162151AA	08/02/2016 17:18	Daniel H Heller	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F162151AA	08/02/2016 17:18	Daniel H Heller	10
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16214C20A	08/02/2016 13:10	Jeremy C Giffin	10
01146	GC VOA Water Prep	SW-846 5030B	1	16214C20A	08/02/2016 13:10	Jeremy C Giffin	10
12858	DRO Microextraction Master	SW-846 8015B	1	162160025A	08/04/2016 15:22	Christine E Dolman	1
12059	Microextraction - DRO (waters)	SW-846 3511	1	162160025A	08/04/2016 07:45	Maria Davenport	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16228049505A	08/16/2016 23:54	Clinton M Wilson	5

Sample Description: MIP-7@7.5 ft Grab Soil
HERR FOODS/101722001

LL Sample # SW 8500775
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 14:00 by ED

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Submitted: 07/29/2016 16:45

Reported: 08/18/2016 09:44

MIP7S

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B					
10237	Benzene	71-43-2	N.D.	0.3	0.44
10237	Ethylbenzene	100-41-4	N.D.	0.6	0.44
10237	Isopropylbenzene	98-82-8	N.D.	0.6	0.44
10237	Methyl Tertiary Butyl Ether	1634-04-4	9	0.3	0.44
10237	Naphthalene	91-20-3	N.D.	0.6	0.44
10237	Toluene	108-88-3	N.D.	0.6	0.44
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.6	0.44
10237	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.6	0.44
10237	Xylene (Total)	1330-20-7	N.D.	0.6	0.44
GC Volatiles SW-846 8015B					
01637	TPH-GRO soil C6-C10	n.a.	N.D.	0.2	18.8
GC Miscellaneous SW-846 8015B					
10941	TPH-DRO soil C10-C28 microwave	n.a.	27	5.2	1
Wet Chemistry SM 5310 B modified-2000					
02079	TOC Solids/Sludges Combustion	n.a.	15,200	254	1
Wet Chemistry SM 2540 G-1997					
00111	Moisture	n.a.	23.6	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PA Unleaded/Diesel	8260B SW-846	1	X162141AA	08/01/2016 17:45	Linda C Pape	0.44
02392	GC/MS - Field Preserved NaHSO4	5035A SW-846	1	201621142058	07/29/2016 14:00	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	5035A SW-846	1	201621142060	07/29/2016 14:00	Client Supplied	1
01637	TPH-GRO soil C6-C10	8015B SW-846	1	16221A34A	08/08/2016 21:51	Marie D Beamenderfer	18.8
06647	GC-5g Field Preserved MeOH	5035A SW-846	1	201621142060	07/29/2016 14:00	Client Supplied	n.a.

Sample Description: MIP-7@7.5 ft Grab Soil
HERR FOODS/101722001

LL Sample # SW 8500775
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 14:00 by ED

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Submitted: 07/29/2016 16:45

Reported: 08/18/2016 09:44

MIP7S

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10941	TPH-DRO soil C10-C28 microwave	SW-846 8015B	1	162220010A	08/10/2016 17:50	Thomas C Wildermuth	1
10942	Microwave Extraction-DRO soils	SW-846 3546	1	162220010A	08/10/2016 09:23	Sally L Appleyard	1
02079	TOC Solids/Sludges Combustion	SM 5310 B modified-2000	1	16229298731A	08/16/2016 20:58	Clinton M Wilson	1
00111	Moisture	SM 2540 G-1997	1	16216820009B	08/03/2016 18:27	Scott W Freisher	1

Sample Description: MIP-7 Grab Groundwater
HERR FOODS/101722001

LL Sample # WW 8500776
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016 15:30 by ED

Rettew Associates

Submitted: 07/29/2016 16:45

3020 Columbia Avenue

Reported: 08/18/2016 09:44

Lancaster PA 17603-4011

MIP7W

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B					
10945	Benzene	71-43-2	N.D.	ug/l 0.5	1
10945	Ethylbenzene	100-41-4	N.D.	0.5	1
10945	Isopropylbenzene	98-82-8	N.D.	0.5	1
10945	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1
10945	Naphthalene	91-20-3	N.D.	1	1
10945	Toluene	108-88-3	N.D.	0.5	1
10945	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.5	1
10945	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.5	1
10945	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC Volatiles SW-846 8015B					
01635	TPH-GRO water C6-C10	n.a.	21 J	ug/l 20	1
GC Petroleum SW-846 8015B					
Hydrocarbons					
08269	TPH-DRO water C10-C28	n.a.	8,800	ug/l 33	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	48.3	mg/l 0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
Preservation requirements were not met. The pH preservation of all non-volatile containers was checked upon receipt at the laboratory. The container for the following analysis was not within specification and was adjusted accordingly by the laboratory: Total Organic Carbon

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162151AA	08/02/2016 17:40	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F162151AA	08/02/2016 17:40	Daniel H Heller	1
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16214C20A	08/02/2016 14:05	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	16214C20A	08/02/2016 14:05	Jeremy C Giffin	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	162170016A	08/05/2016 21:02	Amy Lehr	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	162170016A	08/04/2016 17:30	Ryan J Dowdy	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16228049506A	08/16/2016 03:30	James S Mathiot	1

Sample Description: TB Water
HERR FOODS/101722001

LL Sample # WW 8500777
LL Group # 1688839
Account # 00721

Project Name: Herr Foods/101722001

Collected: 07/29/2016

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Submitted: 07/29/2016 16:45

Reported: 08/18/2016 09:44

MIPTB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles	SW-846 8260B	ug/l	ug/l	
10945	Benzene	71-43-2	N.D.	0.5	1
10945	Ethylbenzene	100-41-4	N.D.	0.5	1
10945	Isopropylbenzene	98-82-8	N.D.	0.5	1
10945	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1
10945	Naphthalene	91-20-3	N.D.	1	1
10945	Toluene	108-88-3	N.D.	0.5	1
10945	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.5	1
10945	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.5	1
10945	Xylene (Total)	1330-20-7	N.D.	0.5	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162151AA	08/02/2016 19:01	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F162151AA	08/02/2016 19:01	Daniel H Heller	1

Quality Control Summary

Client Name: Rettew Associates
Reported: 08/18/2016 09:44

Group Number: 1688839

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	ug/kg	ug/kg
Batch number: Q162151AA	Sample number(s): 8500769	
Benzene	N.D.	25
Ethylbenzene	N.D.	50
Isopropylbenzene	N.D.	50
Methyl Tertiary Butyl Ether	N.D.	25
Naphthalene	N.D.	50
Toluene	N.D.	50
1,2,4-Trimethylbenzene	N.D.	50
1,3,5-Trimethylbenzene	N.D.	50
Xylene (Total)	N.D.	50
Batch number: R162161AA	Sample number(s): 8500771	
Benzene	N.D.	25
Ethylbenzene	N.D.	50
Isopropylbenzene	N.D.	50
Methyl Tertiary Butyl Ether	N.D.	25
Naphthalene	N.D.	50
Toluene	N.D.	50
1,2,4-Trimethylbenzene	N.D.	50
1,3,5-Trimethylbenzene	N.D.	50
Xylene (Total)	N.D.	50
Batch number: X162141AA	Sample number(s): 8500773,8500775	
Benzene	N.D.	0.5
Ethylbenzene	N.D.	1
Isopropylbenzene	N.D.	1
Methyl Tertiary Butyl Ether	N.D.	0.5
Naphthalene	N.D.	1
Toluene	N.D.	1
1,2,4-Trimethylbenzene	N.D.	1
1,3,5-Trimethylbenzene	N.D.	1
Xylene (Total)	N.D.	1
	ug/l	ug/l
Batch number: F162151AA	Sample number(s): 8500770,8500772,8500774,8500776-8500777	
Benzene	N.D.	0.5
Ethylbenzene	N.D.	0.5
Isopropylbenzene	N.D.	0.5
Methyl Tertiary Butyl Ether	N.D.	0.5
Naphthalene	N.D.	1
Toluene	N.D.	0.5
1,2,4-Trimethylbenzene	N.D.	0.5
1,3,5-Trimethylbenzene	N.D.	0.5
Xylene (Total)	N.D.	0.5

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 08/18/2016 09:44

Group Number: 1688839

Method Blank (continued)

Analysis Name	Result	MDL
	mg/kg	mg/kg
Batch number: 16216A16A	Sample number(s): 8500769	
TPH-GRO soil C6-C10	0.4 J 0.2	
Batch number: 16216A16B	Sample number(s): 8500771	
TPH-GRO soil C6-C10	0.2 J 0.2	
Batch number: 16221A34A	Sample number(s): 8500773, 8500775	
TPH-GRO soil C6-C10	N.D. 0.2	
	ug/l	ug/l
Batch number: 16214C20A	Sample number(s): 8500770, 8500772, 8500774, 8500776	
TPH-GRO water C6-C10	N.D. 20	
	mg/kg	mg/kg
Batch number: 162220010A	Sample number(s): 8500769, 8500771, 8500773, 8500775	
TPH-DRO soil C10-C28 microwave	N.D. 4.0	
	ug/l	ug/l
Batch number: 162160025A	Sample number(s): 8500774	
DRO C10-C28	N.D. 45	
Batch number: 162170016A	Sample number(s): 8500770, 8500776	
TPH-DRO water C10-C28	N.D. 32	
Batch number: 162190011A	Sample number(s): 8500772	
DRO C10-C28	N.D. 45	
	mg/kg	mg/kg
Batch number: 16229298731A	Sample number(s): 8500769, 8500771, 8500773, 8500775	
TOC Solids/Sludges Combustion	N.D. 100	
	mg/l	mg/l
Batch number: 16228049505A	Sample number(s): 8500774	
Total Organic Carbon	N.D. 0.50	
Batch number: 16228049506A	Sample number(s): 8500770, 8500772, 8500776	
Total Organic Carbon	N.D. 0.50	

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: Q162151AA	Sample number(s): 8500769								
Benzene	1000	982.2	1000	1080.66	98	108	80-120	10	30
Ethylbenzene	1000	990.79	1000	1071.41	99	107	80-120	8	30
Isopropylbenzene	1000	1014.18	1000	1081.61	101	108	70-120	6	30
Methyl Tertiary Butyl Ether	1000	960.12	1000	1043.93	96	104	72-120	8	30
Naphthalene	1000	1018.54	1000	1083.79	102	108	53-120	6	30

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 08/18/2016 09:44

Group Number: 1688839

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Toluene	1000	982.42	1000	1056.49	98	106	80-120	7	30
1,2,4-Trimethylbenzene	1000	1006.96	1000	1077.45	101	108	74-120	7	30
1,3,5-Trimethylbenzene	1000	1020.6	1000	1076.57	102	108	73-120	5	30
Xylene (Total)	3000	2964.7	3000	3167.55	99	106	80-120	7	30
Batch number: R162161AA	Sample number(s): 8500771								
Benzene	1000	988.71	1000	976.73	99	98	80-120	1	30
Ethylbenzene	1000	877.73	1000	848.1	88	85	80-120	3	30
Isopropylbenzene	1000	855.63	1000	793.71	86	79	70-120	8	30
Methyl Tertiary Butyl Ether	1000	1019.14	1000	1014.73	102	101	72-120	0	30
Naphthalene	1000	937.14	1000	858.48	94	86	53-120	9	30
Toluene	1000	894.72	1000	853.6	89	85	80-120	5	30
1,2,4-Trimethylbenzene	1000	908.82	1000	847.81	91	85	74-120	7	30
1,3,5-Trimethylbenzene	1000	930.26	1000	864.71	93	86	73-120	7	30
Xylene (Total)	3000	2622.18	3000	2578.67	87	86	80-120	2	30
Batch number: X162141AA	Sample number(s): 8500773,8500775								
Benzene	20	16.16	20	19.39	81	97	80-120	18	30
Ethylbenzene	20	16.98	20	20.94	85	105	80-120	21	30
Isopropylbenzene	20	17.06	20	21.45	85	107	70-120	23	30
Methyl Tertiary Butyl Ether	20	15.77	20	17.94	79	90	72-120	13	30
Naphthalene	20	15.25	20	17.79	76	89	53-120	15	30
Toluene	20	17.08	20	20.86	85	104	80-120	20	30
1,2,4-Trimethylbenzene	20	17.25	20	21.17	86	106	74-120	20	30
1,3,5-Trimethylbenzene	20	17.07	20	21.3	85	107	73-120	22	30
Xylene (Total)	60	50.69	60	62.61	84	104	80-120	21	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: F162151AA	Sample number(s): 8500770,8500772,8500774,8500776-8500777								
Benzene	20	17.7	20	17.25	88	86	78-120	3	30
Ethylbenzene	20	18.19	20	17.83	91	89	78-120	2	30
Isopropylbenzene	20	18.1	20	17.7	90	89	80-120	2	30
Methyl Tertiary Butyl Ether	20	18.65	20	18.19	93	91	75-120	3	30
Naphthalene	20	16.25	20	15.69	81	78	59-120	4	30
Toluene	20	18.71	20	18.06	94	90	80-120	4	30
1,2,4-Trimethylbenzene	20	18.22	20	17.54	91	88	75-120	4	30
1,3,5-Trimethylbenzene	20	18.13	20	17.8	91	89	75-120	2	30
Xylene (Total)	60	54.44	60	53.44	91	89	80-120	2	30
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16216A16A	Sample number(s): 8500769								
TPH-GRO soil C6-C10	11	9.47	11	9.63	86	88	61-120	2	30
Batch number: 16216A16B	Sample number(s): 8500771								
TPH-GRO soil C6-C10	11	9.47	11	9.63	86	88	61-120	2	30
Batch number: 16221A34A	Sample number(s): 8500773,8500775								
TPH-GRO soil C6-C10	11	8.28	11	8.63	75	78	61-120	4	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 16214C20A	Sample number(s): 8500770,8500772,8500774,8500776								

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 08/18/2016 09:44

Group Number: 1688839

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
TPH-GRO water C6-C10	1100	1103.93	1100	1089.7	100	99	80-120	1	30
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 162220010A TPH-DRO soil C10-C28 microwave	Sample number(s): 8500769,8500771,8500773,8500775 133	142.54			107		74-117		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 162160025A DRO C10-C28	Sample number(s): 8500774 2680	2332.61	2660	2122.31	87	80	69-115	9	20
Batch number: 162170016A TPH-DRO water C10-C28	Sample number(s): 8500770,8500776 1600	1234.57	1600	1290.21	77	81	53-115	4	20
Batch number: 162190011A DRO C10-C28	Sample number(s): 8500772 2670	2062.36	2680	2000.01	77	75	69-115	3	20
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16229298731A TOC Solids/Sludges Combustion	Sample number(s): 8500769,8500771,8500773,8500775 5830	5022.57			86		47-143		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16228049505A Total Organic Carbon	Sample number(s): 8500774 25	25.06			100		91-113		
Batch number: 16228049506A Total Organic Carbon	Sample number(s): 8500770,8500772,8500776 25	24.86			99		91-113		
	%	%	%	%					
Batch number: 16216820009B Moisture	Sample number(s): 8500769,8500771,8500773,8500775 89.5	89.42			100		99-101		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: F162151AA	Sample number(s): 8500770,8500772,8500774,8500776-8500777 UNSPK: P500394									
Benzene	N.D.	20	19.28	20	19.3	96	96	78-120	0	30
Ethylbenzene	N.D.	20	19.23	20	19.64	96	98	78-120	2	30
Isopropylbenzene	N.D.	20	19.51	20	19.84	98	99	80-120	2	30
Methyl Tertiary Butyl Ether	N.D.	20	19.03	20	18.86	95	94	75-120	1	30
Naphthalene	N.D.	20	15.77	20	15.82	79	79	59-120	0	30
Toluene	N.D.	20	19.91	20	20.43	100	102	80-120	3	30
1,2,4-Trimethylbenzene	N.D.	20	19.47	20	19.31	97	97	75-120	1	30

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 08/18/2016 09:44

Group Number: 1688839

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
1,3,5-Trimethylbenzene	N.D.	20	19.69	20	19.31	98	97	75-120	2	30
Xylene (Total)	N.D.	60	58.35	60	59.45	97	99	80-120	2	30
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 162220010A TPH-DRO soil C10-C28 microwave	Sample number(s): 8500769,8500771,8500773,8500775 175.91	131	315.53			UNSPK: 8500771 107		74-117		
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16229298731A TOC Solids/Sludges Combustion	Sample number(s): 8500769,8500771,8500773,8500775 4981.53	13530	19053.63			UNSPK: P501688 104		47-143		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16228049505A Total Organic Carbon	Sample number(s): 8500774 0.939	UNSPK: P500548 10	11.62			107		91-113		
Batch number: 16228049506A Total Organic Carbon	Sample number(s): 8500770,8500772,8500776 5.34	UNSPK: P500387 10	15.47			101		91-113		

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/kg	DUP Conc mg/kg	DUP RPD	DUP RPD Max
Batch number: 162220010A TPH-DRO soil C10-C28 microwave	Sample number(s): 8500769,8500771,8500773,8500775 175.91	BKG: 8500771 233.72	28*	20
	mg/kg	mg/kg		
Batch number: 16229298731A TOC Solids/Sludges Combustion	Sample number(s): 8500769,8500771,8500773,8500775 4981.53	BKG: P501688 6348.66	24*	7
	mg/l	mg/l		
Batch number: 16228049505A Total Organic Carbon	Sample number(s): 8500774 0.939	BKG: P500548 0.962	2 (1)	3
Batch number: 16228049506A Total Organic Carbon	Sample number(s): 8500770,8500772,8500776 5.34	BKG: P500387 5.40	1	3
	%	%		
Batch number: 16216820009B Moisture	Sample number(s): 8500769,8500771,8500773,8500775 18.04	BKG: 8500773 17.41	4	5

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 08/18/2016 09:44

Group Number: 1688839

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PA UST Unleaded + TMBs

Batch number: F162151AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8500770	92	95	102	97
8500772	92	95	102	97
8500774	94	97	101	94
8500776	94	100	101	97
8500777	95	98	101	93
Blank	94	96	102	96
LCS	95	102	101	97
LCSD	95	100	102	96
MS	96	99	101	97
MSD	94	98	102	98

Limits: 80-116 77-113 80-113 78-113

Analysis Name: PA Unleaded/Diesel 8260B

Batch number: Q162151AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8500769	80	84	93	111
Blank	89	93	91	89
LCS	91	91	92	91
LCSD	101	106	101	100

Limits: 50-141 54-135 52-141 50-131

Analysis Name: PA Unleaded/Diesel 8260B

Batch number: R162161AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8500771	68	70	64	69
Blank	109	103	98	83
LCS	96	91	77	79
LCSD	95	92	77	73

Limits: 50-141 54-135 52-141 50-131

Analysis Name: PA Unleaded/Diesel 8260B

Batch number: X162141AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8500773	105	103	102	84
8500775	112	118	99	91
Blank	105	98	98	95
LCS	100	100	102	102
LCSD	97	93	104	101

Limits: 50-141 54-135 52-141 50-131

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 08/18/2016 09:44

Group Number: 1688839

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH-GRO water C6-C10
Batch number: 16214C20A

Trifluorotoluene-F	
8500770	93
8500772	94
8500774	90
8500776	90
Blank	90
LCS	100
LCSD	98

Limits: 63-135

Analysis Name: TPH-GRO soil C6-C10
Batch number: 16216A16A

Trifluorotoluene-F	
8500769	1845*
Blank	107
LCS	106
LCSD	107

Limits: 50-142

Analysis Name: TPH-GRO soil C6-C10
Batch number: 16216A16B

Trifluorotoluene-F	
8500771	128
Blank	101
LCS	106
LCSD	107

Limits: 50-142

Analysis Name: TPH-GRO soil C6-C10
Batch number: 16221A34A

Trifluorotoluene-F	
8500773	99
8500775	62
Blank	79
LCS	88
LCSD	90

Limits: 50-142

Analysis Name: DRO Microextraction Master
Batch number: 162160025A

Orthoterphenyl	
8500774	68
Blank	115
LCS	94

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 08/18/2016 09:44

Group Number: 1688839

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Orthoterphenyl	
LCSD	90
Limits:	42-160

Analysis Name: TPH-DRO water C10-C28
Batch number: 162170016A

Orthoterphenyl	
8500770	121
8500776	79
Blank	95
LCS	97
LCSD	101
Limits:	50-124

Analysis Name: DRO Microextraction Master
Batch number: 162190011A

Orthoterphenyl	
8500772	27*
Blank	91
LCS	94
LCSD	96
Limits:	42-160

Analysis Name: TPH-DRO soil C10-C28 microwave
Batch number: 162220010A

Orthoterphenyl	
8500769	111
8500771	112
8500773	105
8500775	99
Blank	113
DUP	97
LCS	110
MS	95
Limits:	34-147

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody



Lancaster Laboratories
Environmental

For Eurofins Lancaster Laboratories Environmental use only

Acct. # 721 Group # 1688839 Sample # 8500769-77

COC # 506448

Client Information				Matrix				Analysis Requested												For Lab Use Only		
Client: <u>RETTEW ASSOC. INC</u>		Acct. #:		☐ Tissue ☒ Ground ☐ Surface ☐ Potable ☐ NPDES ☐ Water ☐ Other:		Preservation Codes TDC TPH-C40/TPH-DRO DEP DIESEL/UNLEADED												FSC: _____				
Project Name/ID: <u>WERR FOODS/101722001</u>		PWSID #:																SCR#: <u>191863</u>				
Project Manager: <u>ED DZIEDZIC</u>		P.O. #:														Preservation Codes						
Sampler: <u>ED DZIEDZIC</u>		Quote #:														H=HCl T=Thiosulfate N=HNO ₃ B=NaOH S=H ₂ SO ₄ O=Other						
State where samples were collected: <u>PA</u>		For Compliance: Yes ☐ No ☐														Remarks						
Sample Identification		Collected		Grab	Composite	Soil ☒	Water	Other:	Total # of Containers													
		Date	Time																			
MIP-1 @ 5.5 ft		7/29/16	7:30	X		X			4	X	X	X										
MIP-1		7/29/16	10:15	X			X		6	X	X	X						1 AMBER LITEL DRO				
MIP-3 @ 7.5 ft		7/29/16	11:00	X		X			4	X	X	X										
MIP-3		7/29/16	12:30	X			X		7	X	X	X						DRO MICRO EXTRACTION				
MIP-4 @ 4.75 ft		7/29/16	13:10	X		X			4	X	X	X										
MIP-4		7/29/16	14:30	X			X		6	X	X	X						DRO MICRO EXTRACTION				
MIP-7 @ 7.5 ft		7/29/16	14:00	X		X			4	X	X	X										
MIP-7		7/29/16	15:30	X			X		7	X	X	X										

Turnaround Time (TAT) Requested (please circle) Standard ☒ Rush ☐ (Rush TAT is subject to laboratory approval and surcharge.)		Relinquished by <u>Bottle Storage</u> Date <u>7/22/16</u> Time <u>12:15</u> Received by <u>P. Lafeyver</u> Date <u>7/22/16</u> Time <u>12:15</u>			
		Relinquished by <u>P. Lafeyver</u> Date <u>7/22/16</u> Time <u>13:50</u> Received by <u>Gunn</u> Date <u>7/29/16</u> Time <u>8:00</u>			
		Relinquished by <u>Gunn</u> Date <u>7/29/16</u> Time <u>16:45</u> Received by _____ Date _____ Time _____			
		Relinquished by _____ Date _____ Time _____ Received by _____ Date _____ Time _____			
Date results are needed: _____ E-mail address: <u>EDZIEDZIC@RETTEW.COM</u>		Relinquished by _____ Date _____ Time _____ Received by <u>32</u> Date <u>7/29/16</u> Time <u>1645</u>			
Data Package Options (circle if required) Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only) Type III (Reduced non-CLP) NJ DKQP TX TRRP-13 NYSDEC Category A or B MA MCP CT RCP		EDD Required? Yes ☒ No ☐ If yes, format: <u>EXCEL</u> Site-Specific QC (MS/MSD/Dup)? Yes ☐ No ☐ (If yes, indicate QC sample and submit triplicate sample volume.)			
		Relinquished by Commercial Carrier: UPS _____ FedEx _____ Other _____ Temperature upon receipt <u>45</u> °C			

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The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

7044 0216

Sample Administration
Receipt Documentation Log

Doc Log ID: 155838

Group Number(s): 1688839

Client: Rettew**Delivery and Receipt Information**

Delivery Method:	<u>Client Drop Off</u>	Arrival Timestamp:	<u>07/29/2016 16:45</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>PA</u>		

Arrival Condition Summary

Shipping Container Sealed:	No	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	Yes
Samples Chilled:	Yes	VOA Vial Headspace $\geq$ 6mm:	No
Paperwork Enclosed:	Yes	Total Trip Blank Qty:	2
Samples Intact:	Yes	Trip Blank Type:	HCl
Missing Samples:	No	Air Quality Samples Present:	No
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

*Unpacked by Karen Diem (3060) at 17:07 on 07/29/2016***Samples Chilled Details***Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?	<u>Samples</u> <u>Collected Same</u> <u>Day as Receipt?</u>
1	DT131	8.5	DT	Wet	Y	Bagged	Y	Y

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/L), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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SUMMARY OF LABORATORY TESTING

HERR FOODS

PROJECT NO.	101722001	SAMPLE DATE	-	JAY KAY TESTING, INC.
SAMPLES:	5	LOCATION:	-	5233 Lehman Road, Suite 110
REPORT:	08/05/16	REMARKS:	-	Spring Grove, PA 17362
				Phone: (410) 259-5101

BORING	SAMPLE	DEPTH	MC %	LL	PL	PI	% FINES	WET UNIT	DRY UNIT	VR
MIP-1	Tube	6.5-7.5	29.2	NP	NP	NP	35.1	119.7	92.6	0.820
MIP-3	Tube	5.0-6.0	35.5	52	39	13	38.0	111.9	82.6	1.040
MIP-4	Tube	6.0-7.0	28.4	38	NP	NP	50.7	99.4	77.4	1.178
MIP-7	Tube	6.0-7.0	16.1	40	34	6	29.0	120.5	103.8	0.623
MIP-1, 3, 4, 7	Composite	-	-	-	-	-	-	-	-	-
Jay Kay Testing, Inc. (AASHTO-Accredited)										

HERR FOODS

Boring: MIP-1

Sample: Tube

Depth: 6.5-7.5'

Project No.: 101722001

Sample Date: -

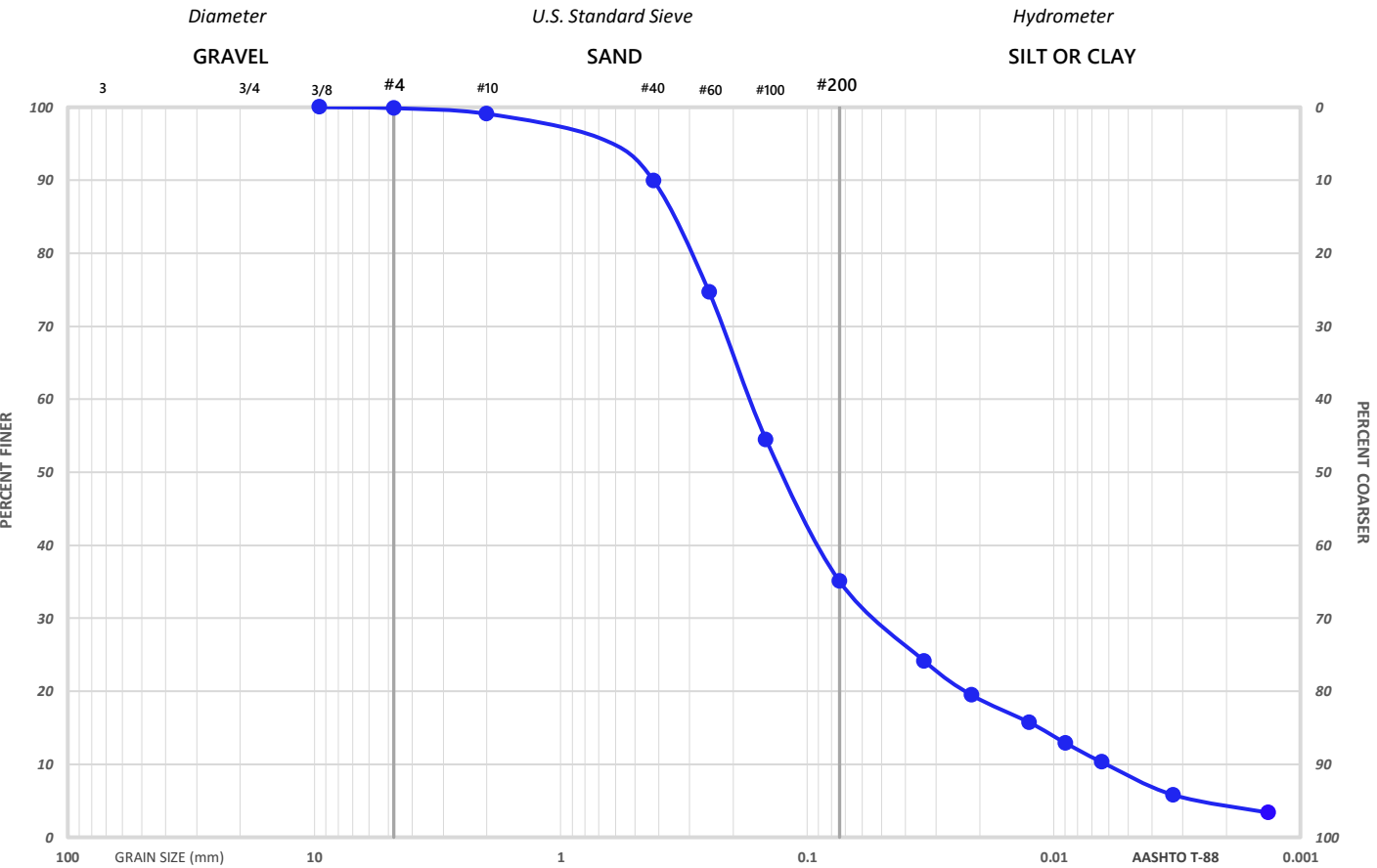
Location: -

JAY KAY TESTING, INC.

5233 Lehman Road, Suite 110

Spring Grove, PA 17362

Phone: (410) 259-5101



GRAIN SIZE ANALYSIS

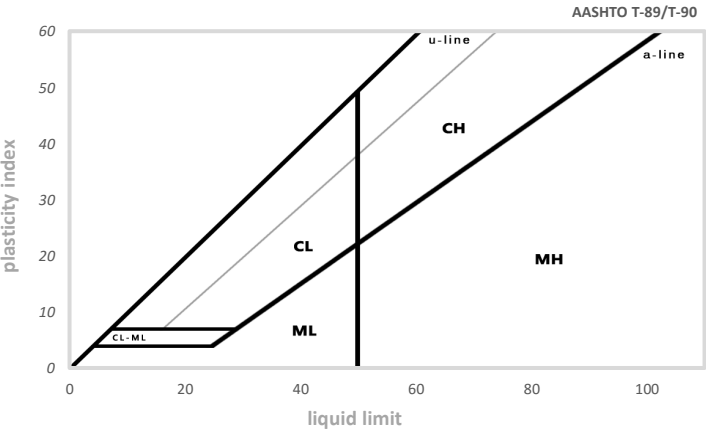
Diameter	75.0	50.8	37.5	25.4	19.0	12.7	9.51	4.75	2.0	0.42	0.25	0.147	0.074
Sieve Size	3"	2"	1.5"	1"	3/4"	1/2"	3/8"	#4	#10	#40	#60	#100	#200
% Passing	-	-	-	-	-	-	100.0	99.9	99.1	89.9	74.7	54.5	35.1

% GRAVEL	% SAND	Coarse Gravel	Fine Gravel	Coarse Sand	Medium Sand	Fine Sand	CC	CU
0.1	64.8	-	0.1	0.8	9.2	54.8	-	-

Moisture Content	29.2	Wet Unit Weight	119.7
Void Ratio*	0.820	Dry Unit Weight	92.6
* Est. Specific Gravity: 2.70			

ATTERBERG LIMITS		CLASSIFICATION	
Liquid Limit	NP	AASHTO	A-4
Plastic Limit	NP	USCS	SM
Plasticity Index	NP		

SOIL DESCRIPTION	
Light brown silty SAND	



HERR FOODS

Boring: MIP-3

Sample: Tube

Depth: 5.0-6.0'

Project No.: 101722001

Sample Date: -

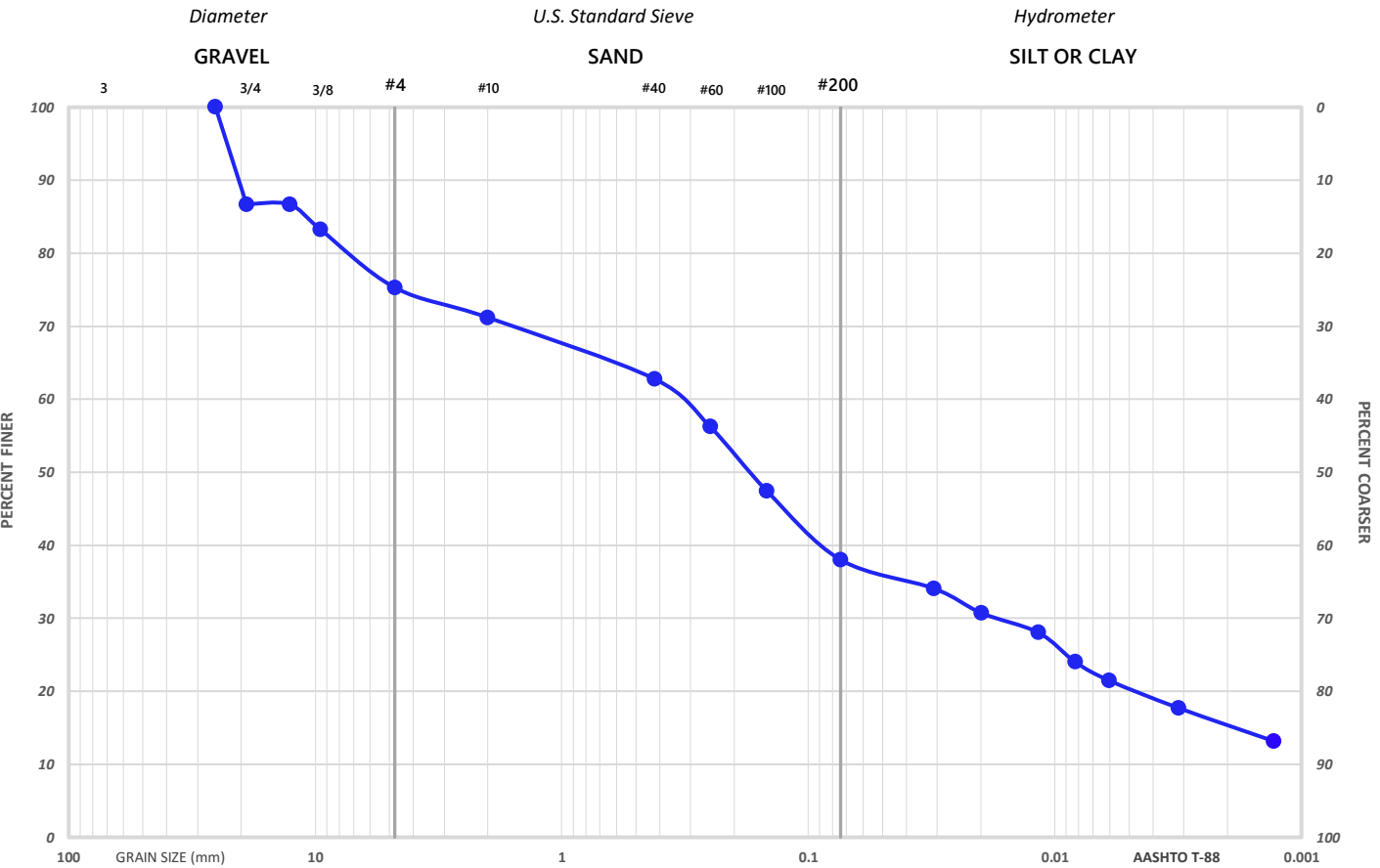
Location: -

JAY KAY TESTING, INC.

5233 Lehman Road, Suite 110

Spring Grove, PA 17362

Phone: (410) 259-5101



GRAIN SIZE ANALYSIS

Diameter	75.0	50.8	37.5	25.4	19.0	12.7	9.51	4.75	2.0	0.42	0.25	0.147	0.074
Sieve Size	3"	2"	1.5"	1"	3/4"	1/2"	3/8"	#4	#10	#40	#60	#100	# 200
% Passing	-	-	-	100.0	86.7	86.7	83.2	75.3	71.2	62.8	56.2	47.4	38.0

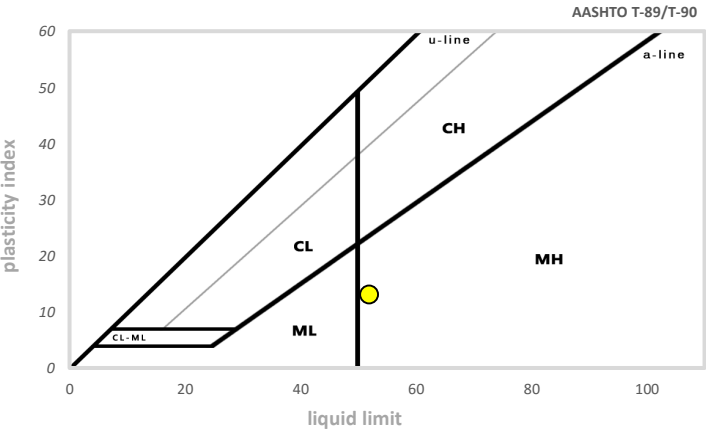
% GRAVEL	% SAND	Coarse Gravel	Fine Gravel	Coarse Sand	Medium Sand	Fine Sand	CC	CU
24.7	37.3	13.3	11.4	4.1	8.4	24.8	-	-

Moisture Content	35.5	Wet Unit Weight	111.9
Void Ratio*	1.040	Dry Unit Weight	82.6
* Est. Specific Gravity: 2.70			

ATTERBERG LIMITS		CLASSIFICATION	
Liquid Limit	52	AASHTO	A-7-5
Plastic Limit	39	USCS	SM
Plasticity Index	13		

SOIL DESCRIPTION

Dark green brown silty SAND with rock



HERR FOODS

Boring: MIP-4

Sample: Tube

Depth: 6.0-7.0'

Project No.: 101722001

Sample Date: -

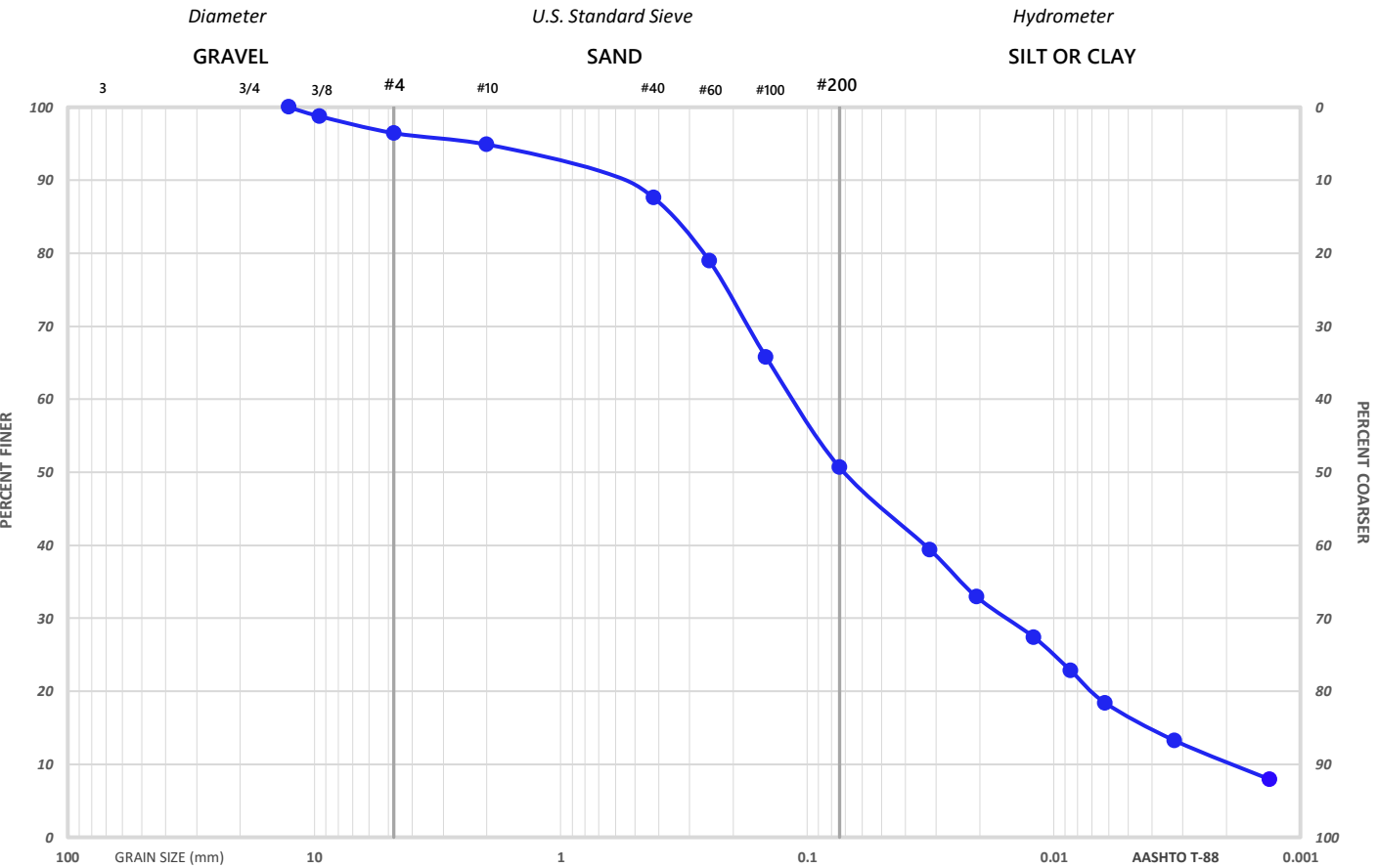
Location: -

JAY KAY TESTING, INC.

5233 Lehman Road, Suite 110

Spring Grove, PA 17362

Phone: (410) 259-5101



GRAIN SIZE ANALYSIS

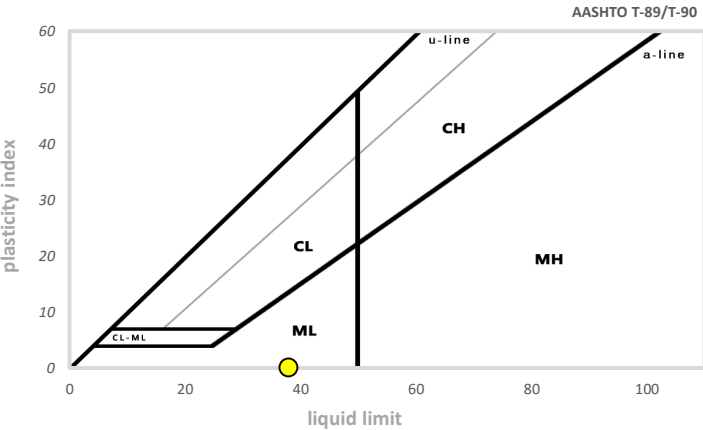
Diameter	75.0	50.8	37.5	25.4	19.0	12.7	9.51	4.75	2.0	0.42	0.25	0.147	0.074
Sieve Size	3"	2"	1.5"	1"	3/4"	1/2"	3/8"	#4	#10	#40	#60	#100	#200
% Passing	-	-	-	-	-	100.0	98.8	96.5	94.9	87.6	79.0	65.8	50.7

% GRAVEL	% SAND	Coarse Gravel	Fine Gravel	Coarse Sand	Medium Sand	Fine Sand	CC	CU
3.5	45.8	-	3.5	1.6	7.3	36.9	-	-

Moisture Content	28.4	Wet Unit Weight	99.4
Void Ratio*	1.178	Dry Unit Weight	77.4
* Est. Specific Gravity: 2.70			

ATTERBERG LIMITS		CLASSIFICATION	
Liquid Limit	38	AASHTO	A-4
Plastic Limit	NP	USCS	ML
Plasticity Index	NP		

SOIL DESCRIPTION	
Brown sandy SILT	



HERR FOODS

Boring: MIP-7

Sample: Tube

Depth: 6.0-7.0'

Project No.: 101722001

Sample Date: -

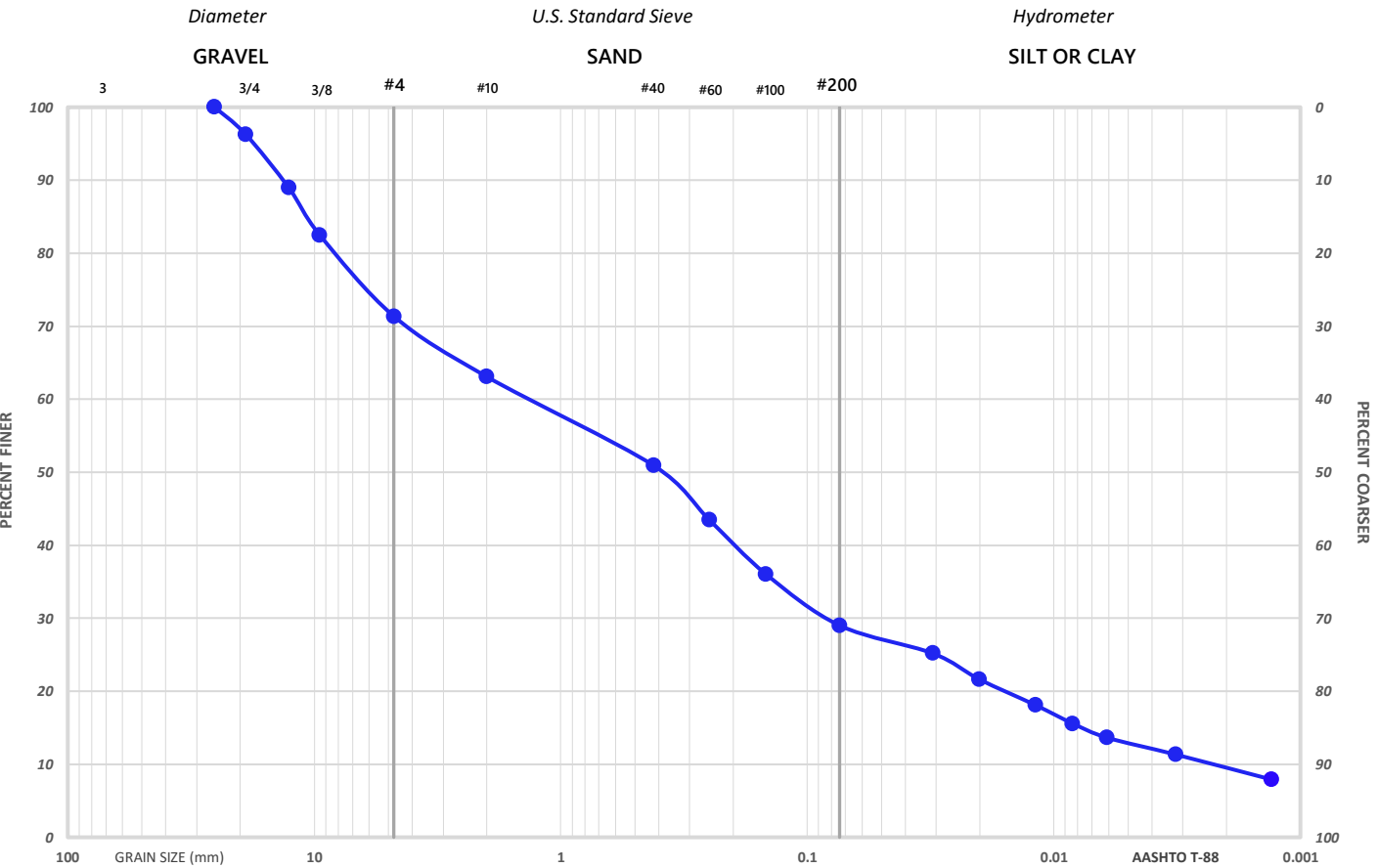
Location: -

JAY KAY TESTING, INC.

5233 Lehman Road, Suite 110

Spring Grove, PA 17362

Phone: (410) 259-5101



GRAIN SIZE ANALYSIS

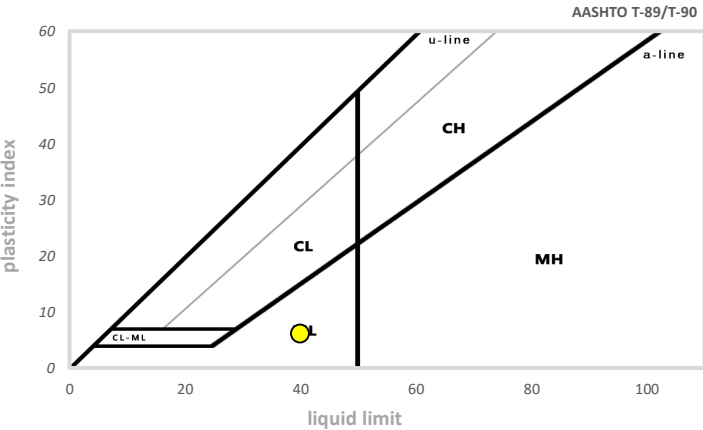
Diameter	75.0	50.8	37.5	25.4	19.0	12.7	9.51	4.75	2.0	0.42	0.25	0.147	0.074
Sieve Size	3"	2"	1.5"	1"	3/4"	1/2"	3/8"	#4	#10	#40	#60	#100	#200
% Passing	-	-	-	100.0	96.3	89.0	82.5	71.4	63.1	50.9	43.5	36.0	29.0

% GRAVEL	% SAND	Coarse Gravel	Fine Gravel	Coarse Sand	Medium Sand	Fine Sand	CC	CU
28.6	42.4	3.7	24.9	8.3	12.2	21.9	-	-

Moisture Content	16.1	Wet Unit Weight	120.5
Void Ratio*	0.623	Dry Unit Weight	103.8
* Est. Specific Gravity: 2.70			

ATTERBERG LIMITS		CLASSIFICATION	
Liquid Limit	40	AASHTO	A-2-4
Plastic Limit	34	USCS	SM
Plasticity Index	6		

SOIL DESCRIPTION	
Brown silty SAND with rock	



HERR FOODS

Boring: MIP-1, 3, 4, 7

Sample: Composite

Depth: -

Project No.: 101722001

Sample Date: -

Location: -

JAY KAY TESTING, INC.

5233 Lehman Road, Suite 110

Spring Grove, PA 17362

Phone: (410) 259-5101

STANDARD PROCTOR TEST RESULTS

TEST METHOD: AASHTO T-99 (C)

MAXIMUM DRY UNIT WEIGHT

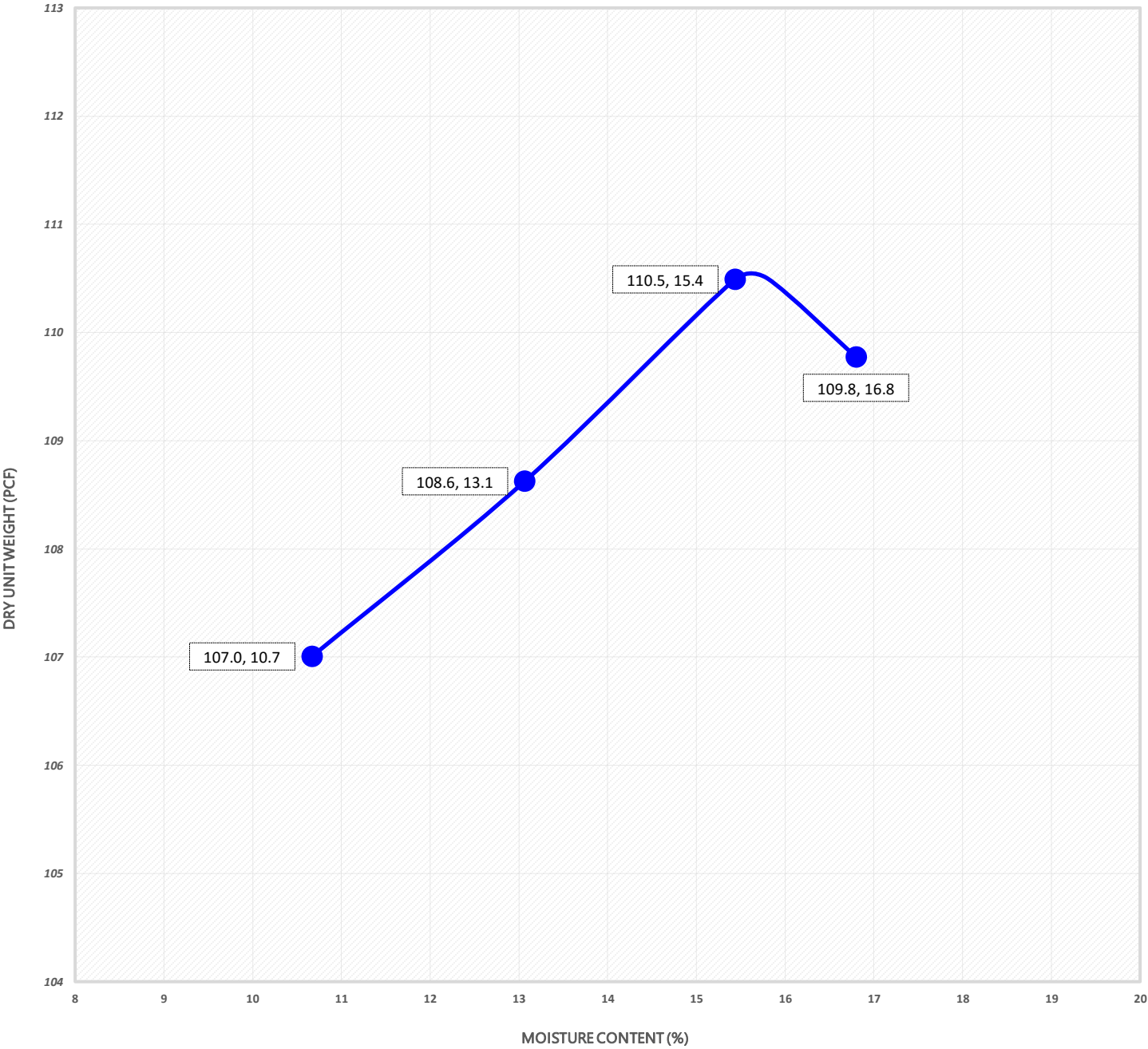
110.5

PCF

OPTIMUM MOISTURE CONTENT

15.7

%



MC	LL	PL	PI	USCS	AASHTO	FINES	VISUAL SOIL DESCRIPTION
-	-	-	-	-	-	-	Brown sandy silt with some rock

APPENDIX C
Packer Testing Laboratory Analytical Reports

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Report Date: August 22, 2016

Project: Herr Foods 101722001

Submittal Date: 08/11/2016

Group Number: 1694048

PO Number: 101722001

State of Sample Origin: PA

Client Sample DescriptionFormer SW @ 70 Grab Groundwater
Former SW @ 80 Grab Groundwater
Former SW @ 30 Grab Groundwater
Trip Blank Water

Lancaster Labs

(LL) #

8522696

8522697

8522698

8522699

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>.

Electronic Copy To Rettew Associates

Attn: Ed Dziedzic

Respectfully Submitted,


Stacy L. Hess
Project Manager

(717) 556-7236

Sample Description: Former SW @ 70 Grab Groundwater
Herr Foods 101722001

LL Sample # WW 8522696
LL Group # 1694048
Account # 00721

Project Name: Herr Foods 101722001

Collected: 08/11/2016 10:42 by ED

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Submitted: 08/11/2016 15:17

Reported: 08/22/2016 10:24

SW-70

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles	SW-846 8260B	ug/l	ug/l	
10945	Benzene	71-43-2	1,900	5	10
10945	Ethylbenzene	100-41-4	1,200	5	10
10945	Isopropylbenzene	98-82-8	34	5	10
10945	Methyl Tertiary Butyl Ether	1634-04-4	8 J	5	10
10945	Naphthalene	91-20-3	200	10	10
10945	Toluene	108-88-3	3,300	50	100
10945	1,2,4-Trimethylbenzene	95-63-6	520	5	10
10945	1,3,5-Trimethylbenzene	108-67-8	140	5	10
10945	Xylene (Total)	1330-20-7	2,500	5	10

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162321AA	08/19/2016 17:43	Daniel H Heller	10
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162321AA	08/19/2016 18:05	Daniel H Heller	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F162321AA	08/19/2016 17:43	Daniel H Heller	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	F162321AA	08/19/2016 18:05	Daniel H Heller	100

Sample Description: Former SW @ 80 Grab Groundwater
Herr Foods 101722001

LL Sample # WW 8522697
LL Group # 1694048
Account # 00721

Project Name: Herr Foods 101722001

Collected: 08/11/2016 12:25 by ED

Rettew Associates

Submitted: 08/11/2016 15:17

3020 Columbia Avenue

Reported: 08/22/2016 10:24

Lancaster PA 17603-4011

SW-80

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles	SW-846 8260B	ug/l	ug/l	
10945	Benzene	71-43-2	170	3	5
10945	Ethylbenzene	100-41-4	36	3	5
10945	Isopropylbenzene	98-82-8	4 J	3	5
10945	Methyl Tertiary Butyl Ether	1634-04-4	6	3	5
10945	Naphthalene	91-20-3	9 J	5	5
10945	Toluene	108-88-3	7	3	5
10945	1,2,4-Trimethylbenzene	95-63-6	12	3	5
10945	1,3,5-Trimethylbenzene	108-67-8	3 J	3	5
10945	Xylene (Total)	1330-20-7	38	3	5

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162321AA	08/19/2016 18:27	Daniel H Heller	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F162321AA	08/19/2016 18:27	Daniel H Heller	5

Sample Description: Former SW @ 30 Grab Groundwater
Herr Foods 101722001

LL Sample # WW 8522698
LL Group # 1694048
Account # 00721

Project Name: Herr Foods 101722001

Collected: 08/11/2016 13:47 by ED

Rettew Associates

Submitted: 08/11/2016 15:17

3020 Columbia Avenue

Reported: 08/22/2016 10:24

Lancaster PA 17603-4011

SW-30

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles	SW-846 8260B	ug/l	ug/l	
10945	Benzene	71-43-2	2,700	50	100
10945	Ethylbenzene	100-41-4	1,700	5	10
10945	Isopropylbenzene	98-82-8	49	5	10
10945	Methyl Tertiary Butyl Ether	1634-04-4	6 J	5	10
10945	Naphthalene	91-20-3	260	10	10
10945	Toluene	108-88-3	5,600	50	100
10945	1,2,4-Trimethylbenzene	95-63-6	730	5	10
10945	1,3,5-Trimethylbenzene	108-67-8	200	5	10
10945	Xylene (Total)	1330-20-7	4,100	5	10

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162321AA	08/19/2016 18:49	Daniel H Heller	10
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162321AA	08/19/2016 19:11	Daniel H Heller	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F162321AA	08/19/2016 18:49	Daniel H Heller	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	F162321AA	08/19/2016 19:11	Daniel H Heller	100

Sample Description: Trip Blank Water
Herr Foods 101722001

LL Sample # WW 8522699
LL Group # 1694048
Account # 00721

Project Name: Herr Foods 101722001

Collected: 08/11/2016

Rettew Associates

Submitted: 08/11/2016 15:17

3020 Columbia Avenue

Reported: 08/22/2016 10:24

Lancaster PA 17603-4011

HR-TB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles	SW-846 8260B	ug/l	ug/l	
10945	Benzene	71-43-2	N.D.	0.5	1
10945	Ethylbenzene	100-41-4	N.D.	0.5	1
10945	Isopropylbenzene	98-82-8	N.D.	0.5	1
10945	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1
10945	Naphthalene	91-20-3	N.D.	1	1
10945	Toluene	108-88-3	N.D.	0.5	1
10945	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.5	1
10945	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.5	1
10945	Xylene (Total)	1330-20-7	N.D.	0.5	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	F162321AA	08/19/2016 19:33	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F162321AA	08/19/2016 19:33	Daniel H Heller	1

Quality Control Summary

Client Name: Rettew Associates
Reported: 08/22/2016 10:24

Group Number: 1694048

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: F162321AA	Sample number(s): 8522696-8522699	
Benzene	N.D.	0.5
Ethylbenzene	N.D.	0.5
Isopropylbenzene	N.D.	0.5
Methyl Tertiary Butyl Ether	N.D.	0.5
Naphthalene	N.D.	1
Toluene	N.D.	0.5
1,2,4-Trimethylbenzene	N.D.	0.5
1,3,5-Trimethylbenzene	N.D.	0.5
Xylene (Total)	N.D.	0.5

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Batch number: F162321AA	Sample number(s): 8522696-8522699								
Benzene	20	19.82	20	18.77	99	94	78-120	5	30
Ethylbenzene	20	19.17	20	17.99	96	90	78-120	6	30
Isopropylbenzene	20	19.47	20	18.34	97	92	80-120	6	30
Methyl Tertiary Butyl Ether	20	18.43	20	17.41	92	87	75-120	6	30
Naphthalene	20	19.2	20	17.47	96	87	59-120	9	30
Toluene	20	19.11	20	18.22	96	91	80-120	5	30
1,2,4-Trimethylbenzene	20	18.88	20	17.63	94	88	75-120	7	30
1,3,5-Trimethylbenzene	20	19.01	20	17.95	95	90	75-120	6	30
Xylene (Total)	60	57.87	60	54.26	96	90	80-120	6	30

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 08/22/2016 10:24

Group Number: 1694048

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PA UST Unleaded + TMBs

Batch number: F162321AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8522696	99	96	98	100
8522697	100	96	98	98
8522698	98	98	97	102
8522699	99	98	98	97
Blank	99	97	99	98
LCS	100	99	100	100
LCSD	101	100	99	99
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.



**Lancaster Laboratories
Environmental**

For Eurofins Lancaster Laboratories Environmental use only

Acct. #

Group #

Sample #

COC # 506626

[illegible]

Client: Rettew Associates**Delivery and Receipt Information**

Delivery Method: Client Drop Off Arrival Timestamp: 08/11/2016 15:17
Number of Packages: 1 Number of Projects: 1
State/Province of Origin: PA

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace $\geq$ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCI
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

*Unpacked by Wesley Miller (2308) at 23:21 on 08/11/2016***Samples Chilled Details**

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?	<u>Samples</u> <u>Collected Same</u> <u>Day as Receipt?</u>
1	DT121	10.2	DT	Wet	Y	Bagged	Y	Y

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/L), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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APPENDIX D
Soil Boring and Monitoring Well Logs

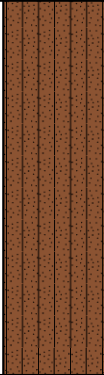


MEMBRANE INTERFACE PROBE (MIP) SOIL BORING MIP-1

Herr Foods, Inc.
273 Old Baltimore Pike
Nottingham, Pennsylvania
Project #: 101722001

Date Drilled : 7/29/16
Equipment : Truck-Mounted Geoprobe
Driller : Cascade
Logged By : E. Dziedzic
Surface Elevation : 512 ft. MSL Approximately

Latitude/Longitude :
Township/County : W. Nottingham Twp./Chester
Total Depth : 8.0 ft. bgs
Diameter : 2-inch boring

Depth (Feet)	LITHOLOGIC DESCRIPTION	GRAPHIC	REMARKS	Surf. Elev. 512
0	0'-1.0': Asphalt and subbase stone			512
2	1.0'-4.0': Dark brown silt with wood fragments, organic material and other fill.			510
4	4.0'-6.5': Orange-brown micaceous silty sand.		Petroleum Odor at 5 ft.	508
6	6.5.0'-7.5': Tube sample for geotechnical analysis.		Boring was back filled with bentonite holepug and capped with a cold patch.	506
8	7.5.0'-8.0': Banded micaceous schist saprolite			
	Target Depth Reached at 8.0 ft bgs			



MEMBRANE INTERFACE PROBE (MIP) SOIL BORING MIP-3

Herr Foods, Inc.
273 Old Baltimore Pike
Nottingham, Pennsylvania
Project #: 101722001

Date Drilled : 7/29/16
Equipment : Truck-Mounted Geoprobe
Driller : Cascade
Logged By : E. Dziedzic
Surface Elevation : 511 ft. MSL Approximately

Latitude/Longitude :
Township/County : W. Nottingham Twp./Chester
Total Depth : 8.0 ft. bgs
Diameter : 2-inch boring

Depth (Feet)	LITHOLOGIC DESCRIPTION	GRAPHIC	REMARKS	Surf. Elev. 511
0	0'-1.0': Asphalt and subbase stone.		Boring was backfilled with bentonite holeplug and capped with cold patch.	511
1	1.0'-5.0': Brown silt with some clay, wood fragments, and roots.			
2				509
4				507
5	5.0'-6.0': Tube sample for geotechnical analysis.			
6	6.0'-8.0': Greenish brown sandy silt.		Wet @ 6 ft.	505
8	Target Depth Reached at 8.0 ft bgs			



MEMBRANE INTERFACE PROBE (MIP) SOIL BORING MIP-4

Herr Foods, Inc.
273 Old Baltimore Pike
Nottingham, Pennsylvania
Project #: 101722001

Date Drilled : 7/29/16
Equipment : Truck-Mounted Geoprobe
Driller : Cascade
Logged By : E. Dziedzic
Surface Elevation : 508 ft. MSL Approximately

Latitude/Longitude :
Township/County : W. Nottingham Twp./Chester
Total Depth : 8.0 ft. bgs
Diameter : 2-inch boring

Depth (Feet)	LITHOLOGIC DESCRIPTION	GRAPHIC	REMARKS	Surf. Elev. 508
0	0'-1.0': Asphalt and subbase stone.		Boring was backfilled with hole plug and capped with cold patch.	508
1	1.0'-4.0': Grayish brown micaceous sandy silt, dry.			
2				506
3				
4	4.0'-6.0': Light brown silty sand with weathered quartz and schist fragments.			504
5				
6	6.0'-7.0': Tube sample for geotechnical analysis.		Wet @ 6 ft.	502
7	7.0'-8.0': Brown sandy silt, dry.			
8	Target Depth Reached at 8.0 ft bgs			



MEMBRANE INTERFACE PROBE (MIP) SOIL BORING MIP-7

Herr Foods, Inc.
273 Old Baltimore Pike
Nottingham, Pennsylvania
Project #: 101722001

Date Drilled : 7/29/16
Equipment : Truck-Mounted Geoprobe
Driller : Cascade
Logged By : E. Dziedzic
Surface Elevation : 507 ft. MSL Approximately

Latitude/Longitude :
Township/County : W. Nottingham Twp./Chester
Total Depth : 8.0 ft. bgs
Diameter : 2-inch boring

Depth (Feet)	LITHOLOGIC DESCRIPTION	GRAPHIC	REMARKS	Surf. Elev. 507
0	0'-1.0': Asphalt and subbase stone.		Boring was backfilled with holeplug and capped with cold patch.	507
1	1.0'-3.0': Brown micaceous silt, dry.			
2				505
3	3.0'-5.0': Dark brown clayey silt with roots and organic material.			
4				503
5	5.0'-6.0': Brown micaceous silty sand.			
6	6.0'-7.0': Tube sample for geotechnical lab analysis.			501
7	7.0'-8.0': Brown micaceous silty sand.			
8	Target Depth Reached at 8.0 ft bgs		Wet @ 6 ft.	

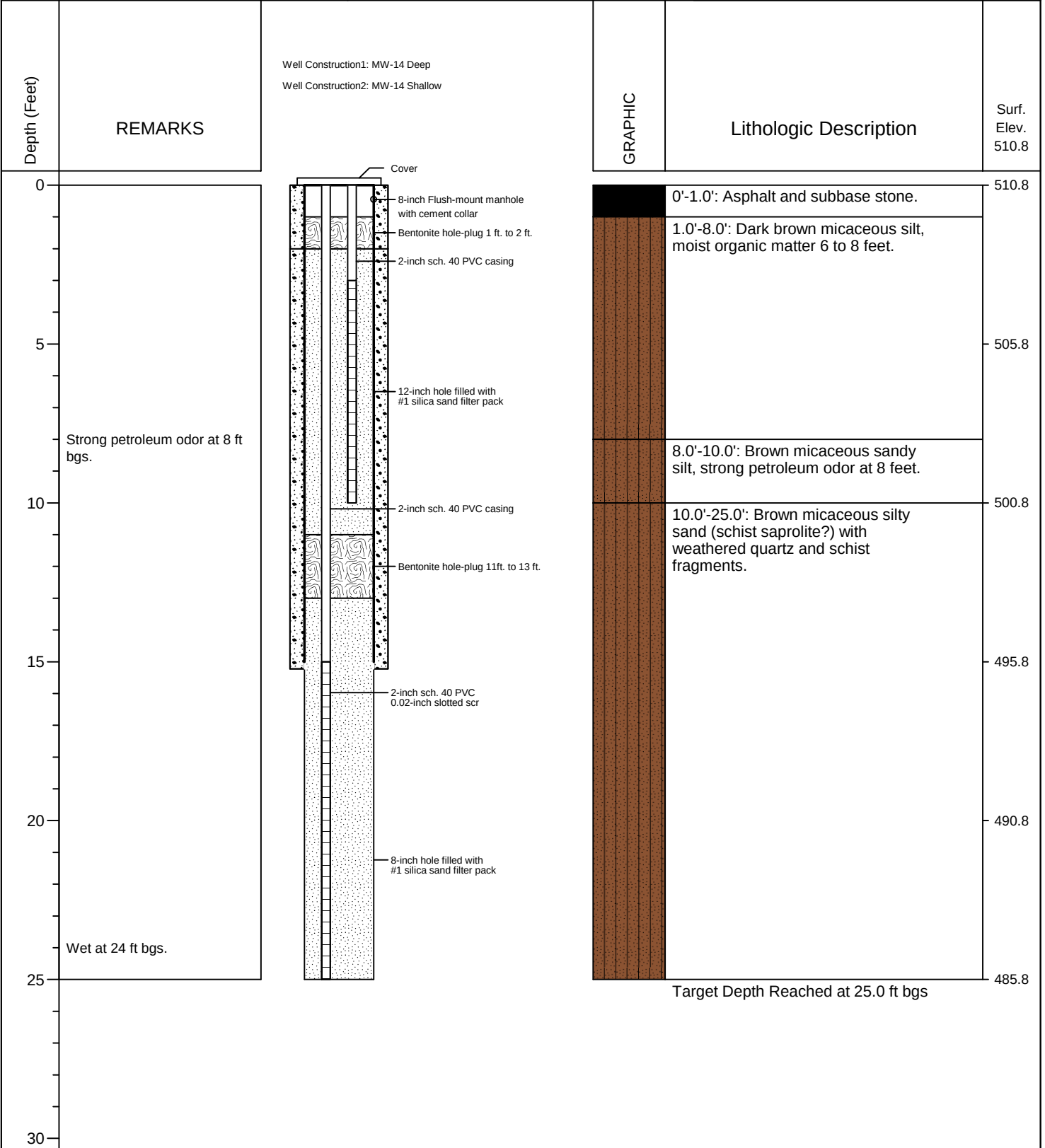
MONITORING WELL LOG: MW-14

Herr Foods, Inc.
273 Old Baltimore Pike
Nottingham, Pennsylvania

RETTEW Project No. 101722001

Date Drilled : 8/12/16
Equipment : Geoprobe 7822DT
Driller : Eichelbergers, Inc
Logged By : E. Dziedzic
Surface Elevation : 510.8 ft. MSL

Latitude/Longitude :
Township/County : W. Nottingham Twp./Chester
Total Depth : 25 ft. bg
Diameter : 2-inch PVC Screen
Blown Yield :



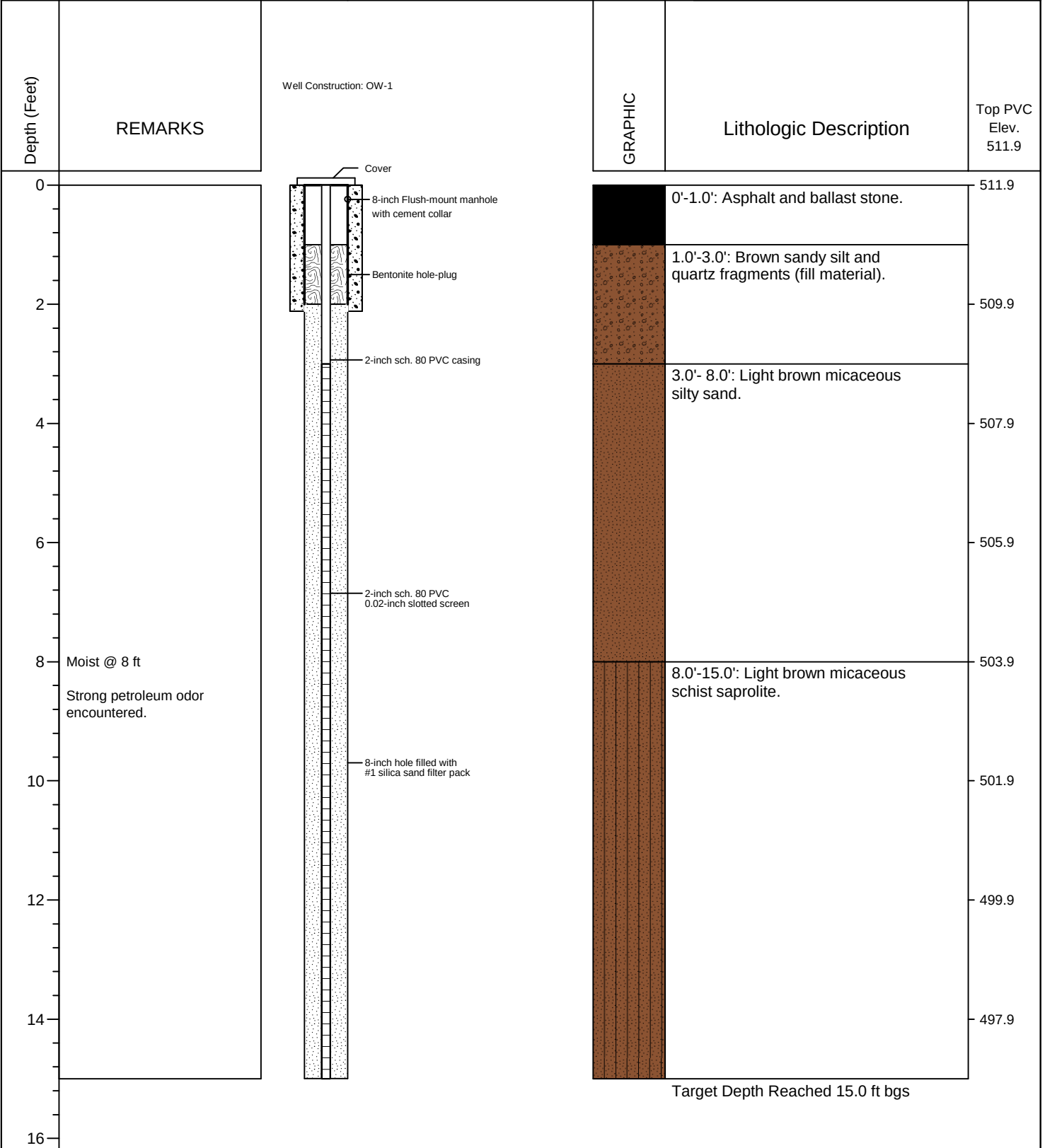
OBSERVATION WELL LOG: OW-1

Herr Foods, Inc.
273 Old Baltimore Pike
Nottingham, Pennsylvania

RETTEW Project No. 101722001

Date Drilled : 11/28/16
Equipment : Geoprobe 7728DT
Driller : Cascade Drilling
Logged By : E. Dziedzic
Surface Elevation : 512.08 ft. MSL

Township/County : W. Nottingham Twp./Chester
Total Depth : 15 ft. bgs
Diameter : 2-inch PVC slotted screen



OBSERVATION WELL LOG: OW-2

Herr Foods, Inc.
273 Old Baltimore Pike
Nottingham, Pennsylvania

RETTEW Project No. 101722001

Date Drilled : 11/28/16
Equipment : Geoprobe 7728DT
Driller : Cascade Drilling
Logged By : E. Dziedzic
Surface Elevation : 510.9 ft. MSL

Township/County : W. Nottingham Twp./Chester
Total Depth : 15 ft. bgs
Diameter : 2-inch PVC slotted screen

Depth (Feet)	REMARKS	Well Construction: OW-2	GRAPHIC	Lithologic Description	Top PVC Elev. 510.7
0		Cover		0'-1.0': Asphalt and ballast stone.	510.7
		8-inch Flush-mount manhole with cement collar			
2		Bentonite hole-plug		1.0'-3.0': Brown micaceous sand.	508.7
		2-inch sch. 40 PVC casing			
4				3.0'- 6.0': Brown micaceous sandy silt with roots and wood fragments (fill).	506.7
6		2-inch sch. 40 PVC 0.02-inch slotted screen		6.0'-15.0': Light brown micaceous schist saprolite.	504.7
8	Moist @ 8 ft Strong petroleum odor encountered.				502.7
10		8-inch hole filled with #1 silica sand filter pack			500.7
12					498.7
14					496.7
16					

Target Depth Reached 15.0 ft bgs

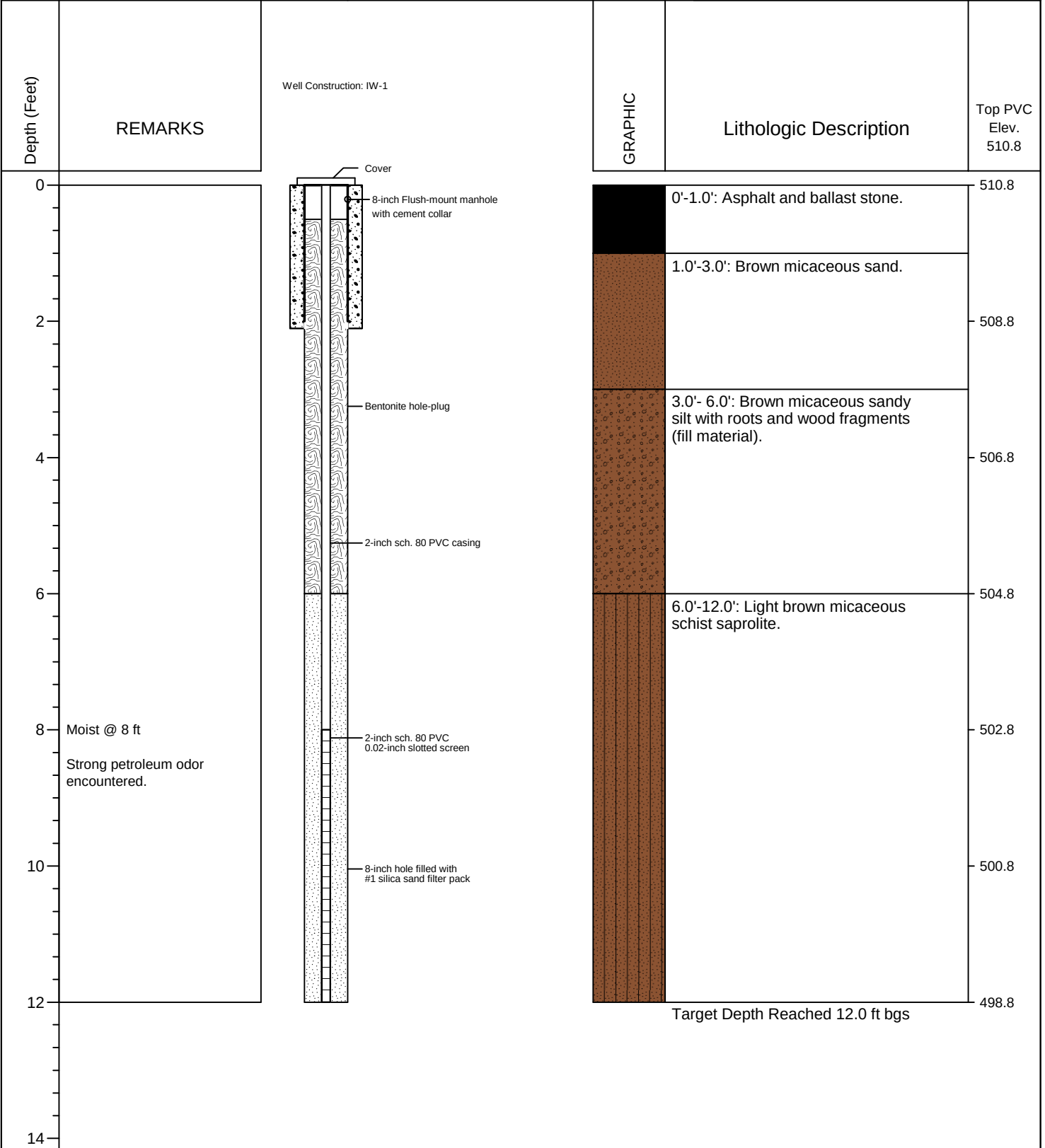
INJECTION WELL LOG: IW-1

Herr Foods, Inc.
273 Old Baltimore Pike
Nottingham, Pennsylvania

RETTEW Project No. 101722001

Date Drilled : 11/28/16
Equipment : Geoprobe 7728DT
Driller : Cascade Drilling
Logged By : E. Dziedzic
Surface Elevation : 511.7 ft. MSL

Township/County : W. Nottingham Twp./Chester
Total Depth : 12 ft. bgs
Diameter : 2-inch PVC Wire Wrapped Screen



APPENDIX E
Waste Disposal Manifests



ERC NON-HAZARDOUS WASTE MANIFEST

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.
NON HAZ

Manifest Document No. D34563

2. Page 1
of 1

3. Generator's Name and Mailing Address

Site Address

Herr Foods Incorporated
273 Old Baltimore Pike
Nottingham, PA 19362

4. Generator's Phone (010-932-9330)

5. Transporter 1 Company Name
Environmental Recovery Corporation

6. US EPA ID Number
PAD987266749

A. State Transporter's ID
717-393-2627

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Environmental Recovery Corporation
1076 Old Manheim Pike
Lancaster, PA 17601

10. US EPA ID Number
PAD987266749

E. State Facility's ID
717-393-2627

F. Facility's Phone

11. WASTE DESCRIPTION

Containers

13.
Total
Quantity

14.
Unit
Wt./Vol.

a. Non RCRA/DOT Liquids (Drill Cuttings)

4

DM

2,500 kst.

P.

b.

c.

d.

G. Additional Descriptions for Materials Listed Above

1.) Approval # 1506-01926-LPT

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

PO:

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed / Typed Name

Signature

Date

Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed / Typed Name

Signature

Date

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed / Typed Name

Signature

Date

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed / Typed Name

Signature

Date

Month Day Year

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

APPENDIX F

Low Flow Groundwater Purging and Monitoring Data Sheets



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6064766
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Donovan Cornell (STL)*

Date: *7/11/16*

Pump: Peristaltic Pump *Proactive Axiors*

Weather: *Sunny*

Meter: Multiparameter With Flow Cell *Hanna HI 98199*

Well No.: MW-1

Screened Interval: 7 to 27 ft.

*Purge start: 1115
End: 1135*

Well Depth: 27 ft.

Depth To Water Before Pump Installation: *3.54*

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: *7/11/16 1138*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1120	<i>6.93</i>	NA	<i>0.129</i>	NA	<i>148.5</i>	NA	<i>4.44</i>	NA	<i>0.065</i>	NA	<i>16.24</i>	NA	<i>320</i>	<i>9.10</i>
MEASURE WATER LEVEL ONLY. DO NOT SAMPLE.														
1125	<i>6.87</i>	<i>0.06</i>	<i>0.129</i>	<i>0</i>	<i>142.8</i>	<i>5.7</i>	<i>4.50</i>	<i>0.06</i>	<i>0.065</i>	<i>0</i>	<i>16.11</i>	<i>0.13</i>	<i>320</i>	<i>4.14</i>
1130	<i>6.87</i>	<i>0</i>	<i>0.129</i>	<i>0</i>	<i>140.7</i>	<i>2.1</i>	<i>4.35</i>	<i>0.15</i>	<i>0.065</i>	<i>0</i>	<i>15.96</i>	<i>0.15</i>	<i>320</i>	<i>7.14</i>
1135	<i>6.85</i>	<i>0.02</i>	<i>0.130</i>	<i>0.001</i>	<i>138.7</i>	<i>2.0</i>	<i>4.51</i>	<i>0.16</i>	<i>0.065</i>	<i>0</i>	<i>15.96</i>	<i>0</i>	<i>320</i>	<i>4.14</i>
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of YSI 556

1.69 gals. purged



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6064766
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 7/12/16

Weather: Sunny 79°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-3

Screened Interval: 5 to 25 ft.

Well Depth: 25 ft.

Depth To Water Before Pump Installation: 4.45

Purge Start: 1200
End: 1225

Well Diameter: 2-inch

Pump Intake Depth: 11 ft.

Sample Time: 7/12/16 1228

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1205	8.20	NA	1.570	NA	-143.1	NA	1.35	NA	0.785	NA	18.51	NA	340	4.76
1210	8.33	0.13	1.570	0	-153.7	10.6	1.33	0.02	0.785	0	18.55	0.04	340	4.80
1215	8.66	0.33	1.543	0.027	-174.2	20.5	1.31	0.02	0.772	0.013	18.59	0.04	340	4.82
1220	8.76	0.10	1.524	0.019	-179.9	5.7	1.30	0.01	0.761	0.011	18.60	0.01	340	4.85
1225	8.75	0.01	1.520	0.004	-184.9		1.30	0	0.761	0	18.57	0.03	340	4.85
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of YSI 556

2.25 gals purged



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6064766
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Donovan Cornell (STL)*

Date: *7/12/16*

Pump: Peristaltic Pump *Proactive Alexis*

Weather: *Sunny 77°F*

Meter: Multiparameter With Flow Cell *Hannaford 98194*

Well No.: MW-5

Screened Interval: 7 to 27 ft.

Well Depth: 27 ft.

Depth To Water Before Pump Installation: *4.29*

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Purge Start: 1030
End: 1100
Sample Time: *7/12/16 1104*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1035	4.87	NA	1.224	NA	111.1	NA	1.37	NA	0.616	NA	20.17	NA	360	4.52
1040	4.89	0.02	1.270	0.046	102.6	8.5	1.32	0.05	0.635	0.019	20.24	0.07	360	4.56
1045	5.01	0.12	1.258	0.012	101.3	1.3	1.28	0.04	0.629	0.006	20.25	-0.01	360	4.60
1050	5.13	0.12	1.244	0.014	99.5	1.8	1.27	0.01	0.622	0.007	20.21	0.04	360	4.60
1055	5.23	0.10	1.233	0.011	88.5	11	1.28	0.01	0.616	0.006	20.01	0.0	360	4.60
1100	5.23	0	1.231	0.002	87.2	1.3	1.28	0	0.615	0.001	20.01	0	360	4.60
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

2.85 gals purged



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6064766
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Danovan Correll (SPL)*

Date: *7/11/16*

Pump: Peristaltic Pump *Proactive Alexis*

Weather: *Sunny 78°F*

Meter: Multiparameter With Flow Cell *Hanna HI98194*

Well No.: MW-6

Screened Interval: 3 to 20 ft.

*Purge start: 1155
End: 1220*

Well Depth: 20 ft.

Depth To Water Before Pump Installation: *2.66*

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: *7/11/16 1222*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
<i>1200</i>	<i>6.26</i>	<i>NA</i>	<i>0.129</i>	<i>NA</i>	<i>99.3</i>	<i>NA</i>	<i>6.40</i>	<i>NA</i>	<i>0.064</i>	<i>NA</i>	<i>19.31</i>	<i>NA</i>	<i>350</i>	<i>3.08</i>
<i>6.26</i> MEASURE WATER LEVEL ONLY. DO NOT SAMPLE.														
<i>1205</i>	<i>6.26</i>	<i>0</i>	<i>0.131</i>	<i>0.002</i>	<i>95.4</i>	<i>3.9</i>	<i>6.27</i>	<i>0.13</i>	<i>0.066</i>	<i>0.002</i>	<i>19.39</i>	<i>0.08</i>	<i>350</i>	<i>3.09</i>
<i>1210</i>	<i>6.28</i>	<i>0.02</i>	<i>0.130</i>	<i>0.001</i>	<i>99.1</i>	<i>3.7</i>	<i>6.32</i>	<i>0.05</i>	<i>0.065</i>	<i>0.001</i>	<i>19.43</i>	<i>0.04</i>	<i>350</i>	<i>3.09</i>
<i>1215</i>	<i>6.29</i>	<i>0.01</i>	<i>0.130</i>	<i>0</i>	<i>104.2</i>	<i>5.1</i>	<i>6.31</i>	<i>0.01</i>	<i>0.065</i>	<i>0</i>	<i>19.47</i>	<i>0.07</i>	<i>350</i>	<i>3.09</i>
<i>1220</i>	<i>6.32</i>	<i>0.03</i>	<i>0.129</i>	<i>0.001</i>	<i>106.2</i>	<i>2.0</i>	<i>6.28</i>	<i>0.03</i>	<i>0.065</i>	<i>0</i>	<i>19.39</i>	<i>0.08</i>	<i>350</i>	<i>3.09</i>
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

2.31 gals purged



Deborah Hannum

Meter: Multiparameter With Flow Cell *Hanna HI 98194*

End: 1145

Sample Time: 7/12/12 1148

* Not to exceed 500 ml/min
** Resolution accuracy of multiparameter meter

2.37 gals purged



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6064766
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Danovan Correll (STL)*

Date: *7/12/16*

Pump: Peristaltic Pump *Proactive Alexis*

Weather: *Sunny 73°*

Meter: Multiparameter With Flow Cell *Hanna HI98194*

Well No.: MW-9

Screened Interval: 3 to 20 ft.

Purge Start: 0850

Well Depth: 20 ft.

Depth To Water Before Pump Installation: *3.41*

End: 0935

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: *7/12/16 0938*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
0855	5.94	NA	1.482	NA	8.9	NA	1.50	NA	0.741	NA	16.19	NA	350	3.99
0900	6.01	0.07	1.490	0.008	15	10.4	1.38	0.12	0.746	0.005	15.89	0.30	350	4.05
0905	6.03	0.02	1.500	0.010	13.0	1.5	1.37	0.01	0.751	0.005	15.79	0.10	350	4.10
0910	6.02	0.01	1.534	0.034	13.2	0.2	1.38	0.01	0.768	0.017	15.67	0.12	350	4.12
0915	6.01	0.01	1.615	0.081	13.2	6.4	1.36	0.02	0.810	0.042	15.65	0.02	350	4.18
0920	6.07	0.06	1.694	0.079	9.9	6.7	1.36	0	0.849	0.039	15.52	0.13	350	4.18
0925	6.08	0.01	1.777	0.083	15.5	5.6	1.36	0	0.889	0.040	15.54	0.02	350	4.18
0930	6.21	0.13	1.832	0.055	25.5	10.0	1.36	0	0.918	0.029	15.44	0.10	350	4.18
0935	6.22	0.01	1.839	0.007	28.9	3.4	1.36	0	0.924	0.006	15.52	0.08	350	4.18
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

4.16 gals purged



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6064766

Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 7/12/16

Weather: Cloudy 72°F

Field Personnel: Danouan Cornell (STL)

Pump: Peristaltic Pump Proactive Alexia

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-10

Screened Interval: 3 to 20 ft.

Well Depth: 20 ft.

Depth To Water Before Pump Installation: 2.88

Purge Start: 0800

End: 0830

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 7/12/16 0834

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
0805	5.53	NA	1.409	NA	-4.5	NA	1.31	NA	0.705	NA	19.95	NA	340	3.94
0810	5.52	0.01	1.420	0.011	-3.1	7.6	1.33	0.02	0.711	0.006	19.86	0.09	340	3.94
0815	5.48	0.04	1.433	0.013	16.4	13.3	1.37	0.04	0.717	0.006	19.65	0.21	340	3.94
0820	5.46	0.02	1.485	0.002	29.9	13.5	1.32	0.05	0.718	0.001	19.35	0.27	340	3.94
0825	5.46	0	1.437	0.002	32.0	3.1	1.31	0.01	0.718	0	19.33	0.05	340	3.94
0830	5.48	0.02	1.433	0.004	36.0	3.0	1.30	0.01	0.710	0.002	19.28	0.05	340	3.94
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

2.7 gals purged



Meter: Multiparameter With Flow Cell *Hanna HI 98194*

Sample Time: 7/12/16 1015

* Feet below top of metal casing

1.84 gals. purged



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6064766
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 7/11/16

Weather: Sunny 74°F

Field Personnel: Donovan Cornell (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI98194

Purging Started: 1030
Ended: 1055

Well No.: MW-12

Screened Interval: 2 to 12 ft.

Well Depth: 12 ft.

Depth To Water Before Pump Installation: 3.71

Well Diameter: 2-inch

Pump Intake Depth: 9 ft.

Sample Time: 7/11/16 1058

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1035	5.25	NA	0.077	NA	211.5	NA	2.56	NA	0.038	NA	16.59	NA	320	4.10
1040	5.27	0.02	0.076	0.001	207.9	3.6	2.35	0.21	0.038	0	16.16	0.43	320	4.13
1045	5.34	0.07	0.076	0	203.5	4.4	2.34	0.01	0.038	0	16.19	0.03	320	4.15
1050	5.43	0.09	0.076	0	199.7	3.8	2.32	0.02	0.038	0	16.10	0.09	320	4.17
1055	5.55	0.12	0.076	0	195.7	4.0	2.32	0	0.038	0	16.14	0.04	320	4.18
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

2.11 gals. purged



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6064766
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Douglas Correll II (STL)*

Date: *7/11/16*

Pump: Peristaltic Pump *Proactive Alex's PP*

Weather: *Sunny 72°F*

Meter: Multiparameter With Flow Cell *Hanna HI98194* *Purge started: 0935 End: 1005*

Well No.: MW-13

Screened Interval: 2 to 12 ft.

Well Depth: 12 ft.

Depth To Water Before Pump Installation: *5.02*

Well Diameter: 2-inch

Pump Intake Depth: 9 ft.

Sample Time: *1008 7/11/16*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
0940	4.84	NA	0.275	NA	195.6	NA	7.25	NA	0.136	NA	15.94	NA	340	5.72
0945	5.00	0.16	0.267	0.008	199.4	3.8	6.63	0.62	0.133	0.003	16.09	0.15	340	5.80
0950	5.03	0.03	0.266	0.001	201.7	2.0	6.32	0.31	0.133	0	16.19	0.10	340	5.83
0955	5.02	0.01	0.266	0	207.5	6.1	6.27	0.05	0.133	0	15.95	0.24	340	5.84
1000	5.00	0.02	0.265	0.001	212.3	4.8	6.36	0.09	0.132	0.001	15.71	0.24	340	5.85
1005	5.03	0.03	0.264	0.001	215.6	3.3	6.29	0.07	0.132	0	15.61	0.10	340	5.85
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

2.7 gals. purged



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6064766
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Donovan Cornell (STL)*

Date: *7/11/16*

Pump: Peristaltic Pump *Proactive Alexis*

Weather: *Sunny 73°F*

Meter: Multiparameter With Flow Cell *Hanna HI98194*

Well No.: ~~MW-8~~ *SW*

Screened Interval: ~~3 to 20 ft.~~

Purge Start: 1240

Well Depth: 20 ft.

Depth To Water Before Pump Installation: *5.85*

End: 1325

Well Diameter: ~~2 inch~~

Pump Intake Depth: *100 10 ft.*

Sample Time: *7/11/16 1328*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1245	7.80	NA	0.819	NA	-192.9	NA	0.63	NA	0.410	NA	16.62	NA	450	6.02
1250	MEASURE WATER LEVEL ONLY. DO NOT SAMPLE.													
1250	7.94	0.14	0.820	0.001	-180.7	12.2	0.54	0.09	0.410	0	15.42	1.2	450	6.28
1255	7.69	0.25	0.822	0.002	-148.9	31.8	0.78	0.24	0.410	0	16.00	0.58	450	6.28
1300	7.56	0.13	0.813	0.009	-155.5	6.6	0.60	0.18	0.407	0.003	16.28	0.28	450	6.28
1305	7.62	0.06	0.809	0.004	-156.6	1.1	0.60	0.00	0.404	0.003	15.97	0.31	450	6.28
1310	7.65	0.03	0.808	0.001	-160.4	3.8	0.57	0.03	0.404	0	15.94	0.03	450	6.28
1315	7.67	0.02	0.804	0.004	-162.9	2.5	0.56	0.01	0.402	0.002	15.87	0.07	450	6.28
1320	7.65	0.02	0.801	0.003	-164.8	1.9	0.55	0.01	0.401	0.001	15.71	0.16	450	6.28
1325	7.55	0.10	0.799	0.002	-164.6	0.2	0.56	0.01	0.400	0.001	15.79	0.08	450	6.28
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

5.35 gallons purged



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Date: 8/19/16

Weather: SUNNY 80°

Field Personnel: ED DZIEDZIC

Pump: Peristaltic Pump

Meter: Multiparameter With Flow Cell

Well No.: MW-14S

Screened Interval: 3 to 10 ft.

Well Depth: 10 ft.

Depth To Water Before Pump Installation: 5.12 TOC 5.70 BGS

Well Diameter: 2-inch

Pump Intake Depth: 8 ft.

Sample Time: 8:50

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
8:31	5.67	NA	2.587	NA	35.7	NA	4.65	NA		NA	23.15	NA	300	5.69
8:36	5.67		2.649		42.1		4.23				24.07		350	5.82
8:39	5.77		2.892		44.5		3.95				23.91		300	5.90
8:42	5.78		2.840		41.1		3.69				23.70		300	5.98
8:45	5.79		2.707		37.6		3.54				23.44		300	6.04
8:48	5.79		2.607		34.1		3.46				23.31		300	6.09
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Date: 8/19/16

Weather: SUNNY 80°

Field Personnel: ED DZIEDLER

Pump: Peristaltic Pump

Meter: Multiparameter With Flow Cell

Well No.: MW-14D

Screened Interval: 15 to 25 ft.

Well Depth: 25 ft.

Depth To Water Before Pump Installation: 5.40 TOC 5.72 BGS

Well Diameter: 2-inch

Pump Intake Depth: 20 ft.

Sample Time: 9:40

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
9:20	5.16	NA	1.658	NA	167.5	NA	2.15	NA		NA	20.39	NA	350	7.19
9:24	5.05		1.644		179.9		1.83				19.92		300	7.28
9:27	4.42		1.598		222.2		1.42				18.95		300	7.76
9:31	4.46		1.606		222.5		1.55				18.79		300	7.76
9:35	4.58		1.620		216.1		2.26				18.76		300	7.74
9:38	4.68		1.639		210.4		2.26				18.74		300	7.70
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Date: 9/16/16

Weather: SUNNY 80°F

Field Personnel: ED DZIEDZIC

Pump: Peristaltic Pump

Meter: Multiparameter With Flow Cell

Well No.: MW-14D

Screened Interval: 15 to 25 ft.

Well Depth: 25 ft.

Depth To Water Before Pump Installation: 6.21 9:56

Well Diameter: 2-inch

Pump Intake Depth: 20 ft.

Sample Time: 10:17

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
9:59	5.55	NA	1.444	NA	112.7	NA	1.16	NA		NA	19.10	NA	500	8:03
10:04	5.49		1.447		115.8		1.19				19.08		300	8:60
10:09	5.54		1.475		110.8		0.62				19.50		300	8:25
10:13	5.56		1.487		110.0		0.50				19.60		300	8:18
10:17	5.57		1.492		110.6		0.44				19.61		300	8:17
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: ED DZIEDZIC

Date: 9/16/16

Pump: Peristaltic Pump

Weather: SUNNY 80°F

Meter: Multiparameter With Flow Cell

Well No.: MW-14S

Screened Interval: 3 to 10 ft.

Well Depth: 10 ft.

Depth To Water Before Pump Installation: 6.13 10:40

Well Diameter: 2-inch

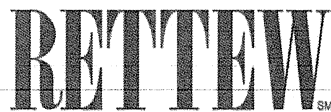
Pump Intake Depth: 8 ft.

Sample Time: 10:56

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
10:42	6.11	NA	2.351	NA	-43.3	NA	2.60	NA		NA	24.54	NA	300	6.65
10:46	6.09		2.449		-42.4		1.26				24.08		300	6.94
10:50	6.09		2.470		-44.8		0.79				23.82		300	7.07
10:53	6.10		2.461		-47.3		0.56				23.68		300	7.16
10:55	6.10		2.455		-48.8		0.45				23.58		300	7.19
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Donovan Cornell (STL)*

Date: *10/4/16*

Pump: Peristaltic Pump *Proactive Alexs*

Weather: *Cloudy 67°F*

Meter: Multiparameter With Flow Cell *Hanna HI 98194*

Well No.: MW-3

Screened Interval: 5 to 25 ft.

Well Depth: 25 ft.

Depth To Water Before Pump Installation: *6.05* *Start Purge: 1210*

Well Diameter: 2-inch

Pump Intake Depth: 11 ft.

Sample Time: *10/4/16 1242*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1215	6.08	NA	0.975	NA	-83.4	NA	1.65	NA	0.483	NA	22.33	NA	375	6.34
1220	6.02	0.06	0.928	0.047	-96.6	13.2	1.63	0.02	0.465	0.018	21.73	0.60	375	6.48
1225	6.11	0.09	0.967	0.039	-115.9	19.3	1.69	0.06	0.484	0.019	21.60	0.07	375	6.54
1230	6.15	0.04	0.981	0.014	-122.4	6.5	1.71	0.02	0.491	0.007	21.60	0.06	375	6.54
1235	6.19	0.04	0.988	0.007	-128.0	5.6	1.73	0.02	0.493	0.002	21.54	0.06	375	6.54
1240	6.21	0.02	0.987	0.001	-130.8	2.8	1.74	0.01	0.495	0.002	21.53	0.01	375	6.54
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min
** Resolution accuracy of YSI 556

Total Purged 2.97 gal.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 10/4/16

Weather: Cloudy 67°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-4

Screened Interval: 0 to 19 ft.

Well Depth: 19 ft.

Depth To Water Before Pump Installation: 6.96

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Start Purge: 1250
Sample Time: 10/4/16 1322

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1255	6.54	NA	0.734	NA	-136.7	NA	1.72	NA	0.367	NA	21.95	NA	375	7.25
1300	6.53	0.01	0.735	0.001	-139.1	2.4	1.71	0.01	0.368	0.001	21.98	0.03	375	7.30
1305	6.51	0.02	0.744	0.009	-140.2	1.1	1.71	0	0.373	0.005	21.76	0.22	375	7.38
1310	6.49	0.02	0.747	0.003	-139.1	1.1	1.72	0.01	0.377	0	21.62	0.14	375	7.42
1315	6.45	0.04	0.752	0.005	-136.6	2.5	1.72	0	0.376	0.003	21.49	0.13	375	7.47
1320	6.45	0	0.753	0.001	-135.9	0.7	1.72	0	0.377	0.001	21.42	0.07	375	7.48
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min
** Resolution accuracy of YSI 556

Total Purged 2.97 gal.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 10/4/16

Weather: Sunny 59° F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-5

Screened Interval: 7 to 27 ft.

Well Depth: 27 ft.

Depth To Water Before Pump Installation: 5.37

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

start purge: 0835
Sample Time: 10/4/16 0902

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
0840	4.60	NA	0.850	NA	42.1	NA	1.72	NA	0.426	NA	23.40	NA	375	5.88
0845	4.60	0	0.873	0.023	57.9	10.8	1.67	0.05	0.437	0.011	23.54	0.14	375	5.90
0850	4.61	0.01	0.877	0.004	66.6	8.7	1.67	0	0.439	0.002	23.49	0.05	375	5.94
0855	4.62	0.01	0.870	0.007	74.7	8.1	1.62	0.05	0.434	0.005	23.47	0.02	375	5.95
0900	4.65	0.03	0.867	0.003	80.8	6.1	1.63	0.01	0.433	0.001	23.43	0.04	375	5.96
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 2.475 gal.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 10/4/16

Weather: Sunny 62°F

Field Personnel: Donovan Cornell (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-7

Screened Interval: 3 to 20 ft.

Well Depth: 20 ft.

Depth To Water Before Pump Installation: 7.12

Well Diameter: 2-inch

Pump Intake Depth: 8 ft.

Start Purge: 0915

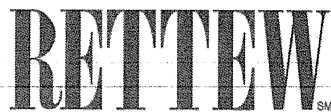
Sample Time: 10/4/16 0942

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
0920	5.07	NA	0.403	NA	-15.7	NA	1.72	NA	0.201	NA	20.61	NA	370	7.82
0925	4.93	0.14	0.398	0.005	-14.8	0.9	1.71	0.01	0.199	0.002	20.23	0.38	370	7.91
0930	4.86	0.07	0.395	0.003	-13.4	1.4	1.71	0.00	0.198	0.001	19.96	0.27	370	7.97
0935	4.84	0.02	0.399	0.004	-13.8	0.4	1.71	0	0.199	0.001	19.84	0.12	370	8.04
0940	4.86	0.02	0.398	0.001	-15.3	1.5	1.72	0.01	0.199	0	19.83	0.01	370	8.09
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 2.44 gal.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Danavan Correll (STL)*

Date: *10/3/16*

Pump: Peristaltic Pump *Proactive Alexis*

Weather: *Sunny 71°F*

Meter: Multiparameter With Flow Cell *Hanna HI9147*

Well No.: MW-9

Screened Interval: 3 to 20 ft.

Well Depth: 20 ft.

Depth To Water Before Pump Installation: *5.10*

start purge: 01325

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

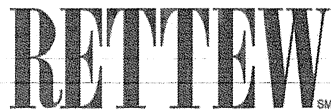
Sample Time: *10/3/16 1352*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1330	4.79	NA	2.901	NA	175.5	NA	1.72	NA	1.462	NA	18.45	NA	375	5.40
1335	4.86	0.07	3.018	0.117	178.7	3.2	1.71	0.01	1.509	0.047	18.19	0.26	375	5.59
1340	4.87	0.01	3.033	0.015	179.6	0.9	1.72	0.01	1.517	0.008	17.85	0.34	375	5.69
1345	4.86	0.01	3.042	0.009	178.7	0.9	1.73	0.01	1.519	0.002	17.59	0.26	375	5.75
1350	4.90	0.04	3.011	0.031	175.9	2.8	1.73	0	1.504	0.015	17.51	0.08	375	5.78
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 2.47 gal.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Donovan Correll (STL)*

Date: *10/3/16*

Pump: Peristaltic Pump *Proactive Alexis*

Weather: *Sunny 68°F*

Meter: Multiparameter With Flow Cell *Hanna HI98194*

Well No.: MW-10

Screened Interval: 3 to 20 ft.

Well Depth: 20 ft.

Depth To Water Before Pump Installation: *4.94* *Purge Start: 1225*

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: *10/3/16 1302*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1230	5.35	NA	1.593	NA	86.4	NA	1.80	NA	0.799	NA	24.18	NA	375	5.11
1235	5.31	0.04	1.602	0.009	88.1	1.7	1.68	0.12	0.802	0.003	23.92	0.26	375	5.15
1240	5.27	0.04	1.597	0.005	94.7	6.6	1.62	0.06	0.799	0.003	23.32	0.60	375	5.21
1245	5.30	0.03	1.584	0.013	89.8	4.9	1.62	0	0.792	0.007	23.08	0.24	375	5.22
1250	5.29	0.01	1.577	0.007	89.5	0.3	1.60	0.02	0.788	0.004	22.94	0.14	375	5.22
1255	5.29	0	1.560	0.017	86.8	2.7	1.62	0.02	0.780	0.008	22.70	0.24	375	5.22
1300	5.30	0.01	1.553	0.007	84.4	2.4	1.61	0.01	0.776	0.004	22.64	0.06	375	5.22
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

Total Purged *3.47 gal.*

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 10/3/16

Weather: Sunny 72°F

Field Personnel: Donovan Cornell CSTL

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-11

Screened Interval: 2 to 12.5 ft.

Well Depth: 12.5 ft.

Depth To Water Before Pump Installation: 0.38' start Purge: 1410

Well Diameter: 2-inch

Pump Intake Depth: 11.5 ft.

Sample Time: 10/3/16 1432

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1415	6.03	NA	0.564	NA	137.0	NA	2.30	NA	0.274	NA	17.24	NA	370	0.73
1420	5.92	0.11	0.548	0.016	132.2	4.8	2.09	0.21	0.275	0.001	17.23	0.01	370	0.81
1425	5.94	0.02	0.547	0.001	128.7	3.5	2.08	0.01	0.273	0.002	17.24	0.01	370	0.86
1430	5.94	0	0.547	0	127.5	1.2	2.10	0.02	0.272	0.001	17.24	0	370	0.88
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 1.95 gal.

LOW-FLOW PURGUING AND SAMPLING

DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 10/3/16

Weather: Sunny 66°F

Field Personnel: Donnan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-12

Screened Interval: 2 to 12 ft.

Well Depth: 12 ft.

Depth To Water Before Pump Installation: 5.48 start purge: 1050

Well Diameter: 2-inch

Pump Intake Depth: 9 ft.

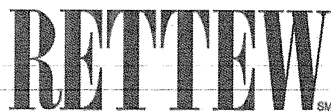
Sample Time: 10/3/16 1122

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1055	4.38	NA	0.078	NA	256.5	NA	3.63	NA	0.039	NA	17.58	NA	375	5.50
1100	4.37	0.01	0.077	0.001	303.5	47.0	3.37	0.26	0.039	0	17.47	0.11	375	5.52
1105	4.48	0.11	0.077	0	311.5	8.0	3.31	0.06	0.039	0	17.36	0.11	375	5.54
1110	4.83	0.35	0.077	0	301.2	10.3	3.26	0.05	0.039	0	17.56	0.20	375	5.58
1115	5.07	0.24	0.077	0	219.6	1.6	3.23	0.03	0.038	0.001	17.37	0.19	375	5.61
1120	4.97	0.1	0.077	0	306.2	6.6	3.28	0.05	0.039	0.001	17.40	0.03	375	5.62
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 2.97 gal.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING

DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 10/3/16

Weather: Sunny 66°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-13

Screened Interval: 2 to 12 ft.

Well Depth: 12 ft.

Depth To Water Before Pump Installation: 6.63

Well Diameter: 2-inch

Pump Intake Depth: 9 ft.

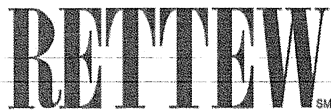
Purge Start: 1140
Sample Time: 10/3/16 1212

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1145	5.02	NA	0.205	NA	289.4	NA	5.09	NA	0.103	NA	17.81	NA	370	6.95
1150	4.77	0.25	0.203	0.002	303.6	14.2	5.04	0.05	0.101	0.002	17.73	0.08	370	6.98
1155	4.88	0.11	0.203	0	294.4	9.2	4.88	0.16	0.102	0.001	18.05	0.32	370	6.99
1200	4.90	0.02	0.204	0.001	296.5	2.1	4.94	0.06	0.102	0	17.68	0.37	370	7.02
1205	4.82	0.08	0.204	0	299.5	3.0	4.88	0.06	0.102	0	17.84	0.16	370	7.03
1210	4.90	0.08	0.204	0	294.8	4.7	4.89	0.01	0.102	0	17.89	0.05	370	7.04
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 2.93 gal.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 10/4/16

Weather: Sunny 64°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI98194

Well No.: Former Supply Well

Screened Interval: Open interval 74 to 210 feet

Well Depth: 210 ft.

Depth To Water Before Pump Installation: 6.94

Well Diameter: 6-inch

Pump Intake Depth: 18 ft.

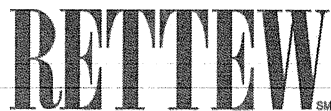
Start Purge: 1000
Sample Time: 10/4/16 1028

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1005	7.19	NA	1.011	NA	-171.0	NA	1.66	NA	0.505	NA	18.85	NA	400	7.20
1010	7.21	0.02	1.010	0.001	-171.7	0.007	1.67	0.01	0.505	0	18.86	0.01	400	7.24
1015	7.24	0.03	1.008	0.002	-171.3	0.004	1.66	0.01	0.504	0.001	18.77	0.09	400	7.24
1020	7.25	0.01	1.005	0.003	-171.4	0.001	1.66	0	0.503	0.001	18.71	0.06	400	7.24
1025	7.26	0.01	1.003	0.002	-171.6	0.002	1.66	0	0.501	0.002	18.65	0.06	400	7.24
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 2.75 gal.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 10/4/16

Weather: Cloudy 67°

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-14S

Screened Interval: 3 to 10 ft.

Well Depth: 10 ft.

Depth To Water Before Pump Installation: 5.71

Well Diameter: 2-inch

Pump Intake Depth: 8 ft.

Start Pump: 1130

Sample Time: 10/4/16 1158

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1135	6.27	NA	1.919	NA	-106.6	NA	1.58	NA	0.960	NA	23.62	NA	300	6.25
1140	6.21	0.06	1.933	0.014	-103.9	2.7	1.57	0.01	0.967	0.007	23.79	0.17	300	6.31
1145	6.19	0.02	1.978	0.045	-103.7	0.2	1.57	0	0.990	0.023	23.62	0.17	300	6.49
1150	6.19	0	1.992	0.014	-103.6	0.1	1.57	0	0.995	0.005	23.49	0.13	300	6.61
1155	6.20	0.01	1.992	0	-103.5	0.1	1.57	0	0.997	0.002	23.47	0.02	300	6.67
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Pumped 1.975 gal.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6093063
Deborah Hannum

Site: Herr Foods, Inc., Nottingham, PA

Date: 10/4/16

Weather: Cloudy 63°F

Field Personnel: Donavan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-14D

Screened Interval: 15 to 25 ft.

Well Depth: 25 ft.

Depth To Water Before Pump Installation: 6.41

Well Diameter: 2-inch

Pump Intake Depth: 20 ft.

Start Pump: 1055

Sample Time: 10/4/16 1122

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1100	5.58	NA	1.195	NA	75.5	NA	1.83	NA	0.598	NA	18.92	NA	400	7.26
1105	5.54	0.04	1.207	0.012	84.7	9.2	1.77	0.06	0.604	0.006	18.87	0.05	400	7.62
1110	5.55	0.01	1.213	0.006	86.1	1.4	1.76	0.01	0.607	0.003	18.76	0.11	400	7.71
1115	5.56	0.01	1.221	0.008	87.6	1.5	1.75	0.01	0.611	0.004	18.68	0.08	400	7.75
1120	5.57	0.01	1.236	0.015	92.1	4.5	1.75	0	0.618	0.007	18.58	0.10	400	7.78
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 2.75 gal.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6122519
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Date: 12/19/16

Weather: Sunny 25°F

Field Personnel: Donovan Carroll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI98194

Well No.: MW-4

Screened Interval: 0 to 19 ft.

Purge State: 0925

Well Depth: 19 ft.

Depth To Water Before Pump Installation: 7.81 7.70

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 1020

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
0930	12.05	NA	22.62	NA	49.8	NA	25.96	NA	11.22	NA	17.19	NA	400	8.41
0935	12.02	0.03	22.07	0.55	61.2	11.4	29.00	3.04	11.06	0.16	17.33	0.14	400	8.58
0940	12.03	0.01	22.50	0.43	64.4	3.2	29.52	0.52	11.36	0.30	17.51	0.18	400	8.65
0945	12.07	0.04	23.93	1.43	73.8	9.4	30.05	0.53	12.04	0.68	17.30	0.21	400	8.81
0950	12.08	0.01	24.23	0.30	81.2	7.4	29.52	1.53	12.38	0.34	17.45	0.15	400	8.91
0955	12.12	0.04	26.39	2.16	91.6	10.4	24.08	4.44	13.13	0.75	17.33	0.12	400	8.97
1000	12.12	0	26.60	0.21	93.7	2.1	12.13	13.95	13.36	0.23	17.40	0.07	400	9.02
1005	12.13	0.01	26.41	0.19	97.5	3.8	4.45	5.68	13.66	0.30	17.36	0.04	400	9.08
1010	12.15	0.02	26.45	0.04	102.8	5.3	2.77	1.65	13.53	0.13	17.45	0.09	400	9.12
1015	12.12	0.03	26.48	0.03	103.7	0.9	2.68	0.09	13.45	0.08	17.42	0.03	400	9.16
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of YSI 556

Total Purged 5.3 gals



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6122519
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Date: 12/19/16

Weather: Sunny 26°F

Field Personnel: Donavan Cornell (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI98194

Well No.: MW-5

Screened Interval: 7 to 27 ft.

Well Depth: 27 ft.

Depth To Water Before Pump Installation: 6.86 Purga Start: 1135

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 1205

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1140	4.90	NA	0.813	NA	372.7	NA	1.84	NA	0.406	NA	18.87	NA	375	7.10
1145	4.44	0.46	0.825	0.012	391.1	18.4	1.87	0.03	0.412	0.006	18.83	0.02	375	7.12
1150	4.38	0.06	0.830	0.005	397.2	6.1	1.85	0.02	0.415	0.003	18.81	0.02	375	7.13
1155	4.20	0.18	0.836	0.006	398.4	1.2	1.84	0.01	0.418	0.003	18.68	0.13	375	7.14
1200	4.20	0	0.836	0	396.4	2.0	1.83	0.01	0.417	0.001	18.65	0.03	375	7.14
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 2.5 gals.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6122519
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Donovan Correll CSTL*

Date: *12/19/16*

Pump: Peristaltic Pump *Proactive Alexi's*

Weather: *Sunny 26°F*

Meter: Multiparameter With Flow Cell *Hanna HI98194*

Well No.: MW-14S

Screened Interval: 3 to 10 ft.

Well Depth: 10 ft.

Depth To Water Before Pump Installation: *6.30* *Start Pump: 1305*

Well Diameter: 2-inch

Pump Intake Depth: 8 ft.

Sample Time: *1335*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1310	5.58	NA	2.814	NA	34.3	NA	2.44	NA	1.347	NA	16.71	NA	375	6.53
1315	5.45	0.13	2.538	0.276	38.2	3.9	2.00	0.44	1.272	0.075	16.50	0.21	375	6.72
1320	5.53	0.08	2.729	0.191	34.4	3.8	1.77	0.23	1.372	0.100	16.64	0.14	375	6.81
1325	5.63	0.10	2.990	0.261	36.1	1.7	1.75	0.02	1.506	0.134	16.95	0.31	375	6.84
1330	5.67	0.04	3.161	0.171	37.4	1.3	1.75	0	1.580	0.074	16.98	0.03	375	6.89
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged *2.5 gals.*



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6122519
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Date: 12/19/16

Weather: Sunny 26°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI98194

Well No.: MW-14D

Screened Interval: 15 to 25 ft.

Well Depth: 25 ft.

Depth To Water Before Pump Installation: 5.85 Start Purge: 1225

Well Diameter: 2-inch

Pump Intake Depth: 20 ft.

Sample Time: 1255

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1230	5.37	NA	1.191	NA	193.9	NA	1.82	NA	0.591	NA	17.12	NA	400	7.83
1235	5.47	0.10	1.205	0.024	169.5	24.4	1.80	0.02	0.602	0.011	17.20	0.08	400	8.09
1240	5.48	0.01	1.209	0.004	163.8	5.7	1.81	0.01	0.605	0.003	17.04	0.16	400	8.14
1245	5.47	0.01	1.219	0.010	155.7	8.1	1.82	0.01	0.610	0.005	16.99	0.05	400	8.17
1250	5.47	0	1.223	0.004	151.8	3.9	1.82	0	0.612	0.002	17.05	0.06	400	8.18
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 2.6 gals



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6122519
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Danovan Correll (STL)*

Date: *12/19/16*

Pump: Peristaltic Pump *Proactive Alex's*

Weather: *Sunny 25°F*

Meter: Multiparameter With Flow Cell *Hanna HI 98194*

Well No.: OW-1

Screened Interval: 3 to 15 ft.

Well Depth: 15 ft.

Depth To Water Before Pump Installation: *7.69* *Start Purge: 1035*

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: *1110*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
<i>1040</i>	<i>12.15</i>	<i>NA</i>	<i>41.93</i>	<i>NA</i>	<i>-167.4</i>	<i>NA</i>	<i>1.82</i>	<i>NA</i>	<i>20.78</i>	<i>NA</i>	<i>17.35</i>	<i>NA</i>	<i>375</i>	<i>8.15</i>
<i>1045</i>	<i>12.07</i>	<i>0.08</i>	<i>31.72</i>	<i>10.21</i>	<i>-155.9</i>	<i>11.5</i>	<i>1.89</i>	<i>0.07</i>	<i>15.73</i>	<i>5.05</i>	<i>17.28</i>	<i>0.07</i>	<i>375</i>	<i>8.55</i>
<i>1100</i>	<i>11.84</i>		<i>0.26</i>		<i>197.3</i>		<i>2.05</i>		<i>131</i>					
<i>1055</i>	<i>12.11</i>	<i>0.04</i>	<i>31.02</i>	<i>0.70</i>	<i>161.9</i>	<i>6.0</i>	<i>1.87</i>	<i>0.02</i>	<i>15.53</i>	<i>0.20</i>	<i>17.02</i>	<i>0.26</i>	<i>375</i>	<i>8.74</i>
<i>1100</i>	<i>12.10</i>	<i>0.01</i>	<i>30.04</i>	<i>0.98</i>	<i>160.5</i>	<i>1.4</i>	<i>1.89</i>	<i>0.02</i>	<i>14.95</i>	<i>0.58</i>	<i>17.17</i>	<i>0.15</i>	<i>375</i>	<i>9.01</i>
<i>1105</i>	<i>12.09</i>	<i>0.01</i>	<i>29.95</i>	<i>0.09</i>	<i>159.7</i>	<i>0.8</i>	<i>1.91</i>	<i>0.02</i>	<i>14.89</i>	<i>0.06</i>	<i>17.21</i>	<i>0.04</i>	<i>375</i>	<i>9.15</i>
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

Tubing popped at bottom of flowcell. Reddings at 1050 void

* Not to exceed 500 ml/min
** Resolution accuracy of multiparameter meter

Total Purged 3.0 gals.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



6122519
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Date: 12/19/16

Weather: Sunny 25°F

Field Personnel: *Donovan Connel (STL)*

Pump: Peristaltic Pump *Proactive Alexis*

Meter: Multiparameter With Flow Cell *Hanna HI98194*

Well No.: OW-2

Screened Interval: 3 to 15 ft.

Start Purge: 1345

Well Depth: 15 ft.

Depth To Water Before Pump Installation: *7.00*

~~*Start Purge: 1345*~~

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: *1415*

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1350	9.88	NA	7.363	NA	13.4	NA	5.47	NA	3.592	NA	17.24	NA	375	7.50
1355	9.87	0.01	7.232	0.131	19.7	14.7	5.14	0.33	3.665	0.073	16.83	0.41	375	7.83
1400	10.08	0.21	8.406	1.174	1.9	17.8	5.21	0.07	4.270	0.605	16.61	0.22	375	8.10
1405	10.35	0.27	9.570	1.164	14.4	16.3	5.67	0.46	4.826	0.556	16.89	0.28	375	8.14
1410	10.38	0.03	10.18	0.61	22.1	7.7	5.71	0.04	4.839	0.013	16.92	0.03	375	8.18
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 2.5 gals.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: Taylor Wolfe (STL)

Date: 12-30-16 TBW

Pump: Peristaltic Pump Proactive Alexis

Weather: Sunny 34° 36°

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-4

Screened Interval: 0 to 19 ft.

Purge start: 0940

Well Depth: 19 ft.

Depth To Water Before Pump Installation: 7.59

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 1030

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
0945	8.63	NA	8.25	NA	49.8	NA	23.95	NA	4.146	NA	15.86	NA	400	8.06
0950	9.14	0.51	9.69	1.44	63.6	1.3	22.82	1.13	4.846	0.7	16.41	0.55	"	8.22
0955	10.66	1.52	25.20	15.51	82.1	18.5	26.59	3.77	12.72	7.87	17.45	1.04	"	8.32
1000	10.24	0.42	21.90	3.3	101.2	19.1	27.45	1.36	11.07	1.65	17.31	0.14	"	8.52
1005	10.31	0.07	21.72	0.18	107.9	6.7	28.42	0.47	10.91	0.16	17.24	0.08	"	8.70
1010	10.37	0.06	21.95	0.23	111.5	3.6	29.61	1.19	11.07	0.16	17.34	0.10	"	8.82
1015	10.44	0.07	22.48	0.53	117.6	6.1	29.46	0.15	11.23	0.16	17.40	0.06	"	8.91
1020	10.52	0.08	22.93	0.45	122.1	4.5	28.53	0.93	11.53	0.30	17.52	0.12	"	9.00
1025	10.59	0.07	23.71	0.78	124.3	2.2	28.01	0.52	11.84	0.29	17.50	0.02	"	9.02
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of YSI 556

Total purged 4.7 gal



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Date: 12-30-17

Weather: Sunny 34°F

Field Personnel: Taylor Wolfe

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI98194

Well No.: MW-14S

Screened Interval: 3 to 10 ft.

Well Depth: 10 ft.

Depth To Water Before Pump Installation: 6.14

Start 1335

Well Diameter: 2-inch

Pump Intake Depth: 8 ft.

Sample Time: 1405

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1340	5.71	NA	2.41	NA	22.8	NA	2.37	NA	1.20	NA	15.11	NA	360	6.18
1345	5.59	0.12	2.50	0.09	25.6	2.8	2.37	0.00	1.25	0.05	15.12	0.01	"	6.74
1350	5.64	0.05	2.59	0.09	7.5	18.1	1.97	0.40	1.30	0.05	15.23	0.11	"	6.92
1355	5.67	0.03	2.65	0.06	0.2	7.3	1.80	0.17	1.33	0.03	15.70	0.47	"	6.99
1400	5.66	0.01	2.73	0.08	-3.4	3.2	1.72	0.08	1.37	0.04	15.84	0.14	"	6.98
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged: 2.2 gal



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Date: 12.30.16

Weather: Sunny 34°F

Field Personnel: Taylor Wolfe (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-14D

Screened Interval: 15 to 25 ft.

Well Depth: 25 ft.

Depth To Water Before Pump Installation: 6.17

Start: 1255

Well Diameter: 2-inch

Pump Intake Depth: 20 ft.

Sample Time: 1320

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1300	6.48	NA	1.20	NA	217.1	NA	2.09	NA	0.60	NA	17.51	NA	400	7.88
1305	5.33	1.15	1.20	0.00	178.5	38.6	2.10	0.01	0.60	2	17.60	0.09	400	8.10
1310	5.23	0.10	1.20	0.00	170.0	8.5	2.00	0.10	0.60	2	17.50	0.10	400	8.16
1315	5.30	0.07	1.22	0.02	160.1	9.9	1.93	0.07	0.61	8	17.48	0.02	400	8.12
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged 2gal



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Date: 12.30.16

Weather: Overcast 37°F

Field Personnel: Taylor Wolfe (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: OW-1

Screened Interval: 3 to 15 ft.

Well Depth: 15 ft.

Depth To Water Before Pump Installation: 7.54

start 1055

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 1135

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1100	9.74	NA	10.58	NA	108.3	NA	28.19	NA	5.61	NA	15.78	NA	360	8.24
1105	10.40	0.66	11.48	0.90	81.4	26.90	28.28	0.09	5.74	0.13	16.09	0.31	"	8.70
1110	10.54	0.14	12.22	0.34	90.9	9.50	29.10	0.82	6.16	0.42	16.52	0.43	"	9.04
1115	10.69	0.15	13.66	1.44	105.7	14.80	30.56	1.46	6.80	0.64	16.81	0.29	"	9.40
1120	10.35	0.34	14.59	0.93	113.5	7.80	31.41	0.85	7.21	0.41	16.89	0.08	"	9.61
1125	10.64	0.29	14.73	0.14	137.5	24.0	28.36	3.05	7.35	0.14	16.39	0.50	"	9.70
1130	10.44	0.20	17.35	2.62	141.7	4.20	32.40	4.04	8.69	1.34	17.12	0.73	"	9.89
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total purged: 35 gals



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Date: 12-30-16

Weather: sunny 36°F

Field Personnel:

Taylor Wolfe (STL)

Pump: Peristaltic Pump

Proactive Alexis

Meter: Multiparameter With Flow Cell

Hanna HI98194

Well No.: OW-2

Screened Interval: 3 to 15 ft.

start ~ 1205

Well Depth: 15 ft.

Depth To Water Before Pump Installation: 6.76

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 1235

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1205	7.94	NA	4.02	NA	182.1	NA	7.57	NA	2005	NA	16.42	NA	400	7.13
1210	7.97	0.03	4.33	0.31	46.2	135.9	3.77	3.8	2181	176	16.48	0.06	400	7.63
1215	8.30	0.33	4.95	0.61	11.5	34.7	3.06	0.71	2496	315	16.04	0.44	400	7.94
1220	8.54	0.24	5.67	0.72	15.2	3.7	3.01	0.05	2853	357	16.34	0.30	400	8.14
1225	8.71	0.17	6.45	0.78	22.5	7.3	3.02	0.01	3276	423	16.50	0.16	400	8.28
1233	9.06	0.35	7.40	0.95	27.2	4.7	3.17	0.15	3732	456	16.79	0.29	400	8.42
1235	9.14	0.08	7.67	0.27	27.3	0.1	3.41	0.24	3849	117	16.81	0.02	400	8.54
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

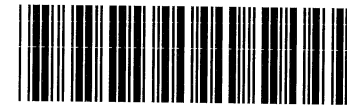
** Resolution accuracy of multiparameter meter

Total purged: 3.1 gal



We answer to you.

LOW-FLOW PURGING AND SAMPLING DATA SHEET



7012602
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Date: 1/18/17

Weather: Cloudy 43°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-3

Screened Interval: 5 to 25 ft.

Well Depth: 25 ft.

Depth To Water Before Pump Installation: 6.45

Start Purge: 1120

Well Diameter: 2-inch

Pump Intake Depth: 11 ft.

Sample Time: 1148

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1125	6.60	NA	1.153	NA	-124.3	NA	0.78	NA	0.576	NA	15.39	NA	380	6.72
1130	6.49	0.11	1.176	0.023	-117.2	7.1	0.74	0.04	0.588	0.12	15.51	0.12	380	6.81
1135	6.45	0.04	1.184	0.008	-116.8	1.6	0.74	0	0.593	0.005	15.57	0.06	380	6.85
1140	6.44	0.01	1.203	0.019	-118.4	1.6	0.74	0	0.601	0.008	15.70	0.13	380	6.87
1145	6.41	0.03	1.204	0.001	-119.5	1.1	0.74	0	0.607	0.006	15.80	0.10	380	6.90
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of YSI 556

Total Purged - 2.5 gals



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



7012602
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Date: 1/17/17

Weather: Cloudy 37°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-4

Screened Interval: 0 to 19 ft.

Well Depth: 19 ft.

Depth To Water Before Pump Installation: 7.67

Start Purge: 1120

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 1218

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1125	7.21	NA	6.500	NA	75.6	NA	1.74	NA	3.247	NA	15.01	NA	375	8.02
1130	7.23	0.02	9.255	2.755	65.1	10.5	3.04	1.30	4.616	1.369	15.01	0	375	8.14
1135	7.26	0.03	12.530	3.275	78.7	13.6	4.48	1.44	6.408	1.792	15.40	0.39	375	8.40
1140	7.33	0.07	14.870	2.340	91.6	12.9	5.56	1.08	7.445	1.037	15.52	0.12	375	8.45
1145	7.36	0.03	17.250	2.380	94.1	2.5	6.38	0.82	8.643	1.198	15.69	0.17	375	8.48
1150	7.41	0.05	19.630	2.380	91.6	2.5	7.25	0.87	9.815	1.175	15.88	0.19	375	8.50
1155	7.75	0.34	21.420	1.790	89.8	1.8	8.24	0.99	10.71	0.892	15.95	0.07	375	8.51
1200	8.02	0.27	22.400	0.98	76.8	13	9.14	0.90	11.21	0.5	16.13	0.18	375	8.51
1205	8.25	0.26	23.990	1.59	65.1	11.7	10.47	1.33	12.02	0.81	16.25	0.12	375	8.51
1210	8.34	0.06	24.080	0.09	62.7	2.4	10.51	0.04	12.14	0.12	16.28	0.03	375	8.52
1215	8.30	0.04	24.180	0.100	61.4	1.3	10.64	0.13	12.21	0.07	16.29	0.01	375	8.52
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of YSI 556

Total Purged - 5.45 gals.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



7012602
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Date: 11/17/17

Weather: Cloudy 37°F

Field Personnel: Donovan Cornell (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-5

Screened Interval: 7 to 27 ft.

Well Depth: 27 ft.

Depth To Water Before Pump Installation: 6.07

Start purge: 0930

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 1004

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
0935	6.74	NA	1.573	NA	190.2	NA	0.94	NA	0.796	NA	16.94	NA	375	6.35
0940	6.16	0.58	1.574	0.001	200.2	10.0	0.93	0.01	0.787	0.001	16.91	0.03	375	6.36
0945	6.02	0.14	1.561	0.013	216.6	16.4	0.92	0.01	0.779	0.008	16.92	0.01	375	6.36
0950	5.86	0.16	1.544	0.017	242.7	26.1	0.88	0.04	0.771	0.008	16.85	0.07	375	6.36
0955	5.82	0.04	1.541	0.003	243.4	0.7	0.87	0.01	0.770	0.001	16.70	0.15	375	6.37
1000	5.79	0.03	1.520	0.021	245.7	2.3	0.85	0.02	0.770	0	16.74	0.04	375	6.37
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged - 2.97 gals.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



7012602
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Date: 1/17/17

Weather: Cloudy 37°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 95194

Well No.: MW-7

Screened Interval: 3 to 20 ft.

Well Depth: 20 ft.

Depth To Water Before Pump Installation: 7.35

Start Purge: 0840

Well Diameter: 2-inch

Pump Intake Depth: 8 ft.

Sample Time: 0914

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
0845	6.85	NA	0.524	NA	32.1	NA	0.84	NA	0.262	NA	14.74	NA	350	7.48
0850	6.88	0.03	0.525	0.001	32.2	0.1	0.82	0.02	0.265	0.002	14.81	0.07	350	8.05
0855	6.87	0.01	0.527	0.02	31.0	1.2	0.79	0.03	0.263	0.002	15.17	0.36	350	8.10
0900	6.87	0	0.527	0	34.7	3.7	0.77	0.02	0.263	0	15.31	0.14	350	8.11
0905	6.87	0	0.526	0.001	41.5	6.8	0.77	0	0.263	0	15.43	0.12	350	8.12
0910	6.87	0	0.526	0	43.1	1.6	0.76	0.01	0.263	0	15.47	0.04	350	8.12
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

Total Purged - 2.77 gals

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



7012602
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Date: 1/16/17

Weather: Cloudy 30 °F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-9

Screened Interval: 3 to 20 ft.

Well Depth: 20 ft.

Depth To Water Before Pump Installation: 5.25 Start Purge: 1400

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 1428

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1405	6.90	NA	3.087	NA	-0.8	NA	0.81	NA	1.545	NA	13.32	NA	380	5.61
1410	6.90	0	3.089	0.002	-8.8	8.0	0.77	0.04	1.542	0.003	13.54	0.22	380	5.65
1415	6.90	0	3.088	0.001	-13.4	4.6	0.76	0.01	1.544	0.002	13.71	0.17	380	5.66
1420	6.90	0	3.089	0.001	-11.4	2.0	0.78	0.02	1.544	0	13.91	0.20	380	5.66
1425	6.90	0	3.101	0.012	-13.1	1.7	0.74	0.04	1.551	0.007	14.03	0.12	380	5.67
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged: 2.5 gal.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



7012602
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Date: 1/16/17

Weather: Cloudy 30°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-10

Screened Interval: 3 to 20 ft.

Well Depth: 20 ft.

Depth To Water Before Pump Installation: 5.15

Start Purge: 1315

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 1349

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1320	6.87	NA	2.011	NA	38.7	NA	0.76	NA	1.006	NA	15.56	NA	375	5.44
1325	6.86	0.01	2.011	0	38.9	0.2	0.76	0	1.006	0	15.83	0.27	375	5.49
1330	6.86	0	2.010	0.001	40.2	1.3	0.75	0.01	1.005	0.001	15.83	0	375	5.51
1335	6.43	0.43	2.000	0.010	41.0	0.8	0.73	0.02	0.997	0.008	16.07	0.24	375	5.54
1340	6.24	0.19	1.985	0.085	40.1	0.9	0.72	0.01	0.991	0.006	16.19	0.12	375	5.55
1345	6.20	0.04	1.974	0.011	38.3	1.8	0.72	0	0.987	0.004	16.22	0.03	375	5.56
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged: 2.97 gals.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



7012602
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Date: 1/16/17

Weather: Cloudy 30°F

Field Personnel: Donovan Cornell (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-11

Screened Interval: 2 to 12.5 ft.

Well Depth: 12.5 ft.

Depth To Water Before Pump Installation: 0.39

Start Purge: 1230

Well Diameter: 2-inch

Pump Intake Depth: 11.5 ft.

Sample Time: 1304

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1235	6.83	NA	0.746	NA	236.4	NA	1.51	NA	0.374	NA	10.52	NA	375	0.71
1240	6.84	0.01	0.775	0.029	222.5	13.6	1.22	0.29	0.389	0.015	10.63	0.11	375	0.71
1245	6.84	0	0.802	0.027	199.5	23.3	1.08	0.14	0.402	0.013	10.85	0.22	375	0.74
1250	6.84	0	0.808	0.006	173.1	26.4	1.06	0.02	0.403	0.001	10.84	0.01	375	0.75
1255	6.84	0	0.810	0.002	177.0	3.9	1.10	0.04	0.404	0.001	11.01	0.17	375	0.76
1300	6.84	0	0.799	0.011	159.1	17.9	1.06	0.04	0.400	0.004	10.97	0.04	375	0.77
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged: 2.97 gals.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET



7012602
Alana Kopicz

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Donovan Correll (STL)*

Date: *1/16/17*

Pump: Peristaltic Pump *Proactive Alexs*

Weather: *Sunny 30°F*

Meter: Multiparameter With Flow Cell *Hanna HI 98194*

Well No.: MW-13

Screened Interval: 2 to 12 ft.

Well Depth: 12 ft.

Depth To Water Before Pump Installation: *5.92*

Well Diameter: 2-inch

Pump Intake Depth: 9 ft.

Start Purge: 1155
Sample Time: 1219

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1200	6.79	NA	0.233	NA	298.4	NA	4.50	NA	0.117	NA	11.28	NA	375	6.05
1205	6.80	0.01	0.235	0.002	291.6	16.8	4.49	0.01	0.118	0.001	11.17	0.11	375	6.05
1210	6.80	0	0.233	0.002	287.4	5.5	4.51	0.02	0.116	0.002	11.15	0.02	375	6.05
1215	6.80	0	0.237	0.004	294.0	6.6	4.56	0.05	0.119	0.003	11.07	0.08	375	6.05
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged: 1.98 gals.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Date: 1/17/17

Weather: Cloudy 37°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI98194

Well No.: MW-14S

Screened Interval: 3 to 10 ft.

Well Depth: 10 ft.

Depth To Water Before Pump Installation: 6.16

Start Purge: 1325

Well Diameter: 2-inch

Pump Intake Depth: 8 ft.

Sample Time: 1405

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1330	6.30	NA	3.303	NA	-57.0	NA	0.83	NA	1.656	NA	14.31	NA	380	6.45
1335	6.39	0.09	3.381	0.078	-64.4	7.4	0.81	0.02	1.688	0.032	14.19	0.12	380	6.68
1340	6.42	0.03	3.380	0.001	-68.1	3.7	0.81	0	1.691	0.003	14.23	0.04	380	6.81
1345	6.44	0.02	3.428	0.038	-73.3	5.2	0.80	0.01	1.715	0.024	14.33	0.10	380	6.94
1350	6.46	0.02	3.488	0.060	-75.0	1.7	0.80	0	1.745	0.030	14.35	0.02	380	7.02
1355	6.47	0.01	3.560	0.072	-77.0	2.0	0.80	0	1.781	0.036	14.43	0.08	380	7.11
1400	6.49	0.02	3.624	0.064	-78.3	1.3	0.80	0	1.814	0.033	14.50	0.07	380	7.20
1405	6.49	0	3.675	0.051	-78.4	0.1	0.80	0	1.841	0.027	14.53	0.03	380	7.24
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

Total Purged - 4.0 gals.

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Date: 1/17/17

Weather: Cloudy 37°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexrs

Meter: Multiparameter With Flow Cell Hanna HI 98194

Well No.: MW-14D

Screened Interval: 15 to 25 ft.

Well Depth: 25 ft.

Depth To Water Before Pump Installation: 6.36

Start Purge: 1240

Well Diameter: 2-inch

Pump Intake Depth: 20 ft.

Sample Time: 1314

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1245	6.08	NA	1.691	NA	141.5	NA	0.86	NA	0.844	NA	16.74	NA	380	7.55
1250	6.00	0.08	1.686	0.005	127.9	13.6	0.83	0.03	0.843	0.001	16.81	0.07	380	7.75
1255	5.96	0.04	1.689	0.003	125.6	2.3	0.83	0	0.845	0.002	16.80	0.01	380	7.80
1300	5.93	0.03	1.705	0.016	119.3	6.3	0.81	0.02	0.853	0.008	16.86	0.06	380	7.88
1305	5.93	0	1.707	0.002	117.4	1.9	0.80	0.01	0.854	0.001	16.90	0.04	380	7.90
1310	5.93	0	1.711	0.004	114.1	3.3	0.80	0	0.855	0.001	16.89	0.01	380	7.91
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

Total Purged - 30 gals.

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Date: 1/17/17

Weather: Cloudy rain 37°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI98194

Well No.: OW-1

Screened Interval: 3 to 15 ft.

Well Depth: 15 ft.

Depth To Water Before Pump Installation: 7.44

Start Pump: 1015

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 1109

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1020	7.23	NA	16.900	NA	39.4	NA	28.65	NA	8.209	NA	15.35	NA	350	7.89
1025	7.24	0.01	15.830	1.070	55.6	16.2	27.63	1.02	7.905	0.304	14.74	0.61	350	8.30
1030	7.25	0.01	17.130	1.300	66.5	10.9	28.57	0.94	8.355	0.450	14.44	0	350	8.53
1035	7.23	0.02	16.860	0.270	76.0	9.5	30.06	1.49	8.365	0.010	14.90	0.16	350	8.70
1040	7.25	0.02	17.960	1.100	92.6	16.6	31.88	1.82	9.084	0.719	15.25	0.35	350	9.00
1045	7.27	0.02	19.200	1.240	101.2	8.6	32.38	0.50	9.384	0.300	15.28	0.03	350	9.07
1050	7.29	0.02	19.230	0.030	107.7	6.5	31.90	0.48	9.648	0.264	15.43	0.15	350	9.16
1055	7.30	0.01	19.530	0.300	113.2	5.5	31.26	0.64	9.820	0.128	15.50	0.07	350	9.22
1100	7.31	0.01	19.560	0.030	118.9	5.7	31.17	0.09	9.971	0.151	15.57	0.07	350	9.31
1105	7.32	0.01	19.570	0.010	120.4	1.5	31.14	0.03	9.989	0.018	15.61	0.04	350	9.35
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged - 4.6 gals.



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Field Personnel: *Donovan Correll (STL)*

Date: *1/18/17*

Pump: Peristaltic Pump *Proactive Alexis*

Weather: *Cloudy 43°F*

Meter: Multiparameter With Flow Cell *Hanna HI 98194*

Well No.: OW-2

Screened Interval: 3 to 15 ft.

Well Depth: 15 ft.

Depth To Water Before Pump Installation: *6.70*

Start Purge: 0920

Well Diameter: 2-inch

Pump Intake Depth: 10 ft.

Sample Time: 1008

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
0925	6.93	NA	4.306	NA	66.1	NA	0.77	NA	2.150	NA	14.76	NA	350	7.41
0930	6.96	0.03	4.436	0.130	50.3	15.8	0.75	0.02	2.227	0.077	14.74	0.02	350	7.59
0935	7.06	0.10	4.762	0.326	21.7	28.6	0.73	0.02	2.388	0.161	14.84	0.10	350	7.81
0940	7.25	0.19	5.110	0.348	14.3	7.4	0.72	0.01	2.566	0.178	15.00	0.16	350	7.98
0945	7.54	0.29	5.767	0.657	15.5	1.2	0.71	0.01	2.900	0.334	15.13	0.13	350	8.11
0950	7.69	0.15	6.165	0.398	16.8	1.3	0.70	0.01	3.097	0.197	15.29	0.16	350	8.20
0955	7.85	0.16	6.567	0.402	20.3	3.5	0.70	0	3.289	0.192	15.42	0.13	350	8.29
1000	7.96	0.11	6.697	0.130	22.7	2.4	0.71	0.01	3.360	0.071	15.43	0.01	350	8.35
1005	8.02	0.06	6.718	0.021	20.8	1.9	0.71	0	3.401	0.041	15.52	0.09	350	8.41
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

Total Purged - 4.2 gals.

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter



We answer to you.

LOW-FLOW PURGUING AND SAMPLING DATA SHEET

Site: Herr Foods, Inc., Nottingham, PA

Date: 1/18/17

Weather: Cloudy 43°F

Field Personnel: Donovan Correll (STL)

Pump: Peristaltic Pump Proactive Alexis

Meter: Multiparameter With Flow Cell Hanna HI98194

Well No.: Former Supply Well

Screened Interval: Open interval 74 to 210 feet

Well Depth: 210 ft.

Depth To Water Before Pump Installation: 7.55

Start Purge: 1025

Well Diameter: 6-inch

Pump Intake Depth: 18 ft.

Sample Time: 1059

Time	pH (SU)		Conductivity (mS/cm)		ORP (mV)		DO (mg/L)		TDS (g/L)		Temp. (°C)		Pumping Rate* (ml/min)	Depth To Water
	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change		
1030	7.17	NA	1.557	NA	-30.0	NA	1.20	NA	0.778	NA	14.04	NA	400	7.57
1035	7.16	0.01	1.554	0.003	-23.7	6.3	1.16	0.04	0.777	0.001	14.07	0.03	400	7.57
1040	7.16	0	1.553	0.001	-26.1	2.4	1.15	0.01	0.776	0.001	14.10	0.03	400	7.58
1045	7.18	0.02	1.546	0.007	-35.1	9.0	1.11	0.04	0.773	0.003	14.21	0.11	400	7.58
1050	7.19	0.01	1.550	0.004	-45.0	9.9	1.13	0.02	0.775	0.002	14.16	0.05	400	7.59
1055	7.22	0.03	1.540	0.010	-53.9	8.9	1.10	0.03	0.770	0.005	14.19	0.03	400	7.59
Stabilization Criteria	+/- 0.2 SU		+/- 3% of Reading		+/- 20 mV**		+/- 0.2 mg/L**		+/- 10% of Reading		+/- 0.2°C		NA	

* Not to exceed 500 ml/min

** Resolution accuracy of multiparameter meter

Total Purged - 32 gals.

Location Herr Foods Date 1/16/17Project / Client Reffew

Wells	Static (ft b TOC)
MW-1	5.84
MW-2	7.14
MW-5	6.07
MW-6	4.25
MW-7	7.45
MW-9	5.25
MW-10	5.15
MW-8	4.70
MW-14D	6.49
MW-14S	6.20
OW-2	6.84
OW-1	7.48
MW-4	7.62
MW-11	0.39
Endwall	7.58
SW	7.55
MW-12	4.16
MW-13	5.92
MW-3	6.55*

* MW-3 Water level was taken in the afternoon due to well vault lid being frozen.

Location _____ Date _____

Project / Client _____



7012602
Alana Kopicz

APPENDIX G
Groundwater Sample Laboratory Analytical Reports



Results Report

Order ID: 6064766

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Project: Herr Foods- Monitoring Wells July 2016

Attn: Ed Dziedzic

Regulatory ID:

Sample Number: 6064766-01
Collector: DRC-STL

Site: MW 1
Collect Date: 07/11/2016 11:38 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.0	N/A	N/A		1	07/11/16	BAK	07/11/16 11:38	DRC
Static Water Level (ft)	3.54	N/A	N/A		1	07/11/16	BAK	07/11/16 11:38	DRC
Total Volume Purged (gal)	1.69	N/A	N/A		1	07/11/16	BAK	07/11/16 11:38	DRC
Total Well Depth (ft)	27.0	N/A	N/A		1	07/11/16	BAK	07/11/16 11:38	DRC
Well Diameter (in)	2.00	N/A	N/A		1	07/11/16	BAK	07/11/16 11:38	DRC

Inorganics

Nitrate as N	2.34	mg/L	EPA 300.0	1.00	1	07/12/16	MRW	07/12/16 1:56	MRW
Sulfate	7.62	mg/L	EPA 300.0	5.00	1	07/12/16	MRW	07/12/16 1:56	MRW

Metals

Iron, Dissolved	< 0.100	mg/L	EPA 200.8	0.100	1	07/19/16	RPV	07/19/16 23:37	RPV
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Sample Number: 6064766-03
Collector: DRC-STL

Site: MW 3
Collect Date: 07/12/2016 12:28 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	11.0	N/A	N/A		1	07/12/16	BAK	07/12/16 12:28	DRC
Static Water Level (ft)	4.45	N/A	N/A		1	07/12/16	BAK	07/12/16 12:28	DRC
Total Volume Purged (gal)	2.25	N/A	N/A		1	07/12/16	BAK	07/12/16 12:28	DRC
Total Well Depth (ft)	25.0	N/A	N/A		1	07/12/16	BAK	07/12/16 12:28	DRC
Well Diameter (in)	2.00	N/A	N/A		1	07/12/16	BAK	07/12/16 12:28	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	123	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 12:04	CEM
Isopropylbenzene	41.1	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 12:04	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 12:04	CEM
Naphthalene	149	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 12:04	CEM
1,3,5-Trimethylbenzene	137	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 12:04	CEM

Report Generated On: 07/22/2016 4:34 pm
STL_Results Revision #1.6

6064766
Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 6064766-03
Collector: DRC-STL

Site: MW 3
Collect Date: 07/12/2016 12:28 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Ethyl Benzene	704	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 7:49	SUBURBAN
1,2,4-Trimethylbenzene	375	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 7:49	SUBURBAN
Xylenes, Total	3640	µg/L	SW 846 8260B	10.0	10	07/21/16	CEM	07/22/16 7:49	SUBURBAN
Toluene	4880	µg/L	SW 846 8260B	10.0	20	07/21/16	CEM	07/22/16 11:22	SUBURBAN

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	45.5	µg/L	SW 846 8260B	91%	1	72-136	07/21/16 12:04
Surrogate: 1,2-Dichloroethane-d4	47.6	µg/L	SW 846 8260B	95%	1	79-135	07/21/16 12:04
Surrogate: Toluene-d8	51.1	µg/L	SW 846 8260B	102%	1	88-112	07/21/16 12:04
Surrogate: Bromofluorobenzene	57.9	µg/L	SW 846 8260B	116%	1	75-117	07/21/16 12:04
Surrogate: Dibromofluoromethane	51.6	µg/L	SW 846 8260B	103%	10	72-136	07/22/16 7:49
Surrogate: 1,2-Dichloroethane-d4	49.1	µg/L	SW 846 8260B	98%	10	79-135	07/22/16 7:49
Surrogate: Toluene-d8	50.6	µg/L	SW 846 8260B	101%	10	88-112	07/22/16 7:49
Surrogate: Bromofluorobenzene	58.3	µg/L	SW 846 8260B	117%	10	75-117	07/22/16 7:49
Surrogate: Dibromofluoromethane	53.3	µg/L	SW 846 8260B	107%	20	72-136	07/22/16 11:22
Surrogate: 1,2-Dichloroethane-d4	49.2	µg/L	SW 846 8260B	98%	20	79-135	07/22/16 11:22
Surrogate: Toluene-d8	50.3	µg/L	SW 846 8260B	101%	20	88-112	07/22/16 11:22
Surrogate: Bromofluorobenzene	58.5	µg/L	SW 846 8260B	117%	20	75-117	07/22/16 11:22

Sample Number: 6064766-04
Collector: DRC-STL

Site: MW 4
Collect Date: 07/12/2016 1:15 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Conventional Chemistry Parameters by SM/EPA Methods

W-TOC

Total Organic Carbon	9.79	mg/l	SM 5310 C-11	5.00	10	07/18/16	bdw	07/19/16 11:44	bdw
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.0	N/A	N/A		1	07/12/16	BAK	07/12/16 13:15	DRC
Static Water Level (ft)	5.34	N/A	N/A		1	07/12/16	BAK	07/12/16 13:15	DRC
Total Volume Purged (gal)	2.70	N/A	N/A		1	07/12/16	BAK	07/12/16 13:15	DRC
Total Well Depth (ft)	19.0	N/A	N/A		1	07/12/16	BAK	07/12/16 13:15	DRC
Well Diameter (in)	2.00	N/A	N/A		1	07/12/16	BAK	07/12/16 13:15	DRC

Inorganics

Chemical Oxygen Demand	50.0	mg/L	SM 5220-D	5.00	1	07/15/16	KLS	07/15/16 12:54	KLS
Nitrate as N	< 1.00	mg/L	EPA 300.0	1.00	1	07/13/16	MRW	07/13/16 7:42	MRW

Report Generated On: 07/22/2016 4:34 pm
STL_Results Revision #1.6

6064766
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 6064766-04
Collector: DRC-STL

Site: MW 4
Collect Date: 07/12/2016 1:15 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Inorganics (Continued)

Sulfate	< 5.00	mg/L	EPA 300.0	5.00	1	07/13/16	MRW	07/13/16 7:42	MRW
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Metals

Iron, Dissolved	33.3	mg/L	EPA 200.8	0.500	5	07/19/16	RPV	07/19/16 23:42	RPV
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Volatiles

VOA, 8260, USTUnleaded

Isopropylbenzene	57.6	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 12:31	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 12:31	CEM
Naphthalene	218	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 12:31	CEM
Benzene	528	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 10:53	CEM
Ethyl Benzene	522	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 10:53	CEM
Toluene	1730	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 10:53	CEM
1,3,5-Trimethylbenzene	105	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 10:53	CEM
1,2,4-Trimethylbenzene	416	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 10:53	CEM
Xylenes, Total	2270	µg/L	SW 846 8260B	10.0	10	07/21/16	CEM	07/22/16 10:53	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	40.4	µg/L	SW 846 8260B	81%	1	72-136	07/21/16 12:31
Surrogate: 1,2-Dichloroethane-d4	47.3	µg/L	SW 846 8260B	95%	1	79-135	07/21/16 12:31
Surrogate: Toluene-d8	48.4	µg/L	SW 846 8260B	97%	1	88-112	07/21/16 12:31
Surrogate: Bromofluorobenzene	57.6	µg/L	SW 846 8260B	115%	1	75-117	07/21/16 12:31
Surrogate: Dibromofluoromethane	49.1	µg/L	SW 846 8260B	98%	10	72-136	07/22/16 10:53
Surrogate: 1,2-Dichloroethane-d4	45.2	µg/L	SW 846 8260B	90%	10	79-135	07/22/16 10:53
Surrogate: Toluene-d8	49.6	µg/L	SW 846 8260B	99%	10	88-112	07/22/16 10:53
Surrogate: Bromofluorobenzene	57.4	µg/L	SW 846 8260B	115%	10	75-117	07/22/16 10:53

Sample Number: 6064766-05
Collector: DRC-STL

Site: MW 5
Collect Date: 07/12/2016 11:04 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.0	N/A	N/A		1	07/12/16	BAK	07/12/16 11:04	DRC
Static Water Level (ft)	4.29	N/A	N/A		1	07/12/16	BAK	07/12/16 11:04	DRC
Total Volume Purged (gal)	2.85	N/A	N/A		1	07/12/16	BAK	07/12/16 11:04	DRC
Total Well Depth (ft)	27.0	N/A	N/A		1	07/12/16	BAK	07/12/16 11:04	DRC
Well Diameter (in)	2.00	N/A	N/A		1	07/12/16	BAK	07/12/16 11:04	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	267	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:25	SUBUR BANlo
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Report Generated On: 07/22/2016 4:34 pm
STL_Results Revision #1.6

6064766
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 6064766-05
Collector: DRC-STL

Site: MW 5
Collect Date: 07/12/2016 11:04 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Ethyl Benzene	229	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:25	SUBURBAN
Isopropylbenzene	9.7	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:25	SUBURBAN
Methyl-t-butyl ether (MTBE)	6.8	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:25	SUBURBAN
Naphthalene	40.1	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:25	SUBURBAN
Toluene	203	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:25	SUBURBAN
1,3,5-Trimethylbenzene	21.0	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:25	SUBURBAN
1,2,4-Trimethylbenzene	94.4	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:25	SUBURBAN
Xylenes, Total	538	µg/L	SW 846 8260B	1.0	1	07/21/16	CEM	07/22/16 6:25	SUBURBAN

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	47.7	µg/L	SW 846 8260B	95%	1	72-136	07/22/16 6:25
Surrogate: 1,2-Dichloroethane-d4	46.1	µg/L	SW 846 8260B	92%	1	79-135	07/22/16 6:25
Surrogate: Toluene-d8	51.0	µg/L	SW 846 8260B	102%	1	88-112	07/22/16 6:25
Surrogate: Bromofluorobenzene	58.8 V	µg/L	SW 846 8260B	118%	1	75-117	07/22/16 6:25

Sample Number: 6064766-06
Collector: DRC-STL

Site: TRIP BLANK DAY 1 OF SAMPLING
Collect Date: 07/11/2016 6:35 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:09	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:09	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:09	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:09	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:09	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:09	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:09	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:09	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	07/21/16	CEM	07/21/16 11:09	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	56.7	µg/L	SW 846 8260B	113%	1	72-136	07/21/16 11:09
Surrogate: 1,2-Dichloroethane-d4	54.2	µg/L	SW 846 8260B	108%	1	79-135	07/21/16 11:09
Surrogate: Toluene-d8	48.5	µg/L	SW 846 8260B	97%	1	88-112	07/21/16 11:09
Surrogate: Bromofluorobenzene	49.9	µg/L	SW 846 8260B	100%	1	75-117	07/21/16 11:09

Report Generated On: 07/22/2016 4:34 pm
STL_Results Revision #1.6

6064766
Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 6064766-06
Collector: DRC-STL

Site: TRIP BLANK DAY 1 OF SAMPLING
Collect Date: 07/11/2016 6:35 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

Sample Number: 6064766-07
Collector: DRC-STL

Site: MW 6
Collect Date: 07/11/2016 12:22 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.0	N/A	N/A		1	07/11/16	BAK	07/11/16 12:22	DRC
Static Water Level (ft)	2.66	N/A	N/A		1	07/11/16	BAK	07/11/16 12:22	DRC
Total Volume Purged (gal)	2.31	N/A	N/A		1	07/11/16	BAK	07/11/16 12:22	DRC
Total Well Depth (ft)	20.0	N/A	N/A		1	07/11/16	BAK	07/11/16 12:22	DRC
Well Diameter (in)	2.00	N/A	N/A		1	07/11/16	BAK	07/11/16 12:22	DRC

Inorganics

Nitrate as N	6.86	mg/L	EPA 300.0	1.00	1	07/12/16	MRW	07/12/16 8:43	MRW
Sulfate	< 5.00	mg/L	EPA 300.0	5.00	1	07/12/16	MRW	07/12/16 8:43	MRW

Metals

Iron, Dissolved	0.142	mg/L	EPA 200.8	0.100	1	07/19/16	RPV	07/19/16 23:48	RPV
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Sample Number: 6064766-08
Collector: DRC-STL

Site: MW 7
Collect Date: 07/12/2016 11:48 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	8.00	N/A	N/A		1	07/12/16	BAK	07/12/16 11:48	DRC
Static Water Level (ft)	5.55	N/A	N/A		1	07/12/16	BAK	07/12/16 11:48	DRC
Total Volume Purged (gal)	2.37	N/A	N/A		1	07/12/16	BAK	07/12/16 11:48	DRC
Total Well Depth (ft)	20.0	N/A	N/A		1	07/12/16	BAK	07/12/16 11:48	DRC
Well Diameter (in)	2.00	N/A	N/A		1	07/12/16	BAK	07/12/16 11:48	DRC

Inorganics

Nitrate as N	< 1.00	mg/L	EPA 300.0	1.00	1	07/13/16	MRW	07/13/16 6:23	MRW
Sulfate	31.8	mg/L	EPA 300.0	5.00	1	07/13/16	MRW	07/13/16 6:23	MRW

Metals

Iron, Dissolved	30.9	mg/L	EPA 200.8	0.500	50	07/19/16	RPV	07/20/16 16:42	RPV
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Volatiles

VOA, 8260, USTUnleaded

Isopropylbenzene	86.6	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 13:26	CEM
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Report Generated On: 07/22/2016 4:34 pm
STL_Results Revision #1.6

6064766
Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 6064766-08
Collector: DRC-STL

Site: MW 7
Collect Date: 07/12/2016 11:48 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 13:26	CEM
Naphthalene	332	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 13:26	CEM
1,3,5-Trimethylbenzene	274	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 13:26	CEM
Benzene	1370	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 8:46	SUBUR BANio
Ethyl Benzene	669	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 8:46	SUBUR BANio
Toluene	1170	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 8:46	SUBUR BANio
1,2,4-Trimethylbenzene	658	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 8:46	SUBUR BANio
Xylenes, Total	4260	µg/L	SW 846 8260B	10.0	10	07/21/16	CEM	07/22/16 8:46	SUBUR BANio

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	41.4	µg/L	SW 846 8260B	83%	1	72-136	07/21/16 13:26
Surrogate: 1,2-Dichloroethane-d4	44.6	µg/L	SW 846 8260B	89%	1	79-135	07/21/16 13:26
Surrogate: Toluene-d8	51.3	µg/L	SW 846 8260B	103%	1	88-112	07/21/16 13:26
Surrogate: Bromofluorobenzene	59.4	µg/L	SW 846 8260B	119%	1	75-117	07/21/16 13:26
Surrogate: Dibromofluoromethane	48.5	µg/L	SW 846 8260B	97%	10	72-136	07/22/16 8:46
Surrogate: 1,2-Dichloroethane-d4	46.0	µg/L	SW 846 8260B	92%	10	79-135	07/22/16 8:46
Surrogate: Toluene-d8	48.1	µg/L	SW 846 8260B	96%	10	88-112	07/22/16 8:46
Surrogate: Bromofluorobenzene	57.2	µg/L	SW 846 8260B	114%	10	75-117	07/22/16 8:46

Sample Number: 6064766-10
Collector: DRC-STL

Site: MW 9
Collect Date: 07/12/2016 9:38 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.0	N/A	N/A		1	07/12/16	BAK	07/12/16 9:38	DRC
Static Water Level (ft)	3.41	N/A	N/A		1	07/12/16	BAK	07/12/16 9:38	DRC
Total Volume Purged (gal)	4.16	N/A	N/A		1	07/12/16	BAK	07/12/16 9:38	DRC
Total Well Depth (ft)	20.0	N/A	N/A		1	07/12/16	BAK	07/12/16 9:38	DRC
Well Diameter (in)	2.00	N/A	N/A		1	07/12/16	BAK	07/12/16 9:38	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	4.6	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:53	SUBUR BANio
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:53	SUBUR BANio

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STL_Results Revision #1.6

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Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 6064766-10
Collector: DRC-STL

Site: MW 9
Collect Date: 07/12/2016 9:38 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
<u>Volatiles</u> (Continued)									
VOA, 8260, USTUnleaded (Continued)									
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:53	SUBURBANlo
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:53	SUBURBANlo
Naphthalene	5.8	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:53	SUBURBANlo
Toluene	0.6	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:53	SUBURBANlo
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:53	SUBURBANlo
1,2,4-Trimethylbenzene	0.6	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 6:53	SUBURBANlo
Xylenes, Total	1.7	µg/L	SW 846 8260B	1.0	1	07/21/16	CEM	07/22/16 6:53	SUBURBANlo

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	51.1	µg/L	SW 846 8260B	102%	1	72-136	07/22/16 6:53
Surrogate: 1,2-Dichloroethane-d4	49.5	µg/L	SW 846 8260B	99%	1	79-135	07/22/16 6:53
Surrogate: Toluene-d8	50.3	µg/L	SW 846 8260B	101%	1	88-112	07/22/16 6:53
Surrogate: Bromofluorobenzene	54.9	µg/L	SW 846 8260B	110%	1	75-117	07/22/16 6:53

Sample Number: 6064766-11
Collector: DRC-STL

Site: MW 10
Collect Date: 07/12/2016 8:34 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
<u>Conventional Chemistry Parameters by SM/EPA Methods</u>									
W-TOC									
Total Organic Carbon	5.29 2a	mg/l	SM 5310 C-11	0.500	1	07/18/16	bdw	07/19/16 11:59	bdw
<u>General Method</u>									
<u>Monitor Well Sampling</u>									
Sampling Depth (ft)	10.0	N/A	N/A		1	07/12/16	BAK	07/12/16 8:34	DRC
Static Water Level (ft)	5.88	N/A	N/A		1	07/12/16	BAK	07/12/16 8:34	DRC
Total Volume Purged (gal)	2.70	N/A	N/A		1	07/12/16	BAK	07/12/16 8:34	DRC
Total Well Depth (ft)	20.0	N/A	N/A		1	07/12/16	BAK	07/12/16 8:34	DRC
Well Diameter (in)	2.00	N/A	N/A		1	07/12/16	BAK	07/12/16 8:34	DRC

Inorganics

Chemical Oxygen Demand	47.0	mg/L	SM 5220-D	5.00	1	07/15/16	KLS	07/15/16 12:54	KLS
Nitrate as N	< 1.00	mg/L	EPA 300.0	1.00	1	07/13/16	MRW	07/13/16 7:58	MRW
Sulfate	< 5.00	mg/L	EPA 300.0	5.00	1	07/13/16	MRW	07/13/16 7:58	MRW

Metals

Report Generated On: 07/22/2016 4:34 pm
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6064766
Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 6064766-11
Collector: DRC-STL

Site: MW 10
Collect Date: 07/12/2016 8:34 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Metals (Continued)

Iron, Dissolved	17.3	mg/L	EPA 200.8	0.100	1	07/19/16	RPV	07/19/16 23:58	RPV
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Volatiles

VOA, 8260, USTUnleaded

Ethyl Benzene	7.0	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 14:21	CEM
Isopropylbenzene	17.2	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 14:21	CEM
Methyl-t-butyl ether (MTBE)	72.9	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 14:21	CEM
Naphthalene	30.0	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 14:21	CEM
Toluene	7.7	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 14:21	CEM
1,3,5-Trimethylbenzene	2.0	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 14:21	CEM
1,2,4-Trimethylbenzene	1.7	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 14:21	CEM
Xylenes, Total	9.8	µg/L	SW 846 8260B	1.0	1	07/21/16	CEM	07/21/16 14:21	CEM
Benzene	1340	µg/L	SW 846 8260B	5.0	10	07/21/16	CEM	07/22/16 9:14	SUBURBAN

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	46.2	µg/L	SW 846 8260B	92%	1	72-136	07/21/16 14:21
Surrogate: 1,2-Dichloroethane-d4	45.0	µg/L	SW 846 8260B	90%	1	79-135	07/21/16 14:21
Surrogate: Toluene-d8	51.8	µg/L	SW 846 8260B	104%	1	88-112	07/21/16 14:21
Surrogate: Bromofluorobenzene	57.5	µg/L	SW 846 8260B	115%	1	75-117	07/21/16 14:21
Surrogate: Dibromofluoromethane	49.4	µg/L	SW 846 8260B	99%	10	72-136	07/22/16 9:14
Surrogate: 1,2-Dichloroethane-d4	47.8	µg/L	SW 846 8260B	96%	10	79-135	07/22/16 9:14
Surrogate: Toluene-d8	47.4	µg/L	SW 846 8260B	95%	10	88-112	07/22/16 9:14
Surrogate: Bromofluorobenzene	52.1	µg/L	SW 846 8260B	104%	10	75-117	07/22/16 9:14

Sample Number: 6064766-12
Collector: DRC-STL

Site: TRIP BLANK DAY 2 OF SAMPLING
Collect Date: 07/11/2016 6:35 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:37	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:37	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:37	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:37	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:37	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:37	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:37	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/21/16 11:37	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	07/21/16	CEM	07/21/16 11:37	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	57.4	µg/L	SW 846 8260B	115%	1	72-136	07/21/16 11:37

Report Generated On: 07/22/2016 4:34 pm
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SUBURBAN TESTING LABS

Sample Number: 6064766-12

Site: TRIP BLANK DAY 2 OF SAMPLING

Sample ID:

Collector: DRC-STL

Collect Date: 07/11/2016 6:35 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries (Continued)	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: 1,2-Dichloroethane-d4	54.0	µg/L	SW 846 8260B	108%	1	79-135	07/21/16 11:37
Surrogate: Toluene-d8	49.4	µg/L	SW 846 8260B	99%	1	88-112	07/21/16 11:37
Surrogate: Bromofluorobenzene	51.1	µg/L	SW 846 8260B	102%	1	75-117	07/21/16 11:37

Sample Number: 6064766-13

Site: MW 11

Sample ID:

Collector: DRC-STL

Collect Date: 07/12/2016 10:15 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Conventional Chemistry Parameters by SM/EPA Methods

W-TOC

Total Organic Carbon	0.831	mg/l	SM 5310 C-11	0.500	1	07/18/16	bdw	07/19/16 12:16	bdw
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General Method

Monitor Well Sampling

Sampling Depth (ft)	11.5	N/A	N/A		1	07/12/16	BAK	07/12/16 10:15	DRC
Static Water Level (ft)	0.840	N/A	N/A		1	07/12/16	BAK	07/12/16 10:15	DRC
Total Volume Purged (gal)	1.84	N/A	N/A		1	07/12/16	BAK	07/12/16 10:15	DRC
Total Well Depth (ft)	12.5	N/A	N/A		1	07/12/16	BAK	07/12/16 10:15	DRC
Well Diameter (in)	2.00	N/A	N/A		1	07/12/16	BAK	07/12/16 10:15	DRC

Inorganics

Chemical Oxygen Demand	< 5.00	mg/L	SM 5220-D	5.00	1	07/15/16	KLS	07/15/16 12:54	KLS
Nitrate as N	2.35	mg/L	EPA 300.0	1.00	1	07/13/16	MRW	07/13/16 8:14	MRW
Sulfate	< 5.00	mg/L	EPA 300.0	5.00	1	07/13/16	MRW	07/13/16 8:14	MRW

Metals

Iron, Dissolved	< 0.100	mg/L	EPA 200.8	0.100	1	07/19/16	RPV	07/20/16 0:04	RPV
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Volatiles

VOA, 8260, USTUnleaded

Benzene	14.7	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 7:21	SUBUR BANlo
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 7:21	SUBUR BANlo
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 7:21	SUBUR BANlo
Methyl-t-butyl ether (MTBE)	12.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 7:21	SUBUR BANlo
Naphthalene	5.8	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 7:21	SUBUR BANlo

Report Generated On: 07/22/2016 4:34 pm

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Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 6064766-13
Collector: DRC-STL

Site: MW 11
Collect Date: 07/12/2016 10:15 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 7:21	SUBURBAN
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 7:21	SUBURBAN
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/21/16	CEM	07/22/16 7:21	SUBURBAN
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	07/21/16	CEM	07/22/16 7:21	SUBURBAN

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	54.0	µg/L	SW 846 8260B	108%	1	72-136	07/22/16 7:21
Surrogate: 1,2-Dichloroethane-d4	50.6	µg/L	SW 846 8260B	101%	1	79-135	07/22/16 7:21
Surrogate: Toluene-d8	49.0	µg/L	SW 846 8260B	98%	1	88-112	07/22/16 7:21
Surrogate: Bromofluorobenzene	52.2	µg/L	SW 846 8260B	104%	1	75-117	07/22/16 7:21

Sample Number: 6064766-14
Collector: DRC-STL

Site: MW 12
Collect Date: 07/11/2016 10:58 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	9.00	N/A	N/A		1	07/11/16	BAK	07/11/16 10:58	DRC
Static Water Level (ft)	3.71	N/A	N/A		1	07/11/16	BAK	07/11/16 10:58	DRC
Total Volume Purged (gal)	2.11	N/A	N/A		1	07/11/16	BAK	07/11/16 10:58	DRC
Total Well Depth (ft)	12.0	N/A	N/A		1	07/11/16	BAK	07/11/16 10:58	DRC
Well Diameter (in)	2.00	N/A	N/A		1	07/11/16	BAK	07/11/16 10:58	DRC

Inorganics

Nitrate as N	3.74	mg/L	EPA 300.0	1.00	1	07/12/16	MRW	07/12/16 8:58	MRW
Sulfate	< 5.00	mg/L	EPA 300.0	5.00	1	07/12/16	MRW	07/12/16 8:58	MRW

Metals

Iron, Dissolved	< 0.100	mg/L	EPA 200.8	0.100	1	07/19/16	RPV	07/20/16 0:25	RPV
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Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:09	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:09	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:09	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:09	CEM
Naphthalene	< 0.5 B	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:09	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:09	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:09	CEM

Report Generated On: 07/22/2016 4:34 pm
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6064766
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 6064766-14
Collector: DRC-STL

Site: MW 12
Collect Date: 07/11/2016 10:58 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:09	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	07/14/16	CEM	07/14/16 14:09	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	56.8	µg/L	SW 846 8260B	114%	1	72-136	07/14/16 14:09
Surrogate: 1,2-Dichloroethane-d4	53.6	µg/L	SW 846 8260B	107%	1	79-135	07/14/16 14:09
Surrogate: Toluene-d8	50.0	µg/L	SW 846 8260B	100%	1	88-112	07/14/16 14:09
Surrogate: Bromofluorobenzene	47.0	µg/L	SW 846 8260B	94%	1	75-117	07/14/16 14:09

Sample Number: 6064766-15
Collector: DRC-STL

Site: MW 13
Collect Date: 07/11/2016 10:08 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	9.00	N/A	N/A		1	07/11/16	BAK	07/11/16 10:08	DRC
Static Water Level (ft)	5.02	N/A	N/A		1	07/11/16	BAK	07/11/16 10:08	DRC
Total Volume Purged (gal)	2.70	N/A	N/A		1	07/11/16	BAK	07/11/16 10:08	DRC
Total Well Depth (ft)	12.0	N/A	N/A		1	07/11/16	BAK	07/11/16 10:08	DRC
Well Diameter (in)	2.00	N/A	N/A		1	07/11/16	BAK	07/11/16 10:08	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:37	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:37	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:37	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:37	CEM
Naphthalene	< 0.5 B	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:37	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:37	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:37	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 14:37	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	07/14/16	CEM	07/14/16 14:37	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	58.5	µg/L	SW 846 8260B	117%	1	72-136	07/14/16 14:37
Surrogate: 1,2-Dichloroethane-d4	54.2	µg/L	SW 846 8260B	108%	1	79-135	07/14/16 14:37
Surrogate: Toluene-d8	49.4	µg/L	SW 846 8260B	99%	1	88-112	07/14/16 14:37
Surrogate: Bromofluorobenzene	46.6	µg/L	SW 846 8260B	93%	1	75-117	07/14/16 14:37

Report Generated On: 07/22/2016 4:34 pm 6064766
STL_Results Revision #1.6 Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 6064766-16

Site: SW

Sample ID:

Collector: DRC-STL

Collect Date: 07/11/2016 1:28 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	100	N/A	N/A		1	07/11/16	BAK	07/11/16 13:28	DRC
Static Water Level (ft)	5.85	N/A	N/A		1	07/11/16	BAK	07/11/16 13:28	DRC
Total Volume Purged (gal)	5.35	N/A	N/A		1	07/11/16	BAK	07/11/16 13:28	DRC
Total Well Depth (ft)	0.00	N/A	N/A		1	07/11/16	BAK	07/11/16 13:28	DRC
Well Diameter (in)	0.00	N/A	N/A		1	07/11/16	BAK	07/11/16 13:28	DRC

Volatiles

VOA, 8260, USTUnleaded

Isopropylbenzene	29.0	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 15:03	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 15:03	CEM
1,3,5-Trimethylbenzene	88.6	µg/L	SW 846 8260B	0.5	1	07/14/16	CEM	07/14/16 15:03	CEM
Benzene	2080	µg/L	SW 846 8260B	5.0	10	07/20/16	CEM	07/21/16 5:09	CEM
Ethyl Benzene	1160	µg/L	SW 846 8260B	5.0	10	07/20/16	CEM	07/21/16 5:09	CEM
Naphthalene	142	µg/L	SW 846 8260B	5.0	10	07/20/16	CEM	07/21/16 5:09	CEM
Toluene	2830	µg/L	SW 846 8260B	5.0	10	07/20/16	CEM	07/21/16 5:09	CEM
1,2,4-Trimethylbenzene	508	µg/L	SW 846 8260B	5.0	10	07/20/16	CEM	07/21/16 5:09	CEM
Xylenes, Total	2440	µg/L	SW 846 8260B	10.0	10	07/20/16	CEM	07/21/16 5:09	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	46.0	µg/L	SW 846 8260B	92%	1	72-136	07/14/16 15:03
Surrogate: 1,2-Dichloroethane-d4	46.3	µg/L	SW 846 8260B	93%	1	79-135	07/14/16 15:03
Surrogate: Toluene-d8	51.1	µg/L	SW 846 8260B	102%	1	88-112	07/14/16 15:03
Surrogate: Bromofluorobenzene	54.0	µg/L	SW 846 8260B	108%	1	75-117	07/14/16 15:03
Surrogate: Dibromofluoromethane	50.5	µg/L	SW 846 8260B	101%	10	72-136	07/21/16 5:09
Surrogate: 1,2-Dichloroethane-d4	47.5	µg/L	SW 846 8260B	95%	10	79-135	07/21/16 5:09
Surrogate: Toluene-d8	48.0	µg/L	SW 846 8260B	96%	10	88-112	07/21/16 5:09
Surrogate: Bromofluorobenzene	61.7 V	µg/L	SW 846 8260B	123%	10	75-117	07/21/16 5:09

Data Qualifiers:

- 2a The RPD result exceeded the QC control limits for the duplicate, LCSD or MSD sample analyzed. Data accepted based on additional batch QC.
- B The target analyte was detected in the Method Blank, Dilution Water Blank, or Sterility Check at or above the method Reporting Limit or applicable method, client, or regulatory requirement.
- V The surrogate associated with this sample was not within the established acceptance criteria.

Work Order Memo

SUB: SM 5310 C-11 performed by Lab ID# 07-0062.

Report Generated On: 07/22/2016 4:34 pm

6064766

STL_Results Revision #1.6

Effective: 07/09/2014

1037F MacArthur Road, Reading, PA 19605

Phone: 800-433-6595

Fax: 610-375-4090

suburbantestinglabs.com

SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

All results meet the requirements of STL's TNI (NELAC) Accredited Quality System unless otherwise noted. If your results contain any data qualifiers or comments, you should evaluate useability relative to your needs.

If collectors initials include "STL", samples have been collected in accordance with STL SOP SL0015.

All results reported on an As Received (Wet Weight) basis unless otherwise noted.

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Results are considered Preliminary unless report is signed by authorized representative of STL.

Reviewed and Released By:

Deborah Hannum
Project Manager

Report Generated On: 07/22/2016 4:34 pm 6064766
STL_Results Revision #1.6 Effective: 07/09/2014





SUBURBAN TESTING LABS

Chain of Custody Record

1037F MacArthur Road, Reading, PA 19605
Phone: 610-375-8378 - Fax: 610-375-4090 - suburbantestinglabs.com

TAT (Circle One): Standard - 24hr - 48hr - 72hr - Other _____
(Additional charges may apply for rush TAT. If not specified, standard TAT will apply.)

ORDER ID: 6064766



Client Name / Address:

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Phone: (717) 394-1063
Fax:

Project Name / Address:

Herr Foods- Monitoring Wells July 2016

Client Project Manager: Ed Dziedzic

Payment / P.O. Info:

Project Description:

Order Comments: Monitoring Well Collection = \$65/hour; Travel time to/from site = \$40/hour; Equipment Rental = \$115 flat fee per event;

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6064766-01	MW 1		7/11/16 1138	DRC	Non-potable	Grab	

Container Type / Preservation

Preservation Check

None	A
500 mL Plastic	B
Field Services	C
500 mL Plastic - Cool to 6 C	D

Analysis - Method

Field Results

General Method

Monitor Well Sampling - N/A

Inorganics

Nitrate as N - EPA 300.0

Sulfate - EPA 300.0

Metals

Iron, 200.8, Dissolved - EPA 200.8

Unassigned

Admin, Miscellaneous - N/A

Sample Collection, Custom 3 - SL0015

6064766-03	MW 3		7/12/16 1228	DRC	Non-potable	Grab	
------------	------	--	--------------	-----	-------------	------	--

Container Type / Preservation

Preservation Check

Field Services	A
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D

Analysis - Method

Field Results

General Method

Monitor Well Sampling - N/A

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

PLEASE NOTE FOR FIELD TEAM:

TAKE WATER LEVELS ONLY AT MW-2, MW-8, ENDWALL

NO ANALYSES.

RECORD ON FIELD LOG. DMH 6/28/16



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6064766-04	MW 4		7/12/16 1315	DRC	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
500 mL Plastic - Cool to 6 C & H2SO4 to pH<2			A		General Method Monitor Well Sampling - N/A Inorganics COD - SM 5220-D Nitrate as N - EPA 300.0 Sulfate - EPA 300.0 TOC - SM 5310-C Metals Iron, 200.8, Dissolved - EPA 200.8 Volatiles VOA, 8260, USTUnleaded - SW 846 8260B		
500 mL Plastic			B				
Field Services			C				
500 mL Plastic - Cool to 6 C			D				
250 mL Glass Amber - Cool to 6 C & H2SO4 to pH<2			E				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			F				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			G				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			H				
6064766-05	MW 5		7/12/16 1104	DRC	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
Field Services			A		General Method Monitor Well Sampling - N/A Volatiles VOA, 8260, USTUnleaded - SW 846 8260B		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			B				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			C				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			D				
6064766-06	TRIP BLANK DAY 1 OF SAMPLING		7/11/16 0635	DRC	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
Field Services			A		Volatiles VOA, 8260, USTUnleaded - SW 846 8260B		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			B				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			C				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			D				



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6064766-07	MW 6		7/11/16 1222	DRC	Non-potable	Grab	

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
500 mL Plastic	A	General Method Monitor Well Sampling - N/A Inorganics Nitrate as N - EPA 300.0 Sulfate - EPA 300.0 Metals Iron, 200.8, Dissolved - EPA 200.8	
Field Services	B		
500 mL Plastic - Cool to 6 C	C		

6064766-08	MW 7		7/12/16 1149	DRC	Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
500 mL Plastic	A	General Method Monitor Well Sampling - N/A Inorganics Nitrate as N - EPA 300.0 Sulfate - EPA 300.0 Metals Iron, 200.8, Dissolved - EPA 200.8 Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
Field Services	B		
500 mL Plastic - Cool to 6 C	C		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	E		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	F		

6064766-10	MW 9		7/12/16 0938	DRC	Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	B	General Method Monitor Well Sampling - N/A Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	E		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	F		



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6064766-11	MW 10		7/12/16 0834	DRC	Non-potable	Grab	

Container Type / Preservation	Preservation Check
500 mL Plastic - Cool to 6 C & H2SO4 to pH<2	A
500 mL Plastic	B
Field Services	C
500 mL Plastic - Cool to 6 C	D
250 mL Glass Amber - Cool to 6 C & H2SO4 to pH<2	E
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	F
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	G
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	H

Analysis - Method	Field Results
-------------------	---------------

General Method

Monitor Well Sampling - N/A

Inorganics

COD - SM 5220-D

Nitrate as N - EPA 300.0

Sulfate - EPA 300.0

TOC - SM 5310-C

Metals

Iron, 200.8, Dissolved - EPA 200.8

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

6064766-12	TRIP BLANK DAY 2 OF SAMPLING		7/11/16 0635	DRC	Non-potable	Grab	
------------	------------------------------	--	--------------	-----	-------------	------	--

Container Type / Preservation	Preservation Check
Field Services	A
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D

Analysis - Method	Field Results
-------------------	---------------

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6064766-13	MW 11		7/12/16 1015	DRC	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
500 mL Plastic - Cool to 6 C & H2SO4 to pH<2			A		General Method Monitor Well Sampling - N/A Inorganics COD - SM 5220-D Nitrate as N - EPA 300.0 Sulfate - EPA 300.0 TOC - SM 5310-C Metals Iron, 200.8, Dissolved - EPA 200.8 Volatiles VOA, 8260, USTUnleaded - SW 846 8260B		
500 mL Plastic			B				
Field Services			C				
500 mL Plastic - Cool to 6 C			D				
250 mL Glass Amber - Cool to 6 C & H2SO4 to pH<2			E				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			F				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			G				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			H				
6064766-14	MW 12		7/11/16 1058	DRC	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
500 mL Plastic			A		General Method Monitor Well Sampling - N/A Inorganics Nitrate as N - EPA 300.0 Sulfate - EPA 300.0 Metals Iron, 200.8, Dissolved - EPA 200.8 Volatiles VOA, 8260, USTUnleaded - SW 846 8260B		
Field Services			B				
500 mL Plastic - Cool to 6 C			C				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			D				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			E				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			F				
6064766-15	MW 13		7/11/16 1008	DRC	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
Field Services			A		General Method Monitor Well Sampling - N/A Volatiles VOA, 8260, USTUnleaded - SW 846 8260B		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			B				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			C				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			D				



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6064766-16	SW		7/11/16 1328	DRC	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
Field Services			A		General Method Monitor Well Sampling - N/A Volatiles VOA, 8260, USTUnleaded - SW 846 8260B		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			B				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			C				
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl			D				

Suburban Testing Labs.
1037F MacArthur Road
Reading, PA 19605

In Lab Date/Time: 7/12/16 1455 In Lab Temp: 3.2

Submitted with COC? ☒ Y / ☐ N
Number of containers match number on COC? ☒ Y / ☐ N
All Containers in tact? ☒ Y / ☐ N
Tests within holding times? ☒ Y / ☐ N
40mL VOA vials free of headspace? ☒ Y / ☐ N

Relinquished by: [Signature] (38)

Received in Lab by: [Signature]

pH 1
DRC
7-12-16

MM-15

Relinquished By:	Date:	Temp (°C):	Sample Conditions	Sample Type Key	Reporting Options
	Time:	Acceptable?: Y / N	Submitted with COC? ☒ Y / ☐ N	G = Grab	☐ SDWA Reporting PWSID:
Received By:	Date:	Temp (°C):	Number of Containers	8HC = 8 Hr. Composite	☐ Fax
	Time:	Acceptable?: Y / N	Match Number of COC? ☒ Y / ☐ N	24HC = 24 Hr. Composite	☐ Email
Relinquished By:	Date: 7/11/16	Temp (°C): 4.4	All Containers Intact? ☒ Y / ☐ N	D = Distribution	☐ Return a copy of this form with Report
	Time: 1455	Acceptable?: ☒ Y / ☐ N	Tests within Holding Times? ☒ Y / ☐ N	S = Entry Point	☐ Other
Received in Lab By:	Date:	Temp (°C):	VOC Vials Free of Headspace? ☒ Y / ☐ N	R = Raw	
	Time:	Acceptable?: Y / N		C = Check	
				S = Special	
				M = Maximum Residence	

Signing this form indicates your agreement with STL's Standard Terms and Conditions (www.suburbantestinglabs.com/resources/standard-terms-and-conditions.html) unless otherwise specified in writing.

Shaded areas are for SWTL use only

7/11/16

Date

Location Herricks

Project / Client Retlaw - Lancaster

6064766

Arrived on Site - 0820

Well Static WL (ft b TAC)

MW-1 3.54

MW-2 4.19

MW-3 4.45

MW-4 5.34

MW-5 4.29

MW-6 2.66

MW-7 5.55

MW-8 3.44

MW-9 3.41

MW-10 3.88

MW-11 0.84 (Top of steel casing) *

MW-12 3.71

MW-13 5.02

SW- 5.85

Endwall - 3.56

* Average water level over the pipe casing



Results Report

Order ID: 6074527

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Project: Herr Foods- Monitoring Wells July 2016

Attn: Ed Dziedzic

Regulatory ID:

Sample Number: 6074527-01
Collector: DRC-STL

Site: MW 1
Collect Date: 07/11/2016 11:38 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
-------------------------------	--------	-------	--------	------	----	-----------	----	---------------	----

Metals

Iron	0.124	mg/L	EPA 200.8	0.100	1	08/01/16	RPV	08/04/16 17:34	RPV
------	-------	------	-----------	-------	---	----------	-----	----------------	-----

Sample Number: 6074527-02
Collector: DRC-STL

Site: MW 4
Collect Date: 07/12/2016 1:15 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
-------------------------------	--------	-------	--------	------	----	-----------	----	---------------	----

Metals

Iron	47.6	mg/L	EPA 200.8	0.500	1	08/01/16	RPV	08/04/16 17:53	RPV
------	------	------	-----------	-------	---	----------	-----	----------------	-----

Sample Number: 6074527-03
Collector: DRC-STL

Site: MW 6
Collect Date: 07/11/2016 12:22 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
-------------------------------	--------	-------	--------	------	----	-----------	----	---------------	----

Metals

Iron	0.261	mg/L	EPA 200.8	0.100	1	08/01/16	RPV	08/04/16 18:15	RPV
------	-------	------	-----------	-------	---	----------	-----	----------------	-----

Sample Number: 6074527-04
Collector: DRC-STL

Site: MW 7
Collect Date: 07/12/2016 11:48 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
-------------------------------	--------	-------	--------	------	----	-----------	----	---------------	----

Metals

Iron	22.1	mg/L	EPA 200.8	0.100	1	08/01/16	RPV	08/04/16 18:23	RPV
------	------	------	-----------	-------	---	----------	-----	----------------	-----

Sample Number: 6074527-05
Collector: DRC-STL

Site: MW 10
Collect Date: 07/12/2016 8:34 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
-------------------------------	--------	-------	--------	------	----	-----------	----	---------------	----

Metals

Iron	16.9	mg/L	EPA 200.8	0.100	1	08/01/16	RPV	08/04/16 18:28	RPV
------	------	------	-----------	-------	---	----------	-----	----------------	-----

Report Generated On: 08/09/2016 4:26 pm
STL_Results Revision #1.6

6074527
Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 6074527-06

Site: MW 11

Sample ID:

Collector: DRC-STL

Collect Date: 07/12/2016 10:15 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
-------------------------------	--------	-------	--------	------	----	-----------	----	---------------	----

Metals

Iron	< 0.100	mg/L	EPA 200.8	0.100	1	08/01/16	RPV	08/04/16 18:34	RPV
------	---------	------	-----------	-------	---	----------	-----	----------------	-----

Sample Number: 6074527-07

Site: MW 12

Sample ID:

Collector: DRC-STL

Collect Date: 07/11/2016 10:58 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
-------------------------------	--------	-------	--------	------	----	-----------	----	---------------	----

Metals

Iron	0.117	mg/L	EPA 200.8	0.100	1	08/01/16	RPV	08/04/16 18:39	RPV
------	-------	------	-----------	-------	---	----------	-----	----------------	-----

Data Qualifiers:

Work Order Memo

SUB: SM 5310 C-11 performed by Lab ID# 07-0062.

All results meet the requirements of STL's TNI (NELAC) Accredited Quality System unless otherwise noted. If your results contain any data qualifiers or comments, you should evaluate useability relative to your needs.

If collectors initials include "STL", samples have been collected in accordance with STL SOP SL0015.

All results reported on an As Received (Wet Weight) basis unless otherwise noted.

This laboratory report may not be reproduced, except in full, without the written approval of STL.

Results are considered Preliminary unless report is signed by authorized representative of STL.

Reviewed and Released By:

Deborah Hannum
Project Manager

Report Generated On: 08/09/2016 4:26 pm
STL_Results Revision #1.6

6074527
Effective: 07/09/2014

1037F MacArthur Road, Reading, PA 19605 Phone: 800-433-6595 Fax: 610-375-4090 suburbantestinglabs.com

SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

Chain of Custody Record

1037F MacArthur Road, Reading, PA 19605
Phone: 610-375-8378 - Fax: 610-375-4090 - suburbantestinglabs.com

TAT (Circle One): Standard - 24hr - 48hr - 72hr - Other _____
(Additional charges may apply for rush TAT. If not specified, standard TAT will apply.)

ORDER ID: 6064766

Client Name / Address:

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Phone: (717) 394-1063
Fax:

Project Name / Address:

Herr Foods- Monitoring Wells July 2

Client Project Manager: Ed Dziedzic

Payment / P.O. Info:

6074527
Deborah Hannum

Project Description:

Order Comments: Monitoring Well Collection = \$65/hour; Travel time to/from site = \$40/hour; Equipment Rental = \$115 flat fee per event;

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6064766-01	MW-1		7/11/16 11:38	DRC	Non-potable	Grab	

Container Type / Preservation

None

A

500 mL Plastic

B

Field Services

C

500 mL Plastic - Cool to 6 C

D

Preservation Check

preserved until pH 2

which is A on 6074527

Analysis - Method

Field Results

General Method

Monitor Well Sampling - N/A

Inorganics

Nitrate as N - EPA 300.0

Sulfate - EPA 300.0

Metals

Iron, 200.8, Dissolved - EPA 200.8

Unassigned

Admin, Miscellaneous - N/A

Sample Collection, Custom 3 - SL0015

6064766-03 MW 3

7/12/16 12:28

DRC

Non-potable

Grab

Container Type / Preservation

Field Services

A

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

B

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

C

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

D

Preservation Check

Analysis - Method

Field Results

General Method

Monitor Well Sampling - N/A

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

PLEASE NOTE FOR FIELD TEAM:
TAKE WATER LEVELS ONLY AT MW-2, MW-8, END WALL
NO ANALYSES.
RECORD ON FIELD LOG. DMH 6/28/16

* Samples
01, 04, 07, 08,
011, 013, 014
preserved w/ HNO3 until
pH 2
Kaz 7/12/16



6074527
Deborah Hannum

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix
6064766-04	MW 4		7/12/16 1315	DRC	Non-potable

Container Type / Preservation

Preservation Check

Analysis - Method

500 mL Plastic - Cool to 6 C & H₂SO₄ to pH<2

A

500 mL Plastic

B

Field Services

C

500 mL Plastic - Cool to 6 C

D

250 mL Glass Amber - Cool to 6 C & H₂SO₄ to pH<2

E

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

F

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

G

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

H

General Method

Monitor Well Sampling - N/A

Inorganics

COD - SM 5220-D

Nitrate as N - EPA 300.0

Sulfate - EPA 300.0

TOC - SM 5310-C

Metals

Iron, 200.8; Dissolved - EPA 200.8

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

6074527-A
Preserved
pH until pH 2

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Grab
6064766-05	MW 5		7/12/16 1104	DRC	Non-potable	Grab

Container Type / Preservation

Preservation Check

Analysis - Method

Field Results

Field Services

A

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

B

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

C

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

D

General Method

Monitor Well Sampling - N/A

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Grab
6064766-06	TRIP BLANK DAY 1 OF SAMPLING		7/11/16 0635	DRC	Non-potable	Grab

Container Type / Preservation

Preservation Check

Analysis - Method

Field Results

Field Services

A

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

B

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

C

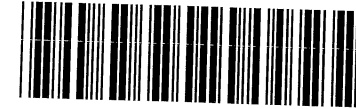
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

D

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix
6064766-07	MW 6		7/11/16 1222	DRC	Non-potable



6074527
Deborah Hannum

Container Type / Preservation	Preservation Check
500 mL Plastic	A
Field Services	B
500 mL Plastic - Cool to 6 C	C

Analysis - Method

General Method

Monitor Well Sampling - N/A

Inorganics

Nitrate as N - EPA 300.0

Sulfate - EPA 300.0

Metals

Iron, 200.8, Dissolved - EPA 200.8

preserved until
pH < 2, 6074527 A

6064766-08		MW-7		7/12/16 1149		DRC		Iron, 200.8, Dissolved - EPA 200.8		Non-potable		Grab			
Container Type / Preservation						Preservation Check				Analysis - Method				Field Results	
500 mL Plastic															

500 mL Plastic	A
Field Services	B
500 mL Plastic - Cool to 6 C	C
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	E
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	F

General Method

Monitor Well Sampling - N/A

Inorganics

Nitrate as N - EPA 300.0

Sulfate - EPA 300.0

Metals

Iron, 200.8, Dissolved - EPA 200.8

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

preserved until
pH < 2, 6074527 A

6064766-10		MW 9		7/12/16 0938		DRC		Non-potable		Grab					
Container Type / Preservation						Preservation Check				Analysis - Method				Field Results	
Field Services						B				General Method					
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl						D				Monitor Well Sampling - N/A					
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl						E				Volatiles					
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl						F				VOA, 8260, USTUnleaded - SW 846 8260B					

Field Services	B
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	E
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	F

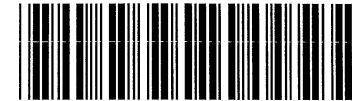
General Method

Monitor Well Sampling - N/A

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix
6064766-11	MW 10		7/12/16 0834	DRC	Non-potable



6074527
Deborah Hannum

Container Type / Preservation	Preservation Check
500 mL Plastic - Cool to 6 C & H2SO4 to pH<2	A
500 mL Plastic	B
Field Services	C
500 mL Plastic - Cool to 6 C	D
250 mL Glass Amber - Cool to 6 C & H2SO4 to pH<2	E
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	F
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	G
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	H

Analysis - Method

General Method

Monitor Well Sampling - N/A

Inorganics

COD - SM 5220-D

Nitrate as N - EPA 300.0

Sulfate - EPA 300.0

TOC - SM 5310-C

Metals

Iron, 200.8, Dissolved - EPA 200.8

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

6064766-12	TRIP BLANK DAY 2 OF SAMPLING		7/11/16 0635	DRC	Non-potable	Grab
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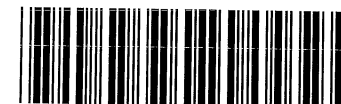
Container Type / Preservation	Preservation Check
Field Services	A
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D

Analysis - Method

Field Results

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B



6074527
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Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix
6064766-13	MW 11		7/12/16 1015	DRC	Non-potable

Container Type / Preservation

Preservation Check

Analysis - Method

500 mL Plastic - Cool to 6 C & H2SO4 to pH<2

A

500 mL Plastic

B

Field Services

C

500 mL Plastic - Cool to 6 C

D

250 mL Glass Amber - Cool to 6 C & H2SO4 to pH<2

E

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

F

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

G

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

H

General Method

Monitor Well Sampling - N/A

Inorganics

COD - SM 5220-D

Nitrate as N - EPA 300.0

Sulfate - EPA 300.0

TOC - SM 5310-C

Metals

Iron, 200.8, Dissolved - EPA 200.8

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

6064766-14 MW 12

7/11/16 1058

DRC

Non-potable

Grab

Container Type / Preservation

Preservation Check

Analysis - Method

Field Results

500 mL Plastic

A

Field Services

B

500 mL Plastic - Cool to 6 C

C

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

D

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

E

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

F

General Method

Monitor Well Sampling - N/A

Inorganics

Nitrate as N - EPA 300.0

Sulfate - EPA 300.0

Metals

Iron, 200.8, Dissolved - EPA 200.8

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

6064766-15 MW 13

7/11/16 1008

DRC

Non-potable

Grab

Container Type / Preservation

Preservation Check

Analysis - Method

Field Results

Field Services

A

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

B

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

C

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

D

General Method

Monitor Well Sampling - N/A

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

6074527
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Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix
6064766-16	SW		7/11/16 1328	DRC	Non-potable

Container Type / Preservation

Preservation Check

Analysis - Method

Field Services

A

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

B

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

C

40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl

D

General Method

Monitor Well Sampling - N/A

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

Suburban Testing Labs.
1037F MacArthur Road
Reading, PA 19605

In Lab Date/Time: 7/12/16 1455 In Lab Temp: 3.2

Submitted with COC?

Number of containers match number on COC?

All Containers in tact?

Tests within holding times?

40mL VOA vials free of headspace?

Relinquished by: [Signature]

Received in Lab by: [Signature]

pH J
DRC
7-12-16

MM-15

Relinquished By:	Date:	Temp (°C):	Sample Conditions	Sample Type Key	Reporting Options
	Time:	Acceptable?: Y / N	Submitted with COC? ☒ Y / N	G = Grab	☐ SDWA Reporting PWSID:
Received By:	Date:	Temp (°C):	Number of Containers	8HC = 8 Hr. Composite	☐ Fax
	Time:	Acceptable?: Y / N	Match Number of COC? ☒ Y / N	24HC = 24 Hr. Composite	☐ Email
Relinquished By:	Date: 7/11/16	Temp (°C): 4.4	All Containers Intact? ☒ Y / N	D = Distribution	☐ Return a copy of this form with Report
	Time: 1455	Acceptable?: ☒ Y / N	Tests within Holding Times? ☒ Y / N	S = Entry Point	☐ Other
Received in Lab By:	Date:	Temp (°C):	VOC Vials Free of Headspace? ☒ Y / N	D = Raw	
	Time:	Acceptable?: Y / N		C = Check	
				S = Special	
				M = Maximum Residence	

Signing this form indicates your agreement with STL's Standard Terms and Conditions (www.suburbantestinglabs.com/resources/standard-terms-and-conditions.html) unless otherwise specified in writing.

Shaded areas are for SWTL use only

wko_STL_Pregog_Is.rpt

Deborah Hannum

Date Created: 06/28/2016

Date Printed: 06/28/2016

6064766

Page 6 of 6



SUBURBAN TESTING LABS

Sample Number: 6093063-04
Collector: DRC-STL

Site: MW 4
Collect Date: 10/04/2016 1:22 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method (Continued)

Monitor Well Sampling (Continued)

Total Volume Purged (gal)	2.97	N/A	N/A		1	10/04/16	ERH	10/04/16 13:22	DRC
Total Well Depth (ft)	19.00	N/A	N/A		1	10/04/16	ERH	10/04/16 13:22	DRC
Well Diameter (in)	2.00	N/A	N/A		1	10/04/16	ERH	10/04/16 13:22	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	2030	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 15:44	AMD
Ethyl Benzene	1590	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 15:44	AMD
Isopropylbenzene	< 50.0	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 15:44	AMD
Methyl-t-butyl ether (MTBE)	< 50.0	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 15:44	AMD
Naphthalene	150	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 15:44	AMD
Toluene	7220	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 15:44	AMD
1,3,5-Trimethylbenzene	204	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 15:44	AMD
1,2,4-Trimethylbenzene	667	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 15:44	AMD
Xylenes, Total	5400	µg/L	SW 846 8260B	100	100	10/11/16	CEM	10/11/16 15:44	AMD

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	64.2	µg/L	SW 846 8260B	128%	100	72-136	10/11/16 15:44
Surrogate: 1,2-Dichloroethane-d4	51.5	µg/L	SW 846 8260B	103%	100	79-135	10/11/16 15:44
Surrogate: Toluene-d8	52.2	µg/L	SW 846 8260B	104%	100	88-112	10/11/16 15:44
Surrogate: Bromofluorobenzene	51.2	µg/L	SW 846 8260B	102%	100	75-117	10/11/16 15:44

Sample Number: 6093063-05
Collector: DRC-STL

Site: MW 5
Collect Date: 10/04/2016 9:02 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	10/04/16	ERH	10/04/16 9:02	DRC
Static Water Level (ft)	5.37	N/A	N/A		1	10/04/16	ERH	10/04/16 9:02	DRC
Total Volume Purged (gal)	2.48	N/A	N/A		1	10/04/16	ERH	10/04/16 9:02	DRC
Total Well Depth (ft)	27.00	N/A	N/A		1	10/04/16	ERH	10/04/16 9:02	DRC
Well Diameter (in)	2.00	N/A	N/A		1	10/04/16	ERH	10/04/16 9:02	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	55.2	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:15	CEM
Ethyl Benzene	26.9	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:15	CEM
Isopropylbenzene	4.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:15	CEM
Methyl-t-butyl ether (MTBE)	2.7	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:15	CEM
Naphthalene	14.6	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:15	CEM

Report Generated On: 10/13/2016 4:31 pm 6093063
STL_Results Revision #1.6 Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 6093063-05
Collector: DRC-STL

Site: MW 5
Collect Date: 10/04/2016 9:02 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Toluene	5.0	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:15	CEM
1,3,5-Trimethylbenzene	5.9	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:15	CEM
1,2,4-Trimethylbenzene	18.6	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:15	CEM
Xylenes, Total	72.8	µg/L	SW 846 8260B	1.0	1	10/10/16	CEM	10/10/16 14:15	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	48.0	µg/L	SW 846 8260B	96%	1	72-136	10/10/16 14:15
Surrogate: 1,2-Dichloroethane-d4	48.8	µg/L	SW 846 8260B	98%	1	79-135	10/10/16 14:15
Surrogate: Toluene-d8	48.9	µg/L	SW 846 8260B	98%	1	88-112	10/10/16 14:15
Surrogate: Bromofluorobenzene	58.4	µg/L	SW 846 8260B	117%	1	75-117	10/10/16 14:15

Sample Number: 6093063-06
Collector: DRC-STL

Site: TRIP BLANK DAY 1 OF SAMPLING
Collect Date: 10/03/2016 7:20 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 12:55	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 12:55	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 12:55	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 12:55	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 12:55	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 12:55	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 12:55	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 12:55	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	10/04/16	CEM	10/04/16 12:55	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	46.6	µg/L	SW 846 8260B	93%	1	72-136	10/04/16 12:55
Surrogate: 1,2-Dichloroethane-d4	47.8	µg/L	SW 846 8260B	96%	1	79-135	10/04/16 12:55
Surrogate: Toluene-d8	48.2	µg/L	SW 846 8260B	96%	1	88-112	10/04/16 12:55
Surrogate: Bromofluorobenzene	49.5	µg/L	SW 846 8260B	99%	1	75-117	10/04/16 12:55

Sample Number: 6093063-08
Collector: DRC-STL

Site: MW 7
Collect Date: 10/04/2016 9:42 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	8.00	N/A	N/A		1	10/04/16	ERH	10/04/16 9:42	DRC
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Report Generated On: 10/13/2016 4:31 pm 6093063
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SUBURBAN TESTING LABS

Sample Number: 6093063-08
Collector: DRC-STL

Site: MW 7
Collect Date: 10/04/2016 9:42 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method (Continued)

Monitor Well Sampling (Continued)

Static Water Level (ft)	7.12	N/A	N/A		1	10/04/16	ERH	10/04/16 9:42	DRC
Total Volume Purged (gal)	2.44	N/A	N/A		1	10/04/16	ERH	10/04/16 9:42	DRC
Total Well Depth (ft)	20.00	N/A	N/A		1	10/04/16	ERH	10/04/16 9:42	DRC
Well Diameter (in)	2.00	N/A	N/A		1	10/04/16	ERH	10/04/16 9:42	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	182	µg/L	SW 846 8260B	5.0	10	10/11/16	CEM	10/11/16 16:14	AMD
Ethyl Benzene	754	µg/L	SW 846 8260B	5.0	10	10/11/16	CEM	10/11/16 16:14	AMD
Isopropylbenzene	48.7	µg/L	SW 846 8260B	5.0	10	10/11/16	CEM	10/11/16 16:14	AMD
Methyl-t-butyl ether (MTBE)	< 5.0	µg/L	SW 846 8260B	5.0	10	10/11/16	CEM	10/11/16 16:14	AMD
Naphthalene	109	µg/L	SW 846 8260B	5.0	10	10/11/16	CEM	10/11/16 16:14	AMD
Toluene	473	µg/L	SW 846 8260B	5.0	10	10/11/16	CEM	10/11/16 16:14	AMD
1,3,5-Trimethylbenzene	144	µg/L	SW 846 8260B	5.0	10	10/11/16	CEM	10/11/16 16:14	AMD
1,2,4-Trimethylbenzene	497	µg/L	SW 846 8260B	5.0	10	10/11/16	CEM	10/11/16 16:14	AMD
Xylenes, Total	2010	µg/L	SW 846 8260B	10.0	10	10/11/16	CEM	10/11/16 16:14	AMD

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	61.7	µg/L	SW 846 8260B	123%	10	72-136	10/11/16 16:14
Surrogate: 1,2-Dichloroethane-d4	50.2	µg/L	SW 846 8260B	100%	10	79-135	10/11/16 16:14
Surrogate: Toluene-d8	52.5	µg/L	SW 846 8260B	105%	10	88-112	10/11/16 16:14
Surrogate: Bromofluorobenzene	55.0	µg/L	SW 846 8260B	110%	10	75-117	10/11/16 16:14

Sample Number: 6093063-10
Collector: DRC-STL

Site: MW 9
Collect Date: 10/03/2016 1:52 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	10/03/16	ERH	10/03/16 13:52	DRC
Static Water Level (ft)	5.10	N/A	N/A		1	10/03/16	ERH	10/03/16 13:52	DRC
Total Volume Purged (gal)	2.47	N/A	N/A		1	10/03/16	ERH	10/03/16 13:52	DRC
Total Well Depth (ft)	20.00	N/A	N/A		1	10/03/16	ERH	10/03/16 13:52	DRC
Well Diameter (in)	2.00	N/A	N/A		1	10/03/16	ERH	10/03/16 13:52	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	1.3	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 16:36	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 16:36	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 16:36	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 16:36	CEM

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STL_Results Revision #1.6 Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 6093063-10

Site: MW 9

Sample ID:

Collector: DRC-STL

Collect Date: 10/03/2016 1:52 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 16:36	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 16:36	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 16:36	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 16:36	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	10/04/16	CEM	10/04/16 16:36	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	51.9	µg/L	SW 846 8260B	104%	1	72-136	10/04/16 16:36
Surrogate: 1,2-Dichloroethane-d4	53.4	µg/L	SW 846 8260B	107%	1	79-135	10/04/16 16:36
Surrogate: Toluene-d8	48.7	µg/L	SW 846 8260B	97%	1	88-112	10/04/16 16:36
Surrogate: Bromofluorobenzene	45.2	µg/L	SW 846 8260B	90%	1	75-117	10/04/16 16:36

Sample Number: 6093063-11

Site: TRIP BLANK DAY 2 OF SAMPLING

Sample ID:

Collector: DRC-STL

Collect Date: 10/03/2016 7:20 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 13:47	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 13:47	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 13:47	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 13:47	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 13:47	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 13:47	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 13:47	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 13:47	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	10/10/16	CEM	10/10/16 13:47	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	56.4	µg/L	SW 846 8260B	113%	1	72-136	10/10/16 13:47
Surrogate: 1,2-Dichloroethane-d4	55.7	µg/L	SW 846 8260B	111%	1	79-135	10/10/16 13:47
Surrogate: Toluene-d8	48.2	µg/L	SW 846 8260B	96%	1	88-112	10/10/16 13:47
Surrogate: Bromofluorobenzene	45.9	µg/L	SW 846 8260B	92%	1	75-117	10/10/16 13:47

Sample Number: 6093063-12

Site: MW 10

Sample ID:

Collector: DRC-STL

Collect Date: 10/03/2016 1:02 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Report Generated On: 10/13/2016 4:31 pm

6093063

STL_Results Revision #1.6

Effective: 07/09/2014

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Sample Number: 6093063-12

Site: MW 10

Sample ID:

Collector: DRC-STL

Collect Date: 10/03/2016 1:02 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method (Continued)

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	10/03/16	ERH	10/03/16 13:02	DRC
Static Water Level (ft)	4.94	N/A	N/A		1	10/03/16	ERH	10/03/16 13:02	DRC
Total Volume Purged (gal)	3.47	N/A	N/A		1	10/03/16	ERH	10/03/16 13:02	DRC
Total Well Depth (ft)	20.00	N/A	N/A		1	10/03/16	ERH	10/03/16 13:02	DRC
Well Diameter (in)	2.00	N/A	N/A		1	10/03/16	ERH	10/03/16 13:02	DRC

Sample Number: 6093063-13

Site: MW 11

Sample ID:

Collector: DRC-STL

Collect Date: 10/03/2016 2:32 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	11.50	N/A	N/A		1	10/03/16	ERH	10/03/16 14:32	DRC
Static Water Level (ft)	0.38	N/A	N/A		1	10/03/16	ERH	10/03/16 14:32	DRC
Total Volume Purged (gal)	1.95	N/A	N/A		1	10/03/16	ERH	10/03/16 14:32	DRC
Total Well Depth (ft)	12.50	N/A	N/A		1	10/03/16	ERH	10/03/16 14:32	DRC
Well Diameter (in)	2.00	N/A	N/A		1	10/03/16	ERH	10/03/16 14:32	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	56.8	µg/L	SW 846 8260B	0.5	1	10/05/16	CEM	10/05/16 14:06	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/05/16	CEM	10/05/16 14:06	CEM
Isopropylbenzene	0.8	µg/L	SW 846 8260B	0.5	1	10/05/16	CEM	10/05/16 14:06	CEM
Methyl-t-butyl ether (MTBE)	83.1	µg/L	SW 846 8260B	0.5	1	10/05/16	CEM	10/05/16 14:06	CEM
Naphthalene	2.3	µg/L	SW 846 8260B	0.5	1	10/05/16	CEM	10/05/16 14:06	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/05/16	CEM	10/05/16 14:06	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/05/16	CEM	10/05/16 14:06	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/05/16	CEM	10/05/16 14:06	CEM
Xylenes, Total	1.0	µg/L	SW 846 8260B	1.0	1	10/05/16	CEM	10/05/16 14:06	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	48.5	µg/L	SW 846 8260B	97%	1	72-136	10/05/16 14:06
Surrogate: 1,2-Dichloroethane-d4	49.1	µg/L	SW 846 8260B	98%	1	79-135	10/05/16 14:06
Surrogate: Toluene-d8	45.1	µg/L	SW 846 8260B	90%	1	88-112	10/05/16 14:06
Surrogate: Bromofluorobenzene	45.8	µg/L	SW 846 8260B	92%	1	75-117	10/05/16 14:06

Sample Number: 6093063-14

Site: MW 12

Sample ID:

Collector: DRC-STL

Collect Date: 10/03/2016 11:22 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Report Generated On: 10/13/2016 4:31 pm

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Effective: 07/09/2014

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Sample Number: 6093063-14
Collector: DRC-STL

Site: MW 12
Collect Date: 10/03/2016 11:22 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	9.00	N/A	N/A		1	10/03/16	ERH	10/03/16 11:22	DRC
Static Water Level (ft)	5.48	N/A	N/A		1	10/03/16	ERH	10/03/16 11:22	DRC
Total Volume Purged (gal)	2.97	N/A	N/A		1	10/03/16	ERH	10/03/16 11:22	DRC
Total Well Depth (ft)	12.00	N/A	N/A		1	10/03/16	ERH	10/03/16 11:22	DRC
Well Diameter (in)	2.00	N/A	N/A		1	10/03/16	ERH	10/03/16 11:22	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 17:59	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 17:59	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 17:59	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 17:59	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 17:59	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 17:59	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 17:59	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 17:59	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	10/04/16	CEM	10/04/16 17:59	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	55.2	µg/L	SW 846 8260B	110%	1	72-136	10/04/16 17:59
Surrogate: 1,2-Dichloroethane-d4	56.5	µg/L	SW 846 8260B	113%	1	79-135	10/04/16 17:59
Surrogate: Toluene-d8	48.0	µg/L	SW 846 8260B	96%	1	88-112	10/04/16 17:59
Surrogate: Bromofluorobenzene	44.7	µg/L	SW 846 8260B	89%	1	75-117	10/04/16 17:59

Sample Number: 6093063-15
Collector: DRC-STL

Site: MW 13
Collect Date: 10/03/2016 12:12 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	9.00	N/A	N/A		1	10/03/16	ERH	10/03/16 12:12	DRC
Static Water Level (ft)	6.63	N/A	N/A		1	10/03/16	ERH	10/03/16 12:12	DRC
Total Volume Purged (gal)	2.93	N/A	N/A		1	10/03/16	ERH	10/03/16 12:12	DRC
Total Well Depth (ft)	12.00	N/A	N/A		1	10/03/16	ERH	10/03/16 12:12	DRC
Well Diameter (in)	2.00	N/A	N/A		1	10/03/16	ERH	10/03/16 12:12	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 18:27	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 18:27	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 18:27	CEM

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STL_Results Revision #1.6

6093063
Effective: 07/09/2014





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Sample Number: 6093063-15
Collector: DRC-STL

Site: MW 13
Collect Date: 10/03/2016 12:12 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 18:27	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 18:27	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 18:27	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 18:27	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/04/16	CEM	10/04/16 18:27	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	10/04/16	CEM	10/04/16 18:27	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	55.8	µg/L	SW 846 8260B	112%	1	72-136	10/04/16 18:27
Surrogate: 1,2-Dichloroethane-d4	55.7	µg/L	SW 846 8260B	111%	1	79-135	10/04/16 18:27
Surrogate: Toluene-d8	46.6	µg/L	SW 846 8260B	93%	1	88-112	10/04/16 18:27
Surrogate: Bromofluorobenzene	45.0	µg/L	SW 846 8260B	90%	1	75-117	10/04/16 18:27

Sample Number: 6093063-16
Collector: DRC-STL

Site: SW
Collect Date: 10/04/2016 10:28 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	18.00	N/A	N/A		1	10/04/16	ERH	10/04/16 10:28	DRC
Static Water Level (ft)	6.94	N/A	N/A		1	10/04/16	ERH	10/04/16 10:28	DRC
Total Volume Purged (gal)	2.75	N/A	N/A		1	10/04/16	ERH	10/04/16 10:28	DRC
Total Well Depth (ft)	210.0	N/A	N/A		1	10/04/16	ERH	10/04/16 10:28	DRC
Well Diameter (in)	6.00	N/A	N/A		1	10/04/16	ERH	10/04/16 10:28	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:43	CEM
Ethyl Benzene	0.9	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:43	CEM
Isopropylbenzene	0.6	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:43	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:43	CEM
Naphthalene	1.2	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:43	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:43	CEM
1,3,5-Trimethylbenzene	0.7	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:43	CEM
1,2,4-Trimethylbenzene	1.3	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 14:43	CEM
Xylenes, Total	1.8	µg/L	SW 846 8260B	1.0	1	10/10/16	CEM	10/10/16 14:43	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	55.1	µg/L	SW 846 8260B	110%	1	72-136	10/10/16 14:43
Surrogate: 1,2-Dichloroethane-d4	55.1	µg/L	SW 846 8260B	110%	1	79-135	10/10/16 14:43
Surrogate: Toluene-d8	50.0	µg/L	SW 846 8260B	100%	1	88-112	10/10/16 14:43

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Sample Number: 6093063-16

Site: SW

Sample ID:

Collector: DRC-STL

Collect Date: 10/04/2016 10:28 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries (Continued)	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Bromofluorobenzene	45.8	µg/L	SW 846 8260B	92%	1	75-117	10/10/16 14:43

Sample Number: 6093063-18

Site: MW-14S

Sample ID:

Collector: DRC-STL

Collect Date: 10/04/2016 11:58 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	8.00	N/A	N/A		1	10/04/16	ERH	10/04/16 11:58	DRC
Static Water Level (ft)	5.71	N/A	N/A		1	10/04/16	ERH	10/04/16 11:58	DRC
Total Volume Purged (gal)	1.98	N/A	N/A		1	10/04/16	ERH	10/04/16 11:58	DRC
Total Well Depth (ft)	10.00	N/A	N/A		1	10/04/16	ERH	10/04/16 11:58	DRC
Well Diameter (in)	2.00	N/A	N/A		1	10/04/16	ERH	10/04/16 11:58	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	6760	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 16:43	AMD
Ethyl Benzene	3380	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 16:43	AMD
Isopropylbenzene	98.0	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 16:43	AMD
Methyl-t-butyl ether (MTBE)	180	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 16:43	AMD
Naphthalene	271	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 16:43	AMD
Toluene	14400	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 16:43	AMD
1,3,5-Trimethylbenzene	544	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 16:43	AMD
1,2,4-Trimethylbenzene	1780	µg/L	SW 846 8260B	50.0	100	10/11/16	CEM	10/11/16 16:43	AMD
Xylenes, Total	13600	µg/L	SW 846 8260B	100	100	10/11/16	CEM	10/11/16 16:43	AMD

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	60.0	µg/L	SW 846 8260B	120%	100	72-136	10/11/16 16:43
Surrogate: 1,2-Dichloroethane-d4	52.1	µg/L	SW 846 8260B	104%	100	79-135	10/11/16 16:43
Surrogate: Toluene-d8	51.5	µg/L	SW 846 8260B	103%	100	88-112	10/11/16 16:43
Surrogate: Bromofluorobenzene	53.3	µg/L	SW 846 8260B	107%	100	75-117	10/11/16 16:43

Sample Number: 6093063-19

Site: MW-14D

Sample ID:

Collector: DRC-STL

Collect Date: 10/04/2016 11:22 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

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Sample Number: 6093063-19

Site: MW-14D

Sample ID:

Collector: DRC-STL

Collect Date: 10/04/2016 11:22 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method (Continued)

Monitor Well Sampling

Sampling Depth (ft)	20.00	N/A	N/A		1	10/04/16	ERH	10/04/16 11:22	DRC
Static Water Level (ft)	6.41	N/A	N/A		1	10/04/16	ERH	10/04/16 11:22	DRC
Total Volume Purged (gal)	2.75	N/A	N/A		1	10/04/16	ERH	10/04/16 11:22	DRC
Total Well Depth (ft)	25.00	N/A	N/A		1	10/04/16	ERH	10/04/16 11:22	DRC
Well Diameter (in)	2.00	N/A	N/A		1	10/04/16	ERH	10/04/16 11:22	DRC

Volatiles

VOA, 8260, USTUnleaded

Ethyl Benzene	80.2	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 16:00	CEM
Isopropylbenzene	47.3	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 16:00	CEM
Methyl-t-butyl ether (MTBE)	45.6	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 16:00	CEM
Naphthalene	164	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 16:00	CEM
Toluene	10.3	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 16:00	CEM
1,3,5-Trimethylbenzene	6.2	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 16:00	CEM
1,2,4-Trimethylbenzene	19.5	µg/L	SW 846 8260B	0.5	1	10/10/16	CEM	10/10/16 16:00	CEM
Xylenes, Total	96.1	µg/L	SW 846 8260B	1.0	1	10/10/16	CEM	10/10/16 16:00	CEM
Benzene	335	µg/L	SW 846 8260B	2.5	5	10/12/16	CEM	10/12/16 14:01	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	44.9	µg/L	SW 846 8260B	90%	1	72-136	10/10/16 16:00
Surrogate: 1,2-Dichloroethane-d4	46.3	µg/L	SW 846 8260B	93%	1	79-135	10/10/16 16:00
Surrogate: Toluene-d8	51.3	µg/L	SW 846 8260B	103%	1	88-112	10/10/16 16:00
Surrogate: Bromofluorobenzene	56.4	µg/L	SW 846 8260B	113%	1	75-117	10/10/16 16:00
Surrogate: Dibromofluoromethane	46.8	µg/L	SW 846 8260B	94%	5	72-136	10/12/16 14:01
Surrogate: 1,2-Dichloroethane-d4	45.4	µg/L	SW 846 8260B	91%	5	79-135	10/12/16 14:01
Surrogate: Toluene-d8	47.7	µg/L	SW 846 8260B	95%	5	88-112	10/12/16 14:01
Surrogate: Bromofluorobenzene	54.0	µg/L	SW 846 8260B	108%	5	75-117	10/12/16 14:01

Data Qualifiers:

All results meet the requirements of STL's TNI (NELAC) Accredited Quality System unless otherwise noted. If your results contain any data qualifiers or comments, you should evaluate useability relative to your needs.

If collectors initials include "STL", samples have been collected in accordance with STL SOP SL0015.

All results reported on an As Received (Wet Weight) basis unless otherwise noted.

This laboratory report may not be reproduced, except in full, without the written approval of STL.

Results are considered Preliminary unless report is signed by authorized representative of STL.

Report Generated On: 10/13/2016 4:31 pm

6093063

STL_Results Revision #1.6

Effective: 07/09/2014

1037F MacArthur Road, Reading, PA 19605

Phone: 800-433-6595

Fax: 610-375-4090

suburbantestinglabs.com

SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN
TESTING LABS

Reviewed and Released By:

Deborah Hannum
Project Manager

Report Generated On: 10/13/2016 4:31 pm 6093063
STL_Results Revision #1.6 Effective: 07/09/2014

1037F MacArthur Road, Reading, PA 19605 Phone: 800-433-6595 Fax: 610-375-4090 suburbantestinglabs.com

SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

Chain of Custody Record

1037F MacArthur Road, Reading, PA 19605
Phone: 610-375-8378 - Fax: 610-375-4090 - suburbantestinglabs.com

TAT (Circle One): Standard - 24hr - 48hr - 72hr - Other _____
(Additional charges may apply for rush TAT. If not specified, standard TAT will apply.)

ORDER ID: 6093063



Client Name / Address:

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Phone: (717) 394-1063
Fax:

Project Name / Address:

Herr Foods- Monitoring Wells Oct 2016

Client Project Manager: Ed Dziedzic

Payment / P.O. Info:

Project Description:

Order Comments: Monitoring Well Collection = \$65/hour; Travel time to/from site = \$40/hour; Equipment Rental = \$115 flat fee per event;
Field Team: take water level readings at MW-2, MW-8 and Endwall

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6093063-01	MW 1 *				Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method		Field Results	
None		A		* General Method			
Field Services		B		Monitor Well Sampling - N/A			
				Unassigned			
				Admin, Miscellaneous - N/A			
				Sample Collection, Custom 3 - SL0015			
6093063-02	MW 2 *				Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method		Field Results	
Field Services		A		Unassigned			
				Sample Collection, Custom 1 - SL0015			
6093063-03	MW 3		10/4/16 12:42	DRC	Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method		Field Results	
Field Services		A		General Method			
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		B		Monitor Well Sampling - N/A			
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		C		Volatiles			
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		D		VOA, 8260, USTUnleaded - SW 846 8260B			



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6093063-04	MW 4		10/4/16 1322	DRC	Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method		Field Results	
Field Services		A		General Method Monitor Well Sampling - N/A Volatiles VOA, 8260, USTUnleaded - SW 846 8260B			
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		B					
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		C					
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		D					
6093063-05	MW 5		10/4/16 0902	DRC	Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method		Field Results	
Field Services		A		General Method Monitor Well Sampling - N/A Volatiles VOA, 8260, USTUnleaded - SW 846 8260B			
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		B					
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		C					
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		D					
6093063-06	TRIP BLANK DAY 1 OF SAMPLING		10/3/16 0720	DRC	Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method		Field Results	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		A		Volatiles VOA, 8260, USTUnleaded - SW 846 8260B			
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		B					
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl		C					
6093063-07	MW 6 *				Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method		Field Results	
Field Services		A		General Method Monitor Well Sampling - N/A			



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6093063-08	MW 7		10/4/16 0942	DRC	Non-potable	Grab	

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	A	General Method Monitor Well Sampling - N/A	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B	Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D		

6093063-09	MW 8	*			Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	A	Unassigned Sample Collection, Custom 1 - SL0015	

6093063-10	MW 9		10/3/16 1352	DRC	Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	A	General Method Monitor Well Sampling - N/A	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B	Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D		

6093063-11	TRIP BLANK DAY 2 OF SAMPLING		10/3/16 0720	DRC	Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	A	Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C		



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6093063-12	MW 10		10/3/16 1302	DRC	Non-potable	Grab	

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	A	General Method Monitor Well Sampling - N/A	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B	Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D		

6093063-13	MW 11		10/3/16 1432	DRC	Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	A	General Method Monitor Well Sampling - N/A	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B	Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D		

6093063-14	MW 12		10/3/16 1122	DRC	Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	A	General Method Monitor Well Sampling - N/A	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B	Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D		

6093063-15	MW 13		10/3/16 1212	DRC	Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	A	General Method Monitor Well Sampling - N/A	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B	Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D		



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6093063-16	SW		10/4/16 1028	DRC	Non-potable	Grab	

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	A	General Method Monitor Well Sampling - N/A	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B	Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D		

6093063-17	Endwall *				Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	A	Unassigned Sample Collection, Custom 1 - SL0015	

6093063-18	MW-14S		10/4/16 1158	DRC	Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	A	General Method Monitor Well Sampling - N/A	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B	Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D		



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6093063-19	MW-14D		10/4/16 1122	DRC	Non-potable	Grab	

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
Field Services	A	General Method Monitor Well Sampling - N/A Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	B		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	C		
40 ml VOA - Cool to 6 C & Ascorbic Acid & HCl	D		

Suburban Testing Labs.
1037F MacArthur Road
Reading, PA 19605

In Lab Date/Time: 10/4/16 1445 In Lab Temp: 4.4

Submitted with COC? ☒ Y / ☐ N
Number of containers match number on COC? ☒ Y / ☐ N
All Containers in tact? ☒ Y / ☐ N
Tests within holding times? ☒ Y / ☐ N
40mL VOA vials free of headspace? ☒ Y / ☐ N

Relinquished by: [Signature] (24)

Received in Lab by: [Signature] 10/4/16 1445

* See copy of Field notes for
static water levels collected on 10/3/16
before purging any wells. ^{DRC} 10/4/16

MM-15

Relinquished By:	Date:	Temp (°C):	Sample Conditions	Sample Type Key	Reporting Options
	Time:	Acceptable: Y / N	Submitted with COC? ☒ Y / ☐ N	G = Grab	☐ SDWA Reporting PWSID:
Received By:	Date:	Temp (°C):	Number of Containers	8HC = 8 Hr. Composite	☐ Fax
	Time:	Acceptable: Y / N	Match Number of COC? ☒ Y / ☐ N	24HC = 24 Hr. Composite	☐ Email
Relinquished By:	Date: 10/3/16	Temp (°C): 4.2	All Containers Intact? ☒ Y / ☐ N	S D = Distribution	☐ Return a copy of this form with Report
	Time: 1600	Acceptable: ☒ Y / ☐ N	Tests within Holding Times? ☒ Y / ☐ N	D E = Entry Point	☐ Other
Received in Lab By:	Date: 10/3/16	Temp (°C): 4.2	VOC Vials Free of Headspace? ☒ Y / ☐ N	R R = Raw	
	Time: 16:00	Acceptable: ☒ Y / ☐ N		C C = Check	
				S S = Special	
				M M = Maximum Residence	

Signing this form indicates your agreement with STL's Standard Terms and Conditions (www.suburbantestinglabs.com/resources/standard-terms-and-conditions.html) unless otherwise specified in writing.

Shaded areas are for SWTL use only

Location Henn Foods Date 10/3/16
 Project / Client Re-tten

Weather: Sunny 63°F	
Wells	Static (ft b ToG)
MW-1	5.45
MW-2	6.68
MW-3	6.05
MW-4	6.96
MW-5	5.37
MW-6	3.68
MW-7	7.12
MW-8	4.40
MW-9	5.10
MW-10	4.94
MW-11	0.38
MW-12	5.48
MW-13	6.63
MW-14S	5.71
MW-14D	6.41
SW	6.94
Ending	3.55



6093063

Deborah Hannum



Results Report

Order ID: 7012602

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Project: Herr Foods - Quarterly MWs 2017

Attn: Ed Dziedzic

Regulatory ID:

Sample Number: 7012602-01

Site: MW-3

Sample ID:

Collector: DRC-STL

Collect Date: 01/18/2017 11:48 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	11.00	N/A	N/A		1	01/18/17	BAK	01/18/17 11:48	DRC
Static Water Level (ft)	6.45	N/A	N/A		1	01/18/17	BAK	01/18/17 11:48	DRC
Total Volume Purged (gal)	2.50	N/A	N/A		1	01/18/17	BAK	01/18/17 11:48	DRC
Total Well Depth (ft)	25.00	N/A	N/A		1	01/18/17	BAK	01/18/17 11:48	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/18/17	BAK	01/18/17 11:48	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	12.6	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Ethyl Benzene	82.0 M3	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Isopropylbenzene	8.2	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Naphthalene	11.5 B1	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Toluene	70.0 M3	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
1,3,5-Trimethylbenzene	7.4	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
1,2,4-Trimethylbenzene	32.6	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Xylenes, Total	88.4	µg/L	SW 846 8260B	1.0	1	01/20/17	CEM	01/20/17 18:10	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	50.2	µg/L	SW 846 8260B	100%	1	72-136	01/20/17 18:10
Surrogate: 1,2-Dichloroethane-d4	48.8	µg/L	SW 846 8260B	98%	1	79-135	01/20/17 18:10
Surrogate: Toluene-d8	50.3	µg/L	SW 846 8260B	101%	1	88-112	01/20/17 18:10
Surrogate: Bromofluorobenzene	51.9	µg/L	SW 846 8260B	104%	1	75-117	01/20/17 18:10

Sample Number: 7012602-02

Site: MW-4

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 12:18 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/17/17	BAK	01/17/17 12:18	DRC
Static Water Level (ft)	7.67	N/A	N/A		1	01/17/17	BAK	01/17/17 12:18	DRC

Report Generated On: 02/01/2017 5:09 pm

7012602

STL_Results Revision #1.6

Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 7012602-02
Collector: DRC-STL

Site: MW-4
Collect Date: 01/17/2017 12:18 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method (Continued)

Monitor Well Sampling (Continued)

Total Volume Purged (gal)	5.45	N/A	N/A		1	01/17/17	BAK	01/17/17 12:18	DRC
Total Well Depth (ft)	19.00	N/A	N/A		1	01/17/17	BAK	01/17/17 12:18	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 12:18	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	1180	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Ethyl Benzene	917	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Isopropylbenzene	54.8	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Methyl-t-butyl ether (MTBE)	< 10.0	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Naphthalene	229	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
1,3,5-Trimethylbenzene	147	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
1,2,4-Trimethylbenzene	1070	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Xylenes, Total	6430	µg/L	SW 846 8260B	20.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Toluene	3240	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 21:06	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	46.9	µg/L	SW 846 8260B	94%	20	72-136	01/18/17 17:21
Surrogate: 1,2-Dichloroethane-d4	55.9	µg/L	SW 846 8260B	112%	20	79-135	01/18/17 17:21
Surrogate: Toluene-d8	46.3	µg/L	SW 846 8260B	93%	20	88-112	01/18/17 17:21
Surrogate: Bromofluorobenzene	47.4	µg/L	SW 846 8260B	95%	20	75-117	01/18/17 17:21
Surrogate: Dibromofluoromethane	55.2	µg/L	SW 846 8260B	110%	50	72-136	01/19/17 21:06
Surrogate: 1,2-Dichloroethane-d4	54.1	µg/L	SW 846 8260B	108%	50	79-135	01/19/17 21:06
Surrogate: Toluene-d8	49.1	µg/L	SW 846 8260B	98%	50	88-112	01/19/17 21:06
Surrogate: Bromofluorobenzene	50.3	µg/L	SW 846 8260B	101%	50	75-117	01/19/17 21:06

Sample Number: 7012602-03
Collector: DRC-STL

Site: MW-5
Collect Date: 01/17/2017 10:04 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/17/17	BAK	01/17/17 10:04	DRC
Static Water Level (ft)	6.07	N/A	N/A		1	01/17/17	BAK	01/17/17 10:04	DRC
Total Volume Purged (gal)	2.97	N/A	N/A		1	01/17/17	BAK	01/17/17 10:04	DRC
Total Well Depth (ft)	27.00	N/A	N/A		1	01/17/17	BAK	01/17/17 10:04	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 10:04	DRC

Volatiles

Report Generated On: 02/01/2017 5:09 pm
STL_Results Revision #1.6

7012602
Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 7012602-03
Collector: DRC-STL

Site: MW-5
Collect Date: 01/17/2017 10:04 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded

Benzene	10.7	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Ethyl Benzene	4.4	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Isopropylbenzene	3.0	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Naphthalene	5.7	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Toluene	1.4	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
1,3,5-Trimethylbenzene	2.6	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
1,2,4-Trimethylbenzene	10.6	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Xylenes, Total	43.5	µg/L	SW 846 8260B	1.0	1	01/18/17	CEM	01/18/17 20:31	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	50.0	µg/L	SW 846 8260B	100%	1	72-136	01/18/17 20:31
Surrogate: 1,2-Dichloroethane-d4	58.6	µg/L	SW 846 8260B	117%	1	79-135	01/18/17 20:31
Surrogate: Toluene-d8	46.8	µg/L	SW 846 8260B	94%	1	88-112	01/18/17 20:31
Surrogate: Bromofluorobenzene	46.2	µg/L	SW 846 8260B	92%	1	75-117	01/18/17 20:31

Sample Number: 7012602-04
Collector: DRC-STL

Site: MW-7
Collect Date: 01/17/2017 9:14 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	8.00	N/A	N/A		1	01/17/17	BAK	01/17/17 9:14	DRC
Static Water Level (ft)	7.35	N/A	N/A		1	01/17/17	BAK	01/17/17 9:14	DRC
Total Volume Purged (gal)	2.77	N/A	N/A		1	01/17/17	BAK	01/17/17 9:14	DRC
Total Well Depth (ft)	20.00	N/A	N/A		1	01/17/17	BAK	01/17/17 9:14	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 9:14	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	510	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
Isopropylbenzene	57.2	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
Methyl-t-butyl ether (MTBE)	< 2.5	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
Naphthalene	222 B1	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
1,3,5-Trimethylbenzene	224	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
1,2,4-Trimethylbenzene	760	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
Ethyl Benzene	972	µg/L	SW 846 8260B	5.0	10	01/26/17	CEM	01/26/17 15:15	CEM
Toluene	897	µg/L	SW 846 8260B	5.0	10	01/26/17	CEM	01/26/17 15:15	CEM
Xylenes, Total	3210	µg/L	SW 846 8260B	10.0	10	01/26/17	CEM	01/26/17 15:15	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
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Report Generated On: 02/01/2017 5:09 pm
STL_Results Revision #1.6

7012602
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7012602-04
Collector: DRC-STL

Site: MW-7
Collect Date: 01/17/2017 9:14 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries (Continued)	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	50.9	µg/L	SW 846 8260B	102%	5	72-136	01/20/17 18:39
Surrogate: 1,2-Dichloroethane-d4	48.8	µg/L	SW 846 8260B	98%	5	79-135	01/20/17 18:39
Surrogate: Toluene-d8	50.7	µg/L	SW 846 8260B	101%	5	88-112	01/20/17 18:39
Surrogate: Bromofluorobenzene	52.6	µg/L	SW 846 8260B	105%	5	75-117	01/20/17 18:39
Surrogate: Dibromofluoromethane	48.6	µg/L	SW 846 8260B	97%	10	72-136	01/26/17 15:15
Surrogate: 1,2-Dichloroethane-d4	50.2	µg/L	SW 846 8260B	100%	10	79-135	01/26/17 15:15
Surrogate: Toluene-d8	48.1	µg/L	SW 846 8260B	96%	10	88-112	01/26/17 15:15
Surrogate: Bromofluorobenzene	53.2	µg/L	SW 846 8260B	106%	10	75-117	01/26/17 15:15

Sample Number: 7012602-05
Collector: DRC-STL

Site: MW-9
Collect Date: 01/16/2017 2:25 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/16/17	BAK	01/16/17 14:25	DRC
Static Water Level (ft)	5.25	N/A	N/A		1	01/16/17	BAK	01/16/17 14:25	DRC
Total Volume Purged (gal)	2.50	N/A	N/A		1	01/16/17	BAK	01/16/17 14:25	DRC
Total Well Depth (ft)	20.00	N/A	N/A		1	01/16/17	BAK	01/16/17 14:25	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/16/17	BAK	01/16/17 14:25	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	3.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
1,3,5-Trimethylbenzene	0.6	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/17/17	CEM	01/17/17 15:19	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	51.5	µg/L	SW 846 8260B	103%	1	72-136	01/17/17 15:19
Surrogate: 1,2-Dichloroethane-d4	59.8	µg/L	SW 846 8260B	120%	1	79-135	01/17/17 15:19
Surrogate: Toluene-d8	46.2	µg/L	SW 846 8260B	92%	1	88-112	01/17/17 15:19
Surrogate: Bromofluorobenzene	41.8	µg/L	SW 846 8260B	84%	1	75-117	01/17/17 15:19

Report Generated On: 02/01/2017 5:09 pm
STL_Results Revision #1.6

7012602
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SUBURBAN TESTING LABS

Sample Number: 7012602-06

Site: MW-10

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 1:49 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/16/17	BAK	01/16/17 13:49	DRC
Static Water Level (ft)	5.15	N/A	N/A		1	01/16/17	BAK	01/16/17 13:49	DRC
Total Volume Purged (gal)	2.97	N/A	N/A		1	01/16/17	BAK	01/16/17 13:49	DRC
Total Well Depth (ft)	20.00	N/A	N/A		1	01/16/17	BAK	01/16/17 13:49	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/16/17	BAK	01/16/17 13:49	DRC

Volatiles

VOA, 8260, USTUnleaded

Ethyl Benzene	96.4	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
Isopropylbenzene	28.9	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
Methyl-t-butyl ether (MTBE)	211	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
Naphthalene	101	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
Toluene	160	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
1,3,5-Trimethylbenzene	11.6	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
1,2,4-Trimethylbenzene	43.0	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
Xylenes, Total	372	µg/L	SW 846 8260B	1.0	1	01/17/17	CEM	01/17/17 17:34	CEM
Benzene	3030	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 16:54	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	44.3	µg/L	SW 846 8260B	89%	1	72-136	01/17/17 17:34
Surrogate: 1,2-Dichloroethane-d4	54.6	µg/L	SW 846 8260B	109%	1	79-135	01/17/17 17:34
Surrogate: Toluene-d8	48.6	µg/L	SW 846 8260B	97%	1	88-112	01/17/17 17:34
Surrogate: Bromofluorobenzene	46.4	µg/L	SW 846 8260B	93%	1	75-117	01/17/17 17:34
Surrogate: Dibromofluoromethane	50.6	µg/L	SW 846 8260B	101%	100	72-136	01/18/17 16:54
Surrogate: 1,2-Dichloroethane-d4	59.2	µg/L	SW 846 8260B	118%	100	79-135	01/18/17 16:54
Surrogate: Toluene-d8	43.7 V	µg/L	SW 846 8260B	87%	100	88-112	01/18/17 16:54
Surrogate: Bromofluorobenzene	42.1	µg/L	SW 846 8260B	84%	100	75-117	01/18/17 16:54

Sample Number: 7012602-07

Site: MW-11

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 1:04 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	11.50	N/A	N/A		1	01/16/17	BAK	01/16/17 13:04	DRC
Static Water Level (ft)	0.39	N/A	N/A		1	01/16/17	BAK	01/16/17 13:04	DRC
Total Volume Purged (gal)	2.97	N/A	N/A		1	01/16/17	BAK	01/16/17 13:04	DRC
Total Well Depth (ft)	12.50	N/A	N/A		1	01/16/17	BAK	01/16/17 13:04	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/16/17	BAK	01/16/17 13:04	DRC

Volatiles

Report Generated On: 02/01/2017 5:09 pm

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SUBURBAN TESTING LABS

Sample Number: 7012602-07

Site: MW-11

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 1:04 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
<i>VOA, 8260, USTUnleaded</i>									
Benzene	46.8	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Isopropylbenzene	0.6	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Methyl-t-butyl ether (MTBE)	85.4	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Naphthalene	1.6	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/18/17	CEM	01/18/17 20:04	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	50.7	µg/L	SW 846 8260B	101%	1	72-136	01/18/17 20:04
Surrogate: 1,2-Dichloroethane-d4	58.9	µg/L	SW 846 8260B	118%	1	79-135	01/18/17 20:04
Surrogate: Toluene-d8	42.9 V	µg/L	SW 846 8260B	86%	1	88-112	01/18/17 20:04
Surrogate: Bromofluorobenzene	40.4	µg/L	SW 846 8260B	81%	1	75-117	01/18/17 20:04

Sample Number: 7012602-08

Site: MW-12

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 11:44 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
<i>General Method</i>									
<i>Monitor Well Sampling</i>									
Sampling Depth (ft)	9.00	N/A	N/A		1	01/16/17	BAK	01/16/17 11:44	DRC
Static Water Level (ft)	4.16	N/A	N/A		1	01/16/17	BAK	01/16/17 11:44	DRC
Total Volume Purged (gal)	2.47	N/A	N/A		1	01/16/17	BAK	01/16/17 11:44	DRC
Total Well Depth (ft)	12.00	N/A	N/A		1	01/16/17	BAK	01/16/17 11:44	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/16/17	BAK	01/16/17 11:44	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/17/17	CEM	01/17/17 16:40	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	56.2	µg/L	SW 846 8260B	112%	1	72-136	01/17/17 16:40
Surrogate: 1,2-Dichloroethane-d4	64.8	µg/L	SW 846 8260B	130%	1	79-135	01/17/17 16:40

Report Generated On: 02/01/2017 5:09 pm

7012602

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SUBURBAN TESTING LABS

Sample Number: 7012602-08

Site: MW-12

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 11:44 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries (Continued)	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Toluene-d8	45.6	µg/L	SW 846 8260B	91%	1	88-112	01/17/17 16:40
Surrogate: Bromofluorobenzene	39.2	µg/L	SW 846 8260B	78%	1	75-117	01/17/17 16:40

Sample Number: 7012602-09

Site: MW-13

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 12:19 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	9.00	N/A	N/A		1	01/16/17	BAK	01/16/17 12:19	DRC
Static Water Level (ft)	5.92	N/A	N/A		1	01/16/17	BAK	01/16/17 12:19	DRC
Total Volume Purged (gal)	1.98	N/A	N/A		1	01/16/17	BAK	01/16/17 12:19	DRC
Total Well Depth (ft)	12.00	N/A	N/A		1	01/16/17	BAK	01/16/17 12:19	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/16/17	BAK	01/16/17 12:19	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/17/17	CEM	01/17/17 17:07	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	55.8	µg/L	SW 846 8260B	112%	1	72-136	01/17/17 17:07
Surrogate: 1,2-Dichloroethane-d4	64.4	µg/L	SW 846 8260B	129%	1	79-135	01/17/17 17:07
Surrogate: Toluene-d8	45.9	µg/L	SW 846 8260B	92%	1	88-112	01/17/17 17:07
Surrogate: Bromofluorobenzene	38.9	µg/L	SW 846 8260B	78%	1	75-117	01/17/17 17:07

Sample Number: 7012602-10

Site: MW-14S

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 2:08 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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STL_Results Revision #1.6

7012602
Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 7012602-10

Site: MW-14S

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 2:08 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	8.00	N/A	N/A		1	01/17/17	BAK	01/17/17 14:08	DRC
Static Water Level (ft)	6.16	N/A	N/A		1	01/17/17	BAK	01/17/17 14:08	DRC
Total Volume Purged (gal)	4.00	N/A	N/A		1	01/17/17	BAK	01/17/17 14:08	DRC
Total Well Depth (ft)	10.00	N/A	N/A		1	01/17/17	BAK	01/17/17 14:08	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 14:08	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	2570	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Ethyl Benzene	2060	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Isopropylbenzene	97.0	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Methyl-t-butyl ether (MTBE)	184	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Naphthalene	279	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Toluene	11900	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
1,3,5-Trimethylbenzene	337	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
1,2,4-Trimethylbenzene	1230	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Xylenes, Total	12400	µg/L	SW 846 8260B	100	100	01/18/17	CEM	01/18/17 17:48	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	50.8	µg/L	SW 846 8260B	102%	100	72-136	01/18/17 17:48
Surrogate: 1,2-Dichloroethane-d4	58.8	µg/L	SW 846 8260B	118%	100	79-135	01/18/17 17:48
Surrogate: Toluene-d8	45.3	µg/L	SW 846 8260B	91%	100	88-112	01/18/17 17:48
Surrogate: Bromofluorobenzene	47.1	µg/L	SW 846 8260B	94%	100	75-117	01/18/17 17:48

Sample Number: 7012602-11

Site: MW-14D

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 1:14 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	20.00	N/A	N/A		1	01/17/17	BAK	01/17/17 13:14	DRC
Static Water Level (ft)	6.36	N/A	N/A		1	01/17/17	BAK	01/17/17 13:14	DRC
Total Volume Purged (gal)	3.00	N/A	N/A		1	01/17/17	BAK	01/17/17 13:14	DRC
Total Well Depth (ft)	25.00	N/A	N/A		1	01/17/17	BAK	01/17/17 13:14	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 13:14	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	211	µg/L	SW 846 8260B	2.5	5	01/18/17	CEM	01/18/17 18:43	CEM
Ethyl Benzene	27.2	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
Isopropylbenzene	40.0	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM

Report Generated On: 02/01/2017 5:09 pm

7012602

STL_Results Revision #1.6

Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7012602-11

Site: MW-14D

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 1:14 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
Naphthalene	137	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
Toluene	5.8	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
1,3,5-Trimethylbenzene	2.8	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
1,2,4-Trimethylbenzene	4.7	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
Xylenes, Total	48.0	µg/L	SW 846 8260B	1.0	1	01/18/17	CEM	01/18/17 22:47	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	49.1	µg/L	SW 846 8260B	98%	5	72-136	01/18/17 18:43
Surrogate: 1,2-Dichloroethane-d4	58.1	µg/L	SW 846 8260B	116%	5	79-135	01/18/17 18:43
Surrogate: Toluene-d8	45.0	µg/L	SW 846 8260B	90%	5	88-112	01/18/17 18:43
Surrogate: Bromofluorobenzene	46.2	µg/L	SW 846 8260B	92%	5	75-117	01/18/17 18:43
Surrogate: Dibromofluoromethane	48.0	µg/L	SW 846 8260B	96%	1	72-136	01/18/17 22:47
Surrogate: 1,2-Dichloroethane-d4	56.4	µg/L	SW 846 8260B	113%	1	79-135	01/18/17 22:47
Surrogate: Toluene-d8	47.7	µg/L	SW 846 8260B	95%	1	88-112	01/18/17 22:47
Surrogate: Bromofluorobenzene	46.1	µg/L	SW 846 8260B	92%	1	75-117	01/18/17 22:47

Sample Number: 7012602-12

Site: OW-1

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 11:09 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/17/17	BAK	01/17/17 11:09	DRC
Static Water Level (ft)	7.44	N/A	N/A		1	01/17/17	BAK	01/17/17 11:09	DRC
Total Volume Purged (gal)	4.60	N/A	N/A		1	01/17/17	BAK	01/17/17 11:09	DRC
Total Well Depth (ft)	15.00	N/A	N/A		1	01/17/17	BAK	01/17/17 11:09	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 11:09	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	3240	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Ethyl Benzene	369	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Isopropylbenzene	< 25.0	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Methyl-t-butyl ether (MTBE)	< 25.0	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Naphthalene	78.0	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Toluene	3020	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
1,3,5-Trimethylbenzene	< 25.0	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
1,2,4-Trimethylbenzene	48.0	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Xylenes, Total	494	µg/L	SW 846 8260B	50.0	50	01/19/17	CEM	01/19/17 22:03	CEM

Report Generated On: 02/01/2017 5:09 pm

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Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7012602-12

Site: OW-1

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 11:09 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	54.3	µg/L	SW 846 8260B	109%	50	72-136	01/19/17 22:03
Surrogate: 1,2-Dichloroethane-d4	54.0	µg/L	SW 846 8260B	108%	50	79-135	01/19/17 22:03
Surrogate: Toluene-d8	48.8	µg/L	SW 846 8260B	98%	50	88-112	01/19/17 22:03
Surrogate: Bromofluorobenzene	48.8	µg/L	SW 846 8260B	98%	50	75-117	01/19/17 22:03

Sample Number: 7012602-13

Site: OW-2

Sample ID:

Collector: DRC-STL

Collect Date: 01/18/2017 10:08 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/18/17	BAK	01/18/17 10:08	DRC
Static Water Level (ft)	6.70	N/A	N/A		1	01/18/17	BAK	01/18/17 10:08	DRC
Total Volume Purged (gal)	4.20	N/A	N/A		1	01/18/17	BAK	01/18/17 10:08	DRC
Total Well Depth (ft)	15.00	N/A	N/A		1	01/18/17	BAK	01/18/17 10:08	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/18/17	BAK	01/18/17 10:08	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	6470	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Ethyl Benzene	956	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Isopropylbenzene	61.0	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Methyl-t-butyl ether (MTBE)	124	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Naphthalene	241	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Toluene	10200	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
1,3,5-Trimethylbenzene	214	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
1,2,4-Trimethylbenzene	819	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Xylenes, Total	6420	µg/L	SW 846 8260B	100	100	01/26/17	CEM	01/26/17 15:44	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	49.0	µg/L	SW 846 8260B	98%	100	72-136	01/26/17 15:44
Surrogate: 1,2-Dichloroethane-d4	53.0	µg/L	SW 846 8260B	106%	100	79-135	01/26/17 15:44
Surrogate: Toluene-d8	47.0	µg/L	SW 846 8260B	94%	100	88-112	01/26/17 15:44
Surrogate: Bromofluorobenzene	52.9	µg/L	SW 846 8260B	106%	100	75-117	01/26/17 15:44

Report Generated On: 02/01/2017 5:09 pm

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STL_Results Revision #1.6

Effective: 07/09/2014

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suburbantestinglabs.com

SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

Sample Number: 7012602-14
Collector: DRC-STL

Site: Former Supply Well
Collect Date: 01/18/2017 10:59 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	18.00	N/A	N/A		1	01/18/17	BAK	01/18/17 10:59	DRC
Static Water Level (ft)	7.55	N/A	N/A		1	01/18/17	BAK	01/18/17 10:59	DRC
Total Volume Purged (gal)	3.20	N/A	N/A		1	01/18/17	BAK	01/18/17 10:59	DRC
Total Well Depth (ft)	210.0	N/A	N/A		1	01/18/17	BAK	01/18/17 10:59	DRC
Well Diameter (in)	6.00	N/A	N/A		1	01/18/17	BAK	01/18/17 10:59	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	2.1	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Ethyl Benzene	0.6	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Naphthalene	< 0.5 B	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Toluene	2.7	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
1,2,4-Trimethylbenzene	0.6	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Xylenes, Total	2.2	µg/L	SW 846 8260B	1.0	1	01/20/17	CEM	01/20/17 20:05	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	55.6	µg/L	SW 846 8260B	111%	1	72-136	01/20/17 20:05
Surrogate: 1,2-Dichloroethane-d4	52.7	µg/L	SW 846 8260B	105%	1	79-135	01/20/17 20:05
Surrogate: Toluene-d8	49.6	µg/L	SW 846 8260B	99%	1	88-112	01/20/17 20:05
Surrogate: Bromofluorobenzene	47.8	µg/L	SW 846 8260B	96%	1	75-117	01/20/17 20:05

Sample Number: 7012602-15
Collector:

Site: Trip Blank - Day 1
Collect Date: 01/16/2017 12:00 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/17/17	CEM	01/17/17 12:08	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
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7012602
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7012602-15

Site: Trip Blank - Day 1

Sample ID:

Collector:

Collect Date: 01/16/2017 12:00 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries (Continued)	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	52.5	µg/L	SW 846 8260B	105%	1	72-136	01/17/17 12:08
Surrogate: 1,2-Dichloroethane-d4	60.9	µg/L	SW 846 8260B	122%	1	79-135	01/17/17 12:08
Surrogate: Toluene-d8	45.6	µg/L	SW 846 8260B	91%	1	88-112	01/17/17 12:08
Surrogate: Bromofluorobenzene	41.3	µg/L	SW 846 8260B	83%	1	75-117	01/17/17 12:08

Sample Number: 7012602-16

Site: Trip Blank - Day 2

Sample ID:

Collector:

Collect Date: 01/17/2017 12:00 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/18/17	CEM	01/18/17 15:21	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	54.0	µg/L	SW 846 8260B	108%	1	72-136	01/18/17 15:21
Surrogate: 1,2-Dichloroethane-d4	62.4	µg/L	SW 846 8260B	125%	1	79-135	01/18/17 15:21
Surrogate: Toluene-d8	45.7	µg/L	SW 846 8260B	91%	1	88-112	01/18/17 15:21
Surrogate: Bromofluorobenzene	40.9	µg/L	SW 846 8260B	82%	1	75-117	01/18/17 15:21

Sample Number: 7012602-17

Site: Trip Blank - Day 3

Sample ID:

Collector:

Collect Date: 01/18/2017 12:00 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM

Report Generated On: 02/01/2017 5:09 pm

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SUBURBAN TESTING LABS

Sample Number: 7012602-17

Site: Trip Blank - Day 3

Sample ID:

Collector:

Collect Date: 01/18/2017 12:00 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
1,3,5-Trimethylbenzene	0.6	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/19/17	CEM	01/19/17 16:21	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	55.1	µg/L	SW 846 8260B	110%	1	72-136	01/19/17 16:21
Surrogate: 1,2-Dichloroethane-d4	53.3	µg/L	SW 846 8260B	107%	1	79-135	01/19/17 16:21
Surrogate: Toluene-d8	50.0	µg/L	SW 846 8260B	100%	1	88-112	01/19/17 16:21
Surrogate: Bromofluorobenzene	49.1	µg/L	SW 846 8260B	98%	1	75-117	01/19/17 16:21

Data Qualifiers:

- B The target analyte was detected in the Method Blank, Dilution Water Blank, or Sterility Check at or above the method Reporting Limit or applicable method, client, or regulatory requirement.
- B1 The target analyte was detected in the Method Blank at or above the method Reporting Limit, however it was <10% the concentration detected in the sample. Data are reportable under the 2009 TNI Standard.
- M3 The Matrix Spike associated with this sample is above established acceptance criteria, indicating potential matrix interference. Results of this sample may be biased high.
- V The surrogate associated with this sample was not within the established acceptance criteria.

Sample Receipt Conditions:

All samples met the sample receipt requirements for the relevant analyses.

** This report has been Amended (Rev1) and replaces all previous reports for this order ID **

All results meet the requirements of STL's TNI (NELAC) Accredited Quality System unless otherwise noted. If your results contain any data qualifiers or comments, you should evaluate useability relative to your needs.

If collectors initials include "STL", samples have been collected in accordance with STL SOP SL0015.

All results reported on an As Received (Wet Weight) basis unless otherwise noted.

This laboratory report may not be reproduced, except in full, without the written approval of STL.

Results are considered Preliminary unless report is signed by authorized representative of STL.

Reviewed and Released By:

Alana Kopicz
Project Manager

Report Generated On: 02/01/2017 5:09 pm
STL_Results Revision #1.6

7012602
Effective: 07/09/2014

1037F MacArthur Road, Reading, PA 19605 Phone: 800-433-6595 Fax: 610-375-4090 suburbantestinglabs.com

SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

Chain of Custody Record

1037F MacArthur Road, Reading, PA 19605
Phone: 610-375-8378 - Fax: 610-375-4090 - suburbantestinglabs.com

TAT (Circle One): Standard - 24hr - 48hr - 72hr - Other _____
(Additional charges may apply for rush TAT. If not specified, standard TAT will apply.)

ORDER ID: 7012602



Client Name / Address:

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Phone: (717) 394-1063
Fax:

Project Name / Address:

Herr Foods - Quarterly MWs 2017

Client Project Manager: Ed Dziedzic

Payment / P.O. Info:

Project Description:

Order Comments: Monitoring Well Collection = \$65/hour; Travel time to/from site = \$40/hour; Equipment Rental = \$115 flat fee per event;

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
7012602-01	MW-3		1-18-17 1148	DRC-STL	Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method			Field Results
40ml VOA & HCl		A		General Method			
40ml VOA & HCl		B		Monitor Well Sampling - N/A			
40ml VOA & HCl		C		Unassigned			
Field Services		D		Sample Collection, Custom 1 - SL0015			
				Sample Collection, Custom 3 - SL0015			
				Volatiles			
				VOA, 8260, USTUnleaded - SW 846 8260B			
7012602-02	MW-4		1-17-17 1215	DRC-STL	Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method			Field Results
40ml VOA & HCl		A		General Method			
40ml VOA & HCl		B		Monitor Well Sampling - N/A			
40ml VOA & HCl		C		Volatiles			
Field Services		D		VOA, 8260, USTUnleaded - SW 846 8260B			
7012602-03	MW-5		1-17-17 1004	DRC-STL	Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method			Field Results
40ml VOA & HCl		A		General Method			
40ml VOA & HCl		B		Monitor Well Sampling - N/A			
40ml VOA & HCl		C		Volatiles			
Field Services		D		VOA, 8260, USTUnleaded - SW 846 8260B			



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
7012602-04	MW-7		1-17-17 0914	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
40ml VOA & HCl			A		General Method		
40ml VOA & HCl			B		Monitor Well Sampling - N/A		
40ml VOA & HCl			C		Volatiles		
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B		
7012602-05	MW-9		1-16-17 1428	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
40ml VOA & HCl			A		General Method		
40ml VOA & HCl			B		Monitor Well Sampling - N/A		
40ml VOA & HCl			C		Volatiles		
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B		
7012602-06	MW-10		1-16-17 1349	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
40ml VOA & HCl			A		General Method		
40ml VOA & HCl			B		Monitor Well Sampling - N/A		
40ml VOA & HCl			C		Volatiles		
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B		
7012602-07	MW-11		1-16-17 1304	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
40ml VOA & HCl			A		General Method		
40ml VOA & HCl			B		Monitor Well Sampling - N/A		
40ml VOA & HCl			C		Volatiles		
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B		

APPENDIX H
Pilot Test Laboratory Analytical Reports

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Report Date: December 12, 2016

Project: Herr Foods

Submittal Date: 11/29/2016

Group Number: 1737966

PO Number: 101722001

State of Sample Origin: PA

Client Sample DescriptionIW-1 @ 10 Ft Grab Soil
SA1-SB-INITIAL @ 10 Ft Grab Soil
MW-4 Groundwater
OW-1 Groundwater
MW-14S Groundwater
MW-14D Groundwater
OW-2 Groundwater

Lancaster Labs

(LL) #

8717293
8717294
8717295
8717296
8717297
8717298
8717299

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To Rettew Associates

Attn: Ed Dziedzic

Respectfully Submitted,


Stacy L. Hess
Project Manager

(717) 556-7236

Sample Description: IW-1 @ 10 Ft Grab Soil
Herr Foods

LL Sample # SW 8717293
LL Group # 1737966
Account # 00721

Project Name: Herr Foods

Collected: 11/28/2016 09:45 by ED

Rettew Associates

Submitted: 11/29/2016 15:45

3020 Columbia Avenue

Reported: 12/12/2016 12:10

Lancaster PA 17603-4011

HERR1

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B ug/kg					
10237	Benzene	71-43-2	1,100	25	38.88
10237	Ethylbenzene	100-41-4	200 J	50	38.88
10237	Isopropylbenzene	98-82-8	N.D.	50	38.88
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	25	38.88
10237	Naphthalene	91-20-3	N.D.	50	38.88
10237	Toluene	108-88-3	1,600	50	38.88
10237	1,2,4-Trimethylbenzene	95-63-6	63 J	50	38.88
10237	1,3,5-Trimethylbenzene	108-67-8	N.D.	50	38.88
10237	Xylene (Total)	1330-20-7	660	50	38.88
GC Volatiles SW-846 8015B mg/kg					
01637	TPH-GRO soil C6-C10	n.a.	57	8.1	791.14
GC Miscellaneous SW-846 8015B mg/kg					
10941	TPH-DRO soil C10-C28 microwave	n.a.	N.D.	5.0	1
Wet Chemistry SM 2540 G-1997 %					
00111	Moisture	n.a.	21.5	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PA Unleaded/Diesel 8260B	SW-846 8260B	1	R163361AA	12/01/2016 10:35	Jennifer K Howe	38.88
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201633443569	11/28/2016 09:45	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201633443569	11/28/2016 09:45	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201633443569	11/28/2016 09:45	Client Supplied	1
01637	TPH-GRO soil C6-C10	SW-846 8015B	1	16339A34A	12/06/2016 02:34	Jeremy C Giffin	791.14
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201633443569	11/28/2016 09:45	Client Supplied	n.a.
10941	TPH-DRO soil C10-C28 microwave	SW-846 8015B	1	163350021A	12/01/2016 12:20	Thomas C Wildermuth	1

Sample Description: IW-1 @ 10 Ft Grab Soil
Herr Foods

LL Sample # SW 8717293
LL Group # 1737966
Account # 00721

Project Name: Herr Foods

Collected: 11/28/2016 09:45 by ED

Rettew Associates

3020 Columbia Avenue

Lancaster PA 17603-4011

Submitted: 11/29/2016 15:45

Reported: 12/12/2016 12:10

HERR1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10942	Microwave Extraction-DRO soils	SW-846 3546	1	163350021A	11/30/2016 17:15	Kate E Lutte	1
00111	Moisture	SM 2540 G-1997	1	16336820012A	12/02/2016 01:56	Scott W Freisher	1

Sample Description: SA1-SB-INITIAL @ 10 Ft Grab Soil
Herr Foods

LL Sample # SW 8717294
LL Group # 1737966
Account # 00721

Project Name: Herr Foods

Collected: 11/28/2016 13:15 by ED

Rettew Associates

3020 Columbia Avenue

Lancaster PA 17603-4011

Submitted: 11/29/2016 15:45

Reported: 12/12/2016 12:10

HERR2

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B					
10237	Benzene	71-43-2	1,700	25	38.34
10237	Ethylbenzene	100-41-4	4,800	49	38.34
10237	Isopropylbenzene	98-82-8	250	49	38.34
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	25	38.34
10237	Naphthalene	91-20-3	690	49	38.34
10237	Toluene	108-88-3	24,000	490	383.44
10237	1,2,4-Trimethylbenzene	95-63-6	7,000	49	38.34
10237	1,3,5-Trimethylbenzene	108-67-8	2,200	49	38.34
10237	Xylene (Total)	1330-20-7	23,000	49	38.34
GC Volatiles SW-846 8015B					
01637	TPH-GRO soil C6-C10	n.a.	54	4.2	407.83
GC Miscellaneous SW-846 8015B					
10941	TPH-DRO soil C10-C28 microwave	n.a.	N.D.	5.1	1
Wet Chemistry SM 2540 G-1997					
00111	Moisture	n.a.	22.0	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	PA Unleaded/Diesel 8260B	SW-846 8260B	1	R163361AA	12/01/2016 10:58	Jennifer K Howe	38.34
10237	PA Unleaded/Diesel 8260B	SW-846 8260B	1	R163361AA	12/01/2016 11:46	Jennifer K Howe	383.44
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201633443569	11/28/2016 13:15	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201633443569	11/28/2016 13:15	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201633443569	11/28/2016 13:15	Client Supplied	1
01637	TPH-GRO soil C6-C10	SW-846 8015B	1	16339A34A	12/05/2016 19:32	Jeremy C Giffin	407.83
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201633443569	11/28/2016 13:15	Client Supplied	n.a.

Sample Description: SA1-SB-INITIAL @ 10 Ft Grab Soil
Herr Foods

LL Sample # SW 8717294
LL Group # 1737966
Account # 00721

Project Name: Herr Foods

Collected: 11/28/2016 13:15 by ED

Rettew Associates

3020 Columbia Avenue

Lancaster PA 17603-4011

Submitted: 11/29/2016 15:45

Reported: 12/12/2016 12:10

HERR2

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10941	TPH-DRO soil C10-C28 microwave	SW-846 8015B	1	163350021A	12/01/2016 10:53	Thomas C Wildermuth	1
10942	Microwave Extraction-DRO soils	SW-846 3546	1	163350021A	11/30/2016 17:15	Kate E Lutte	1
00111	Moisture	SM 2540 G-1997	1	16336820012A	12/02/2016 01:56	Scott W Freisher	1

Sample Description: MW-4 Groundwater
Herr Foods

LL Sample # WW 8717295
LL Group # 1737966
Account # 00721

Project Name: Herr Foods

Collected: 11/29/2016 08:30 by ED

Rettew Associates

3020 Columbia Avenue

Lancaster PA 17603-4011

Submitted: 11/29/2016 15:45

Reported: 12/12/2016 12:10

HERR3

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles	SW-846 8260B	ug/l	ug/l	
10945	Benzene	71-43-2	740	10	20
10945	Ethylbenzene	100-41-4	590	10	20
10945	Isopropylbenzene	98-82-8	27 J	10	20
10945	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	10	20
10945	Naphthalene	91-20-3	100	20	20
10945	Toluene	108-88-3	2,200	10	20
10945	1,2,4-Trimethylbenzene	95-63-6	540	10	20
10945	1,3,5-Trimethylbenzene	108-67-8	180	10	20
10945	Xylene (Total)	1330-20-7	2,200	10	20
GC	Volatiles	SW-846 8015B	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	20,000	1,000	50
GC	Petroleum	SW-846 8015B	ug/l	ug/l	
Hydrocarbons					
08269	TPH-DRO water C10-C28	n.a.	4,700	37	1
	The holding time was not met.				

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	D163372AA	12/02/2016 08:59	Anita M Dale	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D163372AA	12/02/2016 08:59	Anita M Dale	20
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16337B20A	12/02/2016 18:21	Marie D Beamenderfer	50
01146	GC VOA Water Prep	SW-846 5030B	1	16337B20A	12/02/2016 18:21	Marie D Beamenderfer	50
08269	TPH-DRO water C10-C28	SW-846 8015B	1	163430025A	12/10/2016 06:04	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	163430025A	12/09/2016 08:00	Kayla A Yuditsky	1

Sample Description: OW-1 Groundwater
Herr Foods

LL Sample # WW 8717296
LL Group # 1737966
Account # 00721

Project Name: Herr Foods

Collected: 11/29/2016 09:45 by ED

Rettew Associates
3020 Columbia Avenue
Lancaster PA 17603-4011

Submitted: 11/29/2016 15:45

Reported: 12/12/2016 12:10

HERR4

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B					
10945	Benzene	71-43-2	5,200	ug/l 50	100
10945	Ethylbenzene	100-41-4	2,300	50	100
10945	Isopropylbenzene	98-82-8	61	5	10
10945	Methyl Tertiary Butyl Ether	1634-04-4	10	5	10
10945	Naphthalene	91-20-3	400	10	10
10945	Toluene	108-88-3	11,000	50	100
10945	1,2,4-Trimethylbenzene	95-63-6	1,400	5	10
10945	1,3,5-Trimethylbenzene	108-67-8	370	5	10
10945	Xylene (Total)	1330-20-7	9,200	50	100
GC Volatiles SW-846 8015B					
01635	TPH-GRO water C6-C10	n.a.	75,000	ug/l 1,000	50
GC Petroleum SW-846 8015B					
Hydrocarbons					
08269	TPH-DRO water C10-C28	n.a.	5,500	36	1
The holding time was not met.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	D163372AA	12/02/2016 09:21	Anita M Dale	10
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	D163372AA	12/02/2016 09:44	Anita M Dale	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D163372AA	12/02/2016 09:21	Anita M Dale	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	D163372AA	12/02/2016 09:44	Anita M Dale	100
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16337B20A	12/02/2016 18:48	Marie D Beamenderfer	50
01146	GC VOA Water Prep	SW-846 5030B	1	16337B20A	12/02/2016 18:48	Marie D Beamenderfer	50
08269	TPH-DRO water C10-C28	SW-846 8015B	1	163430025A	12/10/2016 06:26	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	163430025A	12/09/2016 08:00	Kayla A Yuditsky	1

Sample Description: MW-14S Groundwater
Herr Foods

LL Sample # WW 8717297
LL Group # 1737966
Account # 00721

Project Name: Herr Foods

Collected: 11/29/2016 11:00 by ED

Rettew Associates

3020 Columbia Avenue

Lancaster PA 17603-4011

Submitted: 11/29/2016 15:45

Reported: 12/12/2016 12:10

HERR5

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B					
10945	Benzene	71-43-2	3,500	ug/l	100
10945	Ethylbenzene	100-41-4	2,600	50	100
10945	Isopropylbenzene	98-82-8	90	5	10
10945	Methyl Tertiary Butyl Ether	1634-04-4	210	5	10
10945	Naphthalene	91-20-3	380	10	10
10945	Toluene	108-88-3	11,000	50	100
10945	1,2,4-Trimethylbenzene	95-63-6	2,000	5	10
10945	1,3,5-Trimethylbenzene	108-67-8	560	5	10
10945	Xylene (Total)	1330-20-7	10,000	50	100
GC Volatiles SW-846 8015B					
01635	TPH-GRO water C6-C10	n.a.	76,000	ug/l	50
GC Petroleum SW-846 8015B					
Hydrocarbons					
08269	TPH-DRO water C10-C28	n.a.	8,500	ug/l	1
The holding time was not met.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	D163371AA	12/02/2016 10:41	Anita M Dale	10
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	D163371AA	12/02/2016 11:04	Anita M Dale	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D163371AA	12/02/2016 10:41	Anita M Dale	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	D163371AA	12/02/2016 11:04	Anita M Dale	100
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16337B20A	12/02/2016 19:43	Marie D Beamenderfer	50
01146	GC VOA Water Prep	SW-846 5030B	1	16337B20A	12/02/2016 19:43	Marie D Beamenderfer	50
08269	TPH-DRO water C10-C28	SW-846 8015B	1	163430025A	12/10/2016 06:48	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	163430025A	12/09/2016 08:00	Kayla A Yuditsky	1

Sample Description: MW-14D Groundwater
Herr Foods

LL Sample # WW 8717298
LL Group # 1737966
Account # 00721

Project Name: Herr Foods

Collected: 11/29/2016 11:30 by ED

Rettew Associates

3020 Columbia Avenue

Lancaster PA 17603-4011

Submitted: 11/29/2016 15:45

Reported: 12/12/2016 12:10

HERR6

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B					
10945	Benzene	71-43-2	190	ug/l	5
10945	Ethylbenzene	100-41-4	28	3	5
10945	Isopropylbenzene	98-82-8	10	3	5
10945	Methyl Tertiary Butyl Ether	1634-04-4	45	3	5
10945	Naphthalene	91-20-3	25	5	5
10945	Toluene	108-88-3	180	3	5
10945	1,2,4-Trimethylbenzene	95-63-6	22	3	5
10945	1,3,5-Trimethylbenzene	108-67-8	13	3	5
10945	Xylene (Total)	1330-20-7	320	3	5
GC Volatiles SW-846 8015B					
01635	TPH-GRO water C6-C10	n.a.	3,100	ug/l	10
GC Petroleum SW-846 8015B					
Hydrocarbons					
08269	TPH-DRO water C10-C28	n.a.	1,600	ug/l	1
The holding time was not met.					

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	D163371AA	12/02/2016 11:27	Anita M Dale	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D163371AA	12/02/2016 11:27	Anita M Dale	5
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16337B20A	12/02/2016 20:10	Marie D Beamenderfer	10
01146	GC VOA Water Prep	SW-846 5030B	1	16337B20A	12/02/2016 20:10	Marie D Beamenderfer	10
08269	TPH-DRO water C10-C28	SW-846 8015B	1	163430025A	12/10/2016 07:10	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	163430025A	12/09/2016 08:00	Kayla A Yuditsky	1

Sample Description: OW-2 Groundwater
Herr Foods

LL Sample # WW 8717299
LL Group # 1737966
Account # 00721

Project Name: Herr Foods

Collected: 11/29/2016 12:00 by ED

Rettew Associates

3020 Columbia Avenue

Lancaster PA 17603-4011

Submitted: 11/29/2016 15:45

Reported: 12/12/2016 12:10

HERR7

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B ug/l					
10945	Benzene	71-43-2	13,000	100	200
10945	Ethylbenzene	100-41-4	2,500	10	20
10945	Isopropylbenzene	98-82-8	55	10	20
10945	Methyl Tertiary Butyl Ether	1634-04-4	130	10	20
10945	Naphthalene	91-20-3	310	20	20
10945	Toluene	108-88-3	26,000	100	200
10945	1,2,4-Trimethylbenzene	95-63-6	1,200	10	20
10945	1,3,5-Trimethylbenzene	108-67-8	320	10	20
10945	Xylene (Total)	1330-20-7	9,800	10	20
GC Volatiles SW-846 8015B ug/l					
01635	TPH-GRO water C6-C10	n.a.	130,000	2,000	100
GC Petroleum SW-846 8015B ug/l					
Hydrocarbons					
08269	TPH-DRO water C10-C28	n.a.	6,600	33	1
	The holding time was not met.				

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	D163371AA	12/02/2016 11:50	Anita M Dale	20
10945	PA UST Unleaded + TMBs	SW-846 8260B	1	D163371AA	12/02/2016 12:12	Anita M Dale	200
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D163371AA	12/02/2016 11:50	Anita M Dale	20
01163	GC/MS VOA Water Prep	SW-846 5030B	2	D163371AA	12/02/2016 12:12	Anita M Dale	200
01635	TPH-GRO water C6-C10	SW-846 8015B	1	16337B20A	12/02/2016 20:38	Marie D Beamenderfer	100
01146	GC VOA Water Prep	SW-846 5030B	1	16337B20A	12/02/2016 20:38	Marie D Beamenderfer	100
08269	TPH-DRO water C10-C28	SW-846 8015B	1	163430025A	12/10/2016 07:31	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	163430025A	12/09/2016 08:00	Kayla A Yuditsky	1

Quality Control Summary

Client Name: Rettew Associates
Reported: 12/12/2016 12:10

Group Number: 1737966

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	ug/kg	ug/kg
Batch number: R163361AA	Sample number(s): 8717293-8717294	
Benzene	N.D.	25
Ethylbenzene	N.D.	50
Isopropylbenzene	N.D.	50
Methyl Tertiary Butyl Ether	N.D.	25
Naphthalene	N.D.	50
Toluene	N.D.	50
1,2,4-Trimethylbenzene	N.D.	50
1,3,5-Trimethylbenzene	N.D.	50
Xylene (Total)	N.D.	50
	ug/l	ug/l
Batch number: D163371AA	Sample number(s): 8717297-8717299	
Benzene	N.D.	0.5
Ethylbenzene	N.D.	0.5
Isopropylbenzene	N.D.	0.5
Methyl Tertiary Butyl Ether	N.D.	0.5
Naphthalene	N.D.	1
Toluene	N.D.	0.5
1,2,4-Trimethylbenzene	N.D.	0.5
1,3,5-Trimethylbenzene	N.D.	0.5
Xylene (Total)	N.D.	0.5
Batch number: D163372AA	Sample number(s): 8717295-8717296	
Benzene	N.D.	0.5
Ethylbenzene	N.D.	0.5
Isopropylbenzene	N.D.	0.5
Methyl Tertiary Butyl Ether	N.D.	0.5
Naphthalene	N.D.	1
Toluene	N.D.	0.5
1,2,4-Trimethylbenzene	N.D.	0.5
1,3,5-Trimethylbenzene	N.D.	0.5
Xylene (Total)	N.D.	0.5
	mg/kg	mg/kg
Batch number: 16339A34A	Sample number(s): 8717293-8717294	
TPH-GRO soil C6-C10	N.D.	0.2
	ug/l	ug/l
Batch number: 16337B20A	Sample number(s): 8717295-8717299	
TPH-GRO water C6-C10	N.D.	20

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 12/12/2016 12:10

Group Number: 1737966

Method Blank (continued)

Analysis Name	Result	MDL
	mg/kg	mg/kg
Batch number: 163350021A	Sample number(s): 8717293-8717294	
TPH-DRO soil C10-C28 microwave	N.D.	4.0
	ug/l	ug/l
Batch number: 163430025A	Sample number(s): 8717295-8717299	
TPH-DRO water C10-C28	N.D.	32

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: R163361AA	Sample number(s): 8717293-8717294								
Benzene	1000	993.38	1000	1111.17	99	111	80-120	11	30
Ethylbenzene	1000	889.91	1000	1002.51	89	100	80-120	12	30
Isopropylbenzene	1000	798.68	1000	906.44	80	91	76-120	13	30
Methyl Tertiary Butyl Ether	1000	1001.94	1000	1174.71	100	117	72-120	16	30
Naphthalene	1000	660.59	1000	779	66	78	53-120	16	30
Toluene	1000	892.72	1000	1027.76	89	103	80-120	14	30
1,2,4-Trimethylbenzene	1000	860.13	1000	951.8	86	95	74-120	10	30
1,3,5-Trimethylbenzene	1000	845.97	1000	936.36	85	94	73-120	10	30
Xylene (Total)	3000	2611.14	3000	2909.05	87	97	80-120	11	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: D163371AA	Sample number(s): 8717297-8717299								
Benzene	20	22.02	20	21.81	110	109	78-120	1	30
Ethylbenzene	20	21.95	20	21.57	110	108	78-120	2	30
Isopropylbenzene	20	22.36	20	21.91	112	110	80-120	2	30
Methyl Tertiary Butyl Ether	20	22.42	20	22.33	112	112	75-120	0	30
Naphthalene	20	21.25	20	21.25	106	106	59-120	0	30
Toluene	20	22.11	20	21.72	111	109	80-120	2	30
1,2,4-Trimethylbenzene	20	21.79	20	22.04	109	110	75-120	1	30
1,3,5-Trimethylbenzene	20	21.8	20	22.08	109	110	75-120	1	30
Xylene (Total)	60	66.04	60	65.07	110	108	80-120	1	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: D163372AA	Sample number(s): 8717295-8717296								
Benzene	20	22.21	20	20.79	111	104	78-120	7	30
Ethylbenzene	20	21.73	20	20.61	109	103	78-120	5	30
Isopropylbenzene	20	22.11	20	20.68	111	103	80-120	7	30
Methyl Tertiary Butyl Ether	20	22.67	20	20.91	113	105	75-120	8	30
Naphthalene	20	20.71	20	18.86	104	94	59-120	9	30
Toluene	20	21.26	20	20.05	106	100	80-120	6	30
1,2,4-Trimethylbenzene	20	21.99	20	20.57	110	103	75-120	7	30
1,3,5-Trimethylbenzene	20	21.94	20	20.78	110	104	75-120	5	30

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 12/12/2016 12:10

Group Number: 1737966

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Xylene (Total)	60	64.92	60	61.79	108	103	80-120	5	30
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16339A34A TPH-GRO soil C6-C10	Sample number(s): 8717293-8717294								
	11	10.25	11	10.67	93	97	54-120	4	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 16337B20A TPH-GRO water C6-C10	Sample number(s): 8717295-8717299								
	1100	1114.33	1100	1096.97	101	100	80-120	2	30
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 163350021A TPH-DRO soil C10-C28 microwave	Sample number(s): 8717293-8717294								
	133	120.26			90		74-117		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 163430025A TPH-DRO water C10-C28	Sample number(s): 8717295-8717299								
	1600	1297.33	1600	1225.82	81	77	53-115	6	20
	%	%	%	%					
Batch number: 16336820012A Moisture	Sample number(s): 8717293-8717294								
	89.5	89.44			100		99-101		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MSD Spike Added mg/kg	MSD Conc mg/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 163350021A TPH-DRO soil C10-C28 microwave	Sample number(s): 8717293-8717294 UNSPK: 8717294									
	N.D.	133	122.08			92		74-117		

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/kg	DUP Conc mg/kg	DUP RPD	DUP RPD Max
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*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 12/12/2016 12:10

Group Number: 1737966

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/kg	DUP Conc mg/kg	DUP RPD	DUP RPD Max
Batch number: 163350021A TPH-DRO soil C10-C28 microwave	Sample number(s): 8717293-8717294 N.D.	BKG: 8717294 N.D.	0 (1)	20
	%	%		
Batch number: 16336820012A Moisture	Sample number(s): 8717293-8717294 9.80	BKG: P717811 9.38	4	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PA UST Unleaded + TMBs

Batch number: D163371AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8717297	99	95	98	102
8717298	99	99	100	99
8717299	98	96	98	102
Blank	98	99	101	97
LCS	99	98	99	101
LCSD	98	101	98	100
Limits:	80-116	77-113	80-113	78-113

Analysis Name: PA UST Unleaded + TMBs

Batch number: D163372AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8717295	98	98	98	99
8717296	96	95	98	102
Blank	98	99	98	96
LCS	99	101	100	100
LCSD	98	98	100	101
Limits:	80-116	77-113	80-113	78-113

Analysis Name: PA Unleaded/Diesel 8260B

Batch number: R163361AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8717293	85	87	77	88
8717294	82	82	73	81
Blank	98	98	86	88
LCS	99	99	88	92
LCSD	111	109	100	104

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 12/12/2016 12:10

Group Number: 1737966

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PA Unleaded/Diesel 8260B
Batch number: R163361AA

Limits: 50-141 54-135 52-141 50-131

Analysis Name: TPH-GRO water C6-C10
Batch number: 16337B20A

Trifluorotoluene-F

8717295	83
8717296	82
8717297	88
8717298	88
8717299	80
Blank	88
LCS	96
LCSD	86

Limits: 63-135

Analysis Name: TPH-GRO soil C6-C10
Batch number: 16339A34A

Trifluorotoluene-F

8717293	92
8717294	84
Blank	96
LCS	96
LCSD	94

Limits: 50-142

Analysis Name: TPH-DRO soil C10-C28 microwave
Batch number: 163350021A

Orthoterphenyl

8717293	77
8717294	72
Blank	86
DUP	77
LCS	86
MS	85

Limits: 34-147

Analysis Name: TPH-DRO water C10-C28
Batch number: 163430025A

Orthoterphenyl

8717295	90
8717296	98
8717297	110

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Rettew Associates
Reported: 12/12/2016 12:10

Group Number: 1737966

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH-DRO water C10-C28

Batch number: 163430025A

	Orthoterphenyl
8717298	96
8717299	98
Blank	86
LCS	94
LCSD	90

Limits: 50-124

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

For Eurofins Lancaster Laboratories Environmental use only

COC #515568

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

Sample Administration
Receipt Documentation Log

Doc Log ID: 169184

Group Number(s): 1737966

Client: Rettew Associates**Delivery and Receipt Information**

Delivery Method:	<u>Client Drop Off</u>	Arrival Timestamp:	<u>11/29/2016 16:35</u>
Number of Packages:	<u>2</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>PA</u>		

Arrival Condition Summary

Shipping Container Sealed:	No	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	Yes
Samples Chilled:	Yes	VOA Vial Headspace $\geq$ 6mm:	No
Paperwork Enclosed:	Yes	Total Trip Blank Qty:	2
Samples Intact:	Yes	Trip Blank Type:	HCI
Missing Samples:	No	Air Quality Samples Present:	No
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

*Unpacked by Cathy Murphy (10960) at 16:56 on 11/29/2016***Samples Chilled Details***Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.*

<u>Cooler #</u>	<u>Thermometer ID</u>	<u>Corrected Temp</u>	<u>Therm. Type</u>	<u>Ice Type</u>	<u>Ice Present?</u>	<u>Ice Container</u>	<u>Elevated Temp?</u>
1	DT146	3.7	DT	Wet	Y	Bagged	N
2	DT146	3.4	DT	Wet	Y	Bagged	N

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mg	milligram(s)
C	degrees Celsius	mL	milliliter(s)
cfu	colony forming units	MPN	Most Probable Number
CP Units	cobalt-chloroplatinate units	N.D.	none detected
F	degrees Fahrenheit	ng	nanogram(s)
g	gram(s)	NTU	nephelometric turbidity units
IU	International Units	pg/L	picogram/liter
kg	kilogram(s)	RL	Reporting Limit
L	liter(s)	TNTC	Too Numerous To Count
lb.	pound(s)	µg	microgram(s)
m3	cubic meter(s)	µL	microliter(s)
meq	milliequivalents	umhos/cm	micromhos/cm
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...
- W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Additional Data Qualifiers

Qualifier	Definition
B	Detection in the Blank
Q0	LCS/LCSD Low
Q1	LCS/LCSD High
Q4	MS/MSD Out of Range
Q7	LCS/LCSD RPD
Q8	DUP RPD
Q9	MS/MSD RPD



Results Report

Order ID: 6122519

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Project: Herr Foods - Limited GW Sampling Events (Dec 2016)

Attn: Ed Dziedzic

Regulatory ID:

Sample Number: 6122519-01

Site: MW-4

Sample ID:

Collector: DRC-STL

Collect Date: 12/19/2016 10:20 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

C10-C44	6.6	mg/L	8015D	1.0	2	12/23/16		12/27/16 13:57	MJA
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: o-Terphenyl	0.018	mg/L	8015D	91%	2	34-158	12/27/16 13:57

Gasoline Range Organics (GRO) (GC)

Gasoline Range Organics (GRO) (GC)

GRO	28000	ug/L	8015D	2500	100	12/25/16		12/25/16 1:24	DAS
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: a,a,a-Trifluorotoluene	4500	ug/L	8015D	89%	100	79-140	12/25/16 1:24

General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	12/19/16	RSM	12/19/16 10:20	DRC
Static Water Level (ft)	7.70	N/A	N/A		1	12/19/16	RSM	12/19/16 10:20	DRC
Total Volume Purged (gal)	5.30	N/A	N/A		1	12/19/16	RSM	12/19/16 10:20	DRC
Total Well Depth (ft)	19.00	N/A	N/A		1	12/19/16	RSM	12/19/16 10:20	DRC
Well Diameter (in)	2.00	N/A	N/A		1	12/19/16	RSM	12/19/16 10:20	DRC

Volatiles

VOA, 8260, USTUnleaded

Isopropylbenzene	24.1	ug/L	SW 846 8260B	0.5	1	12/23/16	CEM	12/23/16 19:52	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	ug/L	SW 846 8260B	0.5	1	12/23/16	CEM	12/23/16 19:52	CEM
1,3,5-Trimethylbenzene	79.1	ug/L	SW 846 8260B	0.5	1	12/23/16	CEM	12/23/16 19:52	CEM
Ethyl Benzene	3250	ug/L	SW 846 8260B	10.0	20	12/28/16	CEM	12/28/16 23:34	AMD
Naphthalene	2630	ug/L	SW 846 8260B	10.0	20	12/28/16	CEM	12/28/16 23:34	AMD
Benzene	1510	ug/L	SW 846 8260B	250	500	01/02/17	CEM	01/02/17 16:34	CEM
Toluene	5440	ug/L	SW 846 8260B	250	500	01/02/17	CEM	01/02/17 16:34	CEM
1,2,4-Trimethylbenzene	870	ug/L	SW 846 8260B	250	500	01/02/17	CEM	01/02/17 16:34	CEM
Xylenes, Total	5880	ug/L	SW 846 8260B	500	500	01/02/17	CEM	01/02/17 16:34	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
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Report Generated On: 01/05/2017 3:06 pm

6122519

STL_Results Revision #1.6

Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 6122519-01
Collector: DRC-STL

Site: MW-4
Collect Date: 12/19/2016 10:20 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries (Continued)	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	42.0	µg/L	SW 846 8260B	84%	1	72-136	12/23/16 19:52
Surrogate: 1,2-Dichloroethane-d4	51.0	µg/L	SW 846 8260B	102%	1	79-135	12/23/16 19:52
Surrogate: Toluene-d8	48.3	µg/L	SW 846 8260B	97%	1	88-112	12/23/16 19:52
Surrogate: Bromofluorobenzene	52.6	µg/L	SW 846 8260B	105%	1	75-117	12/23/16 19:52
Surrogate: Dibromofluoromethane	43.0	µg/L	SW 846 8260B	86%	20	72-136	12/28/16 23:34
Surrogate: 1,2-Dichloroethane-d4	52.2	µg/L	SW 846 8260B	104%	20	79-135	12/28/16 23:34
Surrogate: Toluene-d8	48.2	µg/L	SW 846 8260B	96%	20	88-112	12/28/16 23:34
Surrogate: Bromofluorobenzene	50.9	µg/L	SW 846 8260B	102%	20	75-117	12/28/16 23:34
Surrogate: Dibromofluoromethane	47.2	µg/L	SW 846 8260B	94%	500	72-136	01/02/17 16:34
Surrogate: 1,2-Dichloroethane-d4	56.2	µg/L	SW 846 8260B	112%	500	79-135	01/02/17 16:34
Surrogate: Toluene-d8	45.6	µg/L	SW 846 8260B	91%	500	88-112	01/02/17 16:34
Surrogate: Bromofluorobenzene	44.6	µg/L	SW 846 8260B	89%	500	75-117	01/02/17 16:34

Sample Number: 6122519-02
Collector: DRC-STL

Site: MW-5
Collect Date: 12/19/2016 12:05 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

C10-C44 < 0.52 mg/L 8015D 0.52 1 12/23/16 12/27/16 12:21 MJA

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: o-Terphenyl	0.018	mg/L	8015D	89%	1	34-158	12/27/16 12:21

Gasoline Range Organics (GRO) (GC)

Gasoline Range Organics (GRO) (GC)

GRO 180 ug/L 8015D 25 1 12/25/16 12/25/16 0:30 DAS

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: a,a,a-Trifluorotoluene	54	ug/L	8015D	109%	1	79-140	12/25/16 0:30

General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	12/19/16	RSM	12/19/16 12:05	DRC
Static Water Level (ft)	6.86	N/A	N/A		1	12/19/16	RSM	12/19/16 12:05	DRC
Total Volume Purged (gal)	2.50	N/A	N/A		1	12/19/16	RSM	12/19/16 12:05	DRC
Total Well Depth (ft)	27.00	N/A	N/A		1	12/19/16	RSM	12/19/16 12:05	DRC
Well Diameter (in)	2.00	N/A	N/A		1	12/19/16	RSM	12/19/16 12:05	DRC

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6122519
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SUBURBAN TESTING LABS

Sample Number: 6122519-02

Site: MW-5

Sample ID:

Collector: DRC-STL

Collect Date: 12/19/2016 12:05 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method (Continued)

Volatiles

VOA, 8260, USTUnleaded

Benzene	14.1	µg/L	SW 846 8260B	0.5	1	12/28/16	CEM	12/28/16 15:52	AMD
Ethyl Benzene	6.1	µg/L	SW 846 8260B	0.5	1	12/28/16	CEM	12/28/16 15:52	AMD
Isopropylbenzene	2.3	µg/L	SW 846 8260B	0.5	1	12/28/16	CEM	12/28/16 15:52	AMD
Methyl-t-butyl ether (MTBE)	1.9	µg/L	SW 846 8260B	0.5	1	12/28/16	CEM	12/28/16 15:52	AMD
Naphthalene	2.5	µg/L	SW 846 8260B	0.5	1	12/28/16	CEM	12/28/16 15:52	AMD
Toluene	3.5	µg/L	SW 846 8260B	0.5	1	12/28/16	CEM	12/28/16 15:52	AMD
1,3,5-Trimethylbenzene	0.9	µg/L	SW 846 8260B	0.5	1	12/28/16	CEM	12/28/16 15:52	AMD
1,2,4-Trimethylbenzene	3.4	µg/L	SW 846 8260B	0.5	1	12/28/16	CEM	12/28/16 15:52	AMD
Xylenes, Total	31.2	µg/L	SW 846 8260B	1.0	1	12/28/16	CEM	12/28/16 15:52	AMD

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	45.6	µg/L	SW 846 8260B	91%	1	72-136	12/28/16 15:52
Surrogate: 1,2-Dichloroethane-d4	53.6	µg/L	SW 846 8260B	107%	1	79-135	12/28/16 15:52
Surrogate: Toluene-d8	46.1	µg/L	SW 846 8260B	92%	1	88-112	12/28/16 15:52
Surrogate: Bromofluorobenzene	47.8	µg/L	SW 846 8260B	96%	1	75-117	12/28/16 15:52

Sample Number: 6122519-03

Site: MW-14S

Sample ID:

Collector: DRC-STL

Collect Date: 12/19/2016 1:35 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

C10-C44	5.0	mg/L	8015D	0.52	1	12/23/16		12/27/16 12:33	MJA
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: o-Terphenyl	0.022	mg/L	8015D	112%	1	34-158	12/27/16 12:33

Gasoline Range Organics (GRO) (GC)

Gasoline Range Organics (GRO) (GC)

GRO	33000	ug/L	8015D	2500	100	12/25/16		12/25/16 2:17	DAS
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: a,a,a-Trifluorotoluene	4100	ug/L	8015D	83%	100	79-140	12/25/16 2:17

General Method

Monitor Well Sampling

Sampling Depth (ft)	8.00	N/A	N/A		1	12/19/16	RSM	12/19/16 13:35	DRC
Static Water Level (ft)	6.30	N/A	N/A		1	12/19/16	RSM	12/19/16 13:35	DRC

Report Generated On: 01/05/2017 3:06 pm

6122519

STL_Results Revision #1.6

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SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

Sample Number: 6122519-03
Collector: DRC-STL

Site: MW-14S
Collect Date: 12/19/2016 1:35 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method (Continued)

Monitor Well Sampling (Continued)

Total Volume Purged (gal)	2.50	N/A	N/A		1	12/19/16	RSM	12/19/16 13:35	DRC
Total Well Depth (ft)	10.00	N/A	N/A		1	12/19/16	RSM	12/19/16 13:35	DRC
Well Diameter (in)	2.00	N/A	N/A		1	12/19/16	RSM	12/19/16 13:35	DRC

Volatiles

VOA, 8260, USTUnleaded

Isopropylbenzene	66.7	µg/L	SW 846 8260B	0.5	1	12/23/16	CEM	12/23/16 20:47	CEM
Methyl-t-butyl ether (MTBE)	153	µg/L	SW 846 8260B	0.5	1	12/23/16	CEM	12/23/16 20:47	CEM
Naphthalene	2050	µg/L	SW 846 8260B	25.0	50	12/29/16	CEM	12/29/16 0:01	AMD
1,3,5-Trimethylbenzene	2270	µg/L	SW 846 8260B	25.0	50	12/29/16	CEM	12/29/16 0:01	AMD
Benzene	2800	µg/L	SW 846 8260B	250	500	01/02/17	CEM	01/02/17 17:01	CEM
Ethyl Benzene	1360	µg/L	SW 846 8260B	250	500	01/02/17	CEM	01/02/17 17:01	CEM
Toluene	8980	µg/L	SW 846 8260B	250	500	01/02/17	CEM	01/02/17 17:01	CEM
1,2,4-Trimethylbenzene	775	µg/L	SW 846 8260B	250	500	01/02/17	CEM	01/02/17 17:01	CEM
Xylenes, Total	6990	µg/L	SW 846 8260B	500	500	01/02/17	CEM	01/02/17 17:01	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	37.4	µg/L	SW 846 8260B	75%	1	72-136	12/23/16 20:47
Surrogate: 1,2-Dichloroethane-d4	51.5	µg/L	SW 846 8260B	103%	1	79-135	12/23/16 20:47
Surrogate: Toluene-d8	45.8	µg/L	SW 846 8260B	92%	1	88-112	12/23/16 20:47
Surrogate: Bromofluorobenzene	52.9	µg/L	SW 846 8260B	106%	1	75-117	12/23/16 20:47
Surrogate: Dibromofluoromethane	42.2	µg/L	SW 846 8260B	84%	50	72-136	12/29/16 0:01
Surrogate: 1,2-Dichloroethane-d4	50.0	µg/L	SW 846 8260B	100%	50	79-135	12/29/16 0:01
Surrogate: Toluene-d8	46.7	µg/L	SW 846 8260B	93%	50	88-112	12/29/16 0:01
Surrogate: Bromofluorobenzene	48.4	µg/L	SW 846 8260B	97%	50	75-117	12/29/16 0:01
Surrogate: Dibromofluoromethane	47.0	µg/L	SW 846 8260B	94%	500	72-136	01/02/17 17:01
Surrogate: 1,2-Dichloroethane-d4	56.9	µg/L	SW 846 8260B	114%	500	79-135	01/02/17 17:01
Surrogate: Toluene-d8	45.7	µg/L	SW 846 8260B	91%	500	88-112	01/02/17 17:01
Surrogate: Bromofluorobenzene	44.6	µg/L	SW 846 8260B	89%	500	75-117	01/02/17 17:01

Sample Number: 6122519-04
Collector: DRC-STL

Site: MW-14D
Collect Date: 12/19/2016 12:55 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

C10-C44	0.87	mg/L	8015D	0.52	1	12/23/16		12/27/16 12:45	MJA
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: o-Terphenyl	0.019	mg/L	8015D	93%	1	34-158	12/27/16 12:45

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SUBURBAN TESTING LABS

Sample Number: 6122519-04

Site: MW-14D

Sample ID:

Collector: DRC-STL

Collect Date: 12/19/2016 12:55 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Gasoline Range Organics (GRO) (GC)

Gasoline Range Organics (GRO) (GC)

GRO	1600	ug/L	8015D	130	5	12/25/16		12/25/16 1:50	DAS
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: a,a,a-Trifluorotoluene	220	ug/L	8015D	90%	5	79-140	12/25/16 1:50

General Method

Monitor Well Sampling

Sampling Depth (ft)	20.00	N/A	N/A		1	12/19/16	RSM	12/19/16 12:55	DRC
Static Water Level (ft)	5.85	N/A	N/A		1	12/19/16	RSM	12/19/16 12:55	DRC
Total Volume Purged (gal)	2.60	N/A	N/A		1	12/19/16	RSM	12/19/16 12:55	DRC
Total Well Depth (ft)	25.00	N/A	N/A		1	12/19/16	RSM	12/19/16 12:55	DRC
Well Diameter (in)	2.00	N/A	N/A		1	12/19/16	RSM	12/19/16 12:55	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	< 1.0	µg/L	SW 846 8260B	1.0	2	12/28/16	CEM	12/28/16 20:19	AMD
Ethyl Benzene	< 1.0	µg/L	SW 846 8260B	1.0	2	12/28/16	CEM	12/28/16 20:19	AMD
Isopropylbenzene	< 1.0	µg/L	SW 846 8260B	1.0	2	12/28/16	CEM	12/28/16 20:19	AMD
Methyl-t-butyl ether (MTBE)	< 1.0	µg/L	SW 846 8260B	1.0	2	12/28/16	CEM	12/28/16 20:19	AMD
Naphthalene	< 1.0	µg/L	SW 846 8260B	1.0	2	12/28/16	CEM	12/28/16 20:19	AMD
Toluene	< 1.0	µg/L	SW 846 8260B	1.0	2	12/28/16	CEM	12/28/16 20:19	AMD
1,3,5-Trimethylbenzene	< 1.0	µg/L	SW 846 8260B	1.0	2	12/28/16	CEM	12/28/16 20:19	AMD
1,2,4-Trimethylbenzene	< 1.0	µg/L	SW 846 8260B	1.0	2	12/28/16	CEM	12/28/16 20:19	AMD
Xylenes, Total	< 2.0	µg/L	SW 846 8260B	2.0	2	12/28/16	CEM	12/28/16 20:19	AMD

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	47.3	µg/L	SW 846 8260B	95%	2	72-136	12/28/16 20:19
Surrogate: 1,2-Dichloroethane-d4	54.2	µg/L	SW 846 8260B	108%	2	79-135	12/28/16 20:19
Surrogate: Toluene-d8	45.2	µg/L	SW 846 8260B	90%	2	88-112	12/28/16 20:19
Surrogate: Bromofluorobenzene	43.4	µg/L	SW 846 8260B	87%	2	75-117	12/28/16 20:19

Sample Number: 6122519-05

Site: OW-1

Sample ID:

Collector: DRC-STL

Collect Date: 12/19/2016 11:10 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

C10-C44	4.9	mg/L	8015D	0.52	1	12/23/16		12/27/16 12:57	MJA
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: o-Terphenyl	0.020	mg/L	8015D	98%	1	34-158	12/27/16 12:57

Report Generated On: 01/05/2017 3:06 pm

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SUBURBAN TESTING LABS

Sample Number: 6122519-05

Site: OW-1

Sample ID:

Collector: DRC-STL

Collect Date: 12/19/2016 11:10 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC) (Continued)

Gasoline Range Organics (GRO) (GC)

Gasoline Range Organics (GRO) (GC)

GRO	31000	ug/L	8015D	2500	100	12/25/16		12/25/16 0:57	DAS
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: a,a,a-Trifluorotoluene	4200	ug/L	8015D	84%	100	79-140	12/25/16 0:57

General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	12/19/16	RSM	12/19/16 11:10	DRC
Static Water Level (ft)	7.69	N/A	N/A		1	12/19/16	RSM	12/19/16 11:10	DRC
Total Volume Purged (gal)	3.00	N/A	N/A		1	12/19/16	RSM	12/19/16 11:10	DRC
Total Well Depth (ft)	15.00	N/A	N/A		1	12/19/16	RSM	12/19/16 11:10	DRC
Well Diameter (in)	2.00	N/A	N/A		1	12/19/16	RSM	12/19/16 11:10	DRC

Volatiles

VOA, 8260, USTUnleaded

Ethyl Benzene	154	µg/L	SW 846 8260B	0.5	1	12/23/16	CEM	12/23/16 21:41	CEM
Isopropylbenzene	7.2	µg/L	SW 846 8260B	0.5	1	12/23/16	CEM	12/23/16 21:41	CEM
Methyl-t-butyl ether (MTBE)	21.4	µg/L	SW 846 8260B	0.5	1	12/23/16	CEM	12/23/16 21:41	CEM
1,2,4-Trimethylbenzene	151	µg/L	SW 846 8260B	0.5	1	12/23/16	CEM	12/23/16 21:41	CEM
Naphthalene	438	µg/L	SW 846 8260B	25.0	50	12/29/16	CEM	12/29/16 0:29	AMD
Toluene	9910	µg/L	SW 846 8260B	25.0	50	12/29/16	CEM	12/29/16 0:29	AMD
1,3,5-Trimethylbenzene	< 25.0	µg/L	SW 846 8260B	25.0	50	12/29/16	CEM	12/29/16 0:29	AMD
Xylenes, Total	4870	µg/L	SW 846 8260B	50.0	50	12/29/16	CEM	12/29/16 0:29	AMD
Benzene	310	µg/L	SW 846 8260B	250	500	01/02/17	CEM	01/02/17 17:28	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	41.6	µg/L	SW 846 8260B	83%	1	72-136	12/23/16 21:41
Surrogate: 1,2-Dichloroethane-d4	52.4	µg/L	SW 846 8260B	105%	1	79-135	12/23/16 21:41
Surrogate: Toluene-d8	48.7	µg/L	SW 846 8260B	97%	1	88-112	12/23/16 21:41
Surrogate: Bromofluorobenzene	52.3	µg/L	SW 846 8260B	105%	1	75-117	12/23/16 21:41
Surrogate: Dibromofluoromethane	42.7	µg/L	SW 846 8260B	85%	50	72-136	12/29/16 0:29
Surrogate: 1,2-Dichloroethane-d4	53.3	µg/L	SW 846 8260B	107%	50	79-135	12/29/16 0:29
Surrogate: Toluene-d8	46.7	µg/L	SW 846 8260B	93%	50	88-112	12/29/16 0:29
Surrogate: Bromofluorobenzene	48.1	µg/L	SW 846 8260B	96%	50	75-117	12/29/16 0:29
Surrogate: Dibromofluoromethane	47.8	µg/L	SW 846 8260B	96%	500	72-136	01/02/17 17:28
Surrogate: 1,2-Dichloroethane-d4	57.6	µg/L	SW 846 8260B	115%	500	79-135	01/02/17 17:28
Surrogate: Toluene-d8	45.7	µg/L	SW 846 8260B	91%	500	88-112	01/02/17 17:28
Surrogate: Bromofluorobenzene	42.6	µg/L	SW 846 8260B	85%	500	75-117	01/02/17 17:28

Report Generated On: 01/05/2017 3:06 pm

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STL_Results Revision #1.6

Effective: 07/09/2014

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SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

Sample Number: 6122519-06

Site: OW-2

Sample ID:

Collector: DRC-STL

Collect Date: 12/19/2016 2:15 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

C10-C44	2.4	mg/L	8015D	0.52	1	12/23/16		12/27/16 13:09	MJA
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: o-Terphenyl	0.019	mg/L	8015D	95%	1	34-158	12/27/16 13:09

Gasoline Range Organics (GRO) (GC)

Gasoline Range Organics (GRO) (GC)

GRO	45000	ug/L	8015D	2500	100	12/25/16		12/25/16 2:43	DAS
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: a,a,a-Trifluorotoluene	4400	ug/L	8015D	87%	100	79-140	12/25/16 2:43

General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	12/19/16	RSM	12/19/16 14:15	DRC
Static Water Level (ft)	7.00	N/A	N/A		1	12/19/16	RSM	12/19/16 14:15	DRC
Total Volume Purged (gal)	2.50	N/A	N/A		1	12/19/16	RSM	12/19/16 14:15	DRC
Total Well Depth (ft)	15.00	N/A	N/A		1	12/19/16	RSM	12/19/16 14:15	DRC
Well Diameter (in)	2.00	N/A	N/A		1	12/19/16	RSM	12/19/16 14:15	DRC

Volatiles

VOA, 8260, USTUnleaded

Isopropylbenzene	44.3	ug/L	SW 846 8260B	0.5	1	12/23/16	CEM	12/23/16 22:09	CEM
Methyl-t-butyl ether (MTBE)	1860	ug/L	SW 846 8260B	25.0	50	12/29/16	CEM	12/29/16 0:56	AMD
Naphthalene	1510	ug/L	SW 846 8260B	25.0	50	12/29/16	CEM	12/29/16 0:56	AMD
1,3,5-Trimethylbenzene	411	ug/L	SW 846 8260B	25.0	50	12/29/16	CEM	12/29/16 0:56	AMD
1,2,4-Trimethylbenzene	7210	ug/L	SW 846 8260B	25.0	50	12/29/16	CEM	12/29/16 0:56	AMD
Benzene	6730	ug/L	SW 846 8260B	500	1000	01/02/17	CEM	01/02/17 17:56	CEM
Ethyl Benzene	< 500	ug/L	SW 846 8260B	500	1000	01/02/17	CEM	01/02/17 17:56	CEM
Toluene	5120	ug/L	SW 846 8260B	500	1000	01/02/17	CEM	01/02/17 17:56	CEM
Xylenes, Total	< 1000	ug/L	SW 846 8260B	1000	1000	01/02/17	CEM	01/02/17 17:56	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	39.6	ug/L	SW 846 8260B	79%	1	72-136	12/23/16 22:09
Surrogate: 1,2-Dichloroethane-d4	54.0	ug/L	SW 846 8260B	108%	1	79-135	12/23/16 22:09
Surrogate: Toluene-d8	45.9	ug/L	SW 846 8260B	92%	1	88-112	12/23/16 22:09
Surrogate: Bromofluorobenzene	53.7	ug/L	SW 846 8260B	107%	1	75-117	12/23/16 22:09
Surrogate: Dibromofluoromethane	42.8	ug/L	SW 846 8260B	86%	50	72-136	12/29/16 0:56
Surrogate: 1,2-Dichloroethane-d4	50.6	ug/L	SW 846 8260B	101%	50	79-135	12/29/16 0:56
Surrogate: Toluene-d8	47.1	ug/L	SW 846 8260B	94%	50	88-112	12/29/16 0:56
Surrogate: Bromofluorobenzene	48.8	ug/L	SW 846 8260B	98%	50	75-117	12/29/16 0:56

Report Generated On: 01/05/2017 3:06 pm

6122519

STL_Results Revision #1.6

Effective: 07/09/2014

1037F MacArthur Road, Reading, PA 19605

Phone: 800-433-6595

Fax: 610-375-4090

suburbantestinglabs.com

SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

Sample Number: 6122519-06

Site: OW-2

Sample ID:

Collector: DRC-STL

Collect Date: 12/19/2016 2:15 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries (Continued)	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	47.9	µg/L	SW 846 8260B	96%	1000	72-136	01/02/17 17:56
Surrogate: 1,2-Dichloroethane-d4	55.7	µg/L	SW 846 8260B	111%	1000	79-135	01/02/17 17:56
Surrogate: Toluene-d8	45.6	µg/L	SW 846 8260B	91%	1000	88-112	01/02/17 17:56
Surrogate: Bromofluorobenzene	43.0	µg/L	SW 846 8260B	86%	1000	75-117	01/02/17 17:56

Data Qualifiers:

Sample Receipt Conditions:

All samples met the sample receipt requirements for the relevant analyses.

Work Order Memo

SUB: DRO & GRO performed by Lab ID# 68-00522.

All results meet the requirements of STL's TNI (NELAC) Accredited Quality System unless otherwise noted. If your results contain any data qualifiers or comments, you should evaluate useability relative to your needs.

If collectors initials include "STL", samples have been collected in accordance with STL SOP SL0015.

All results reported on an As Received (Wet Weight) basis unless otherwise noted.

This laboratory report may not be reproduced, except in full, without the written approval of STL.

Results are considered Preliminary unless report is signed by authorized representative of STL.

Reviewed and Released By:

William Smith

Technical Director

Report Generated On: 01/05/2017 3:06 pm
STL_Results Revision #1.6

6122519
Effective: 07/09/2014





Chain of Custody Record

1037F MacArthur Road, Reading, PA 19605
Phone: 610-375-8378 - Fax: 610-375-4090 - suburbantestinglabs.com

TAT (Circle One): Standard - 24hr - 48hr - 72hr - Other _____
(Additional charges may apply for rush TAT. If not specified, standard TAT will apply.)

ORDER ID: 6122519



Client Name / Address:

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Phone: (717) 394-1063

Fax:

Project Name / Address:

Herr Foods - Limited GW Sampling Events (Dec 2016)

Client Project Manager: Ed Dziedzic

Payment / P.O. Info:

Project Description:

Order Comments: Monitoring Well Collection = \$65/hour; Travel time to/from site = \$40/hour; Equipment Rental = \$115 flat fee per event;

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6122519-01	MW-4		12/19/16 1020	DRC-STL	Non-potable	Grab	

Container Type / Preservation

Preservation Check

Analysis - Method

Field Results

1L GA	A
1L GA	B
40ml VOA	C
40ml VOA	D
40ml VOA	E
Field Services	F
40ml VOA & AA & HCl at sampling	G
40ml VOA & AA & HCl at sampling	H
40ml VOA & AA & HCl at sampling	I

*** DEFAULT GENERAL ME

Diesel Range Organics - SW 846 8015

Gasoline Range Organics - SW 846 8015

General Method

Monitor Well Sampling - N/A

Unassigned

Sample Collection, Custom 3 - SL0015

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6122519-02	MW-5		12/19/16 1205	DRC-STL	Non-potable	Grab	

Container Type / Preservation	Preservation Check
1L GA	A
1L GA	B
40ml VOA	C
40ml VOA	D
40ml VOA	E
Field Services	F
40ml VOA & AA & HCl at sampling	G
40ml VOA & AA & HCl at sampling	H
40ml VOA & AA & HCl at sampling	I

Analysis - Method	Field Results
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*** DEFAULT GENERAL ME

Diesel Range Organics - SW 846 8015

Gasoline Range Organics - SW 846 8015

General Method

Monitor Well Sampling - N/A

Unassigned

Sample Collection, Custom 3 - SL0015

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

6122519-03	MW-14S		12/19/16 1335	DRC-STL	Non-potable	Grab	
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Container Type / Preservation	Preservation Check
1L GA	A
1L GA	B
40ml VOA	C
40ml VOA	D
40ml VOA	E
Field Services	F
40ml VOA & AA & HCl at sampling	G
40ml VOA & AA & HCl at sampling	H
40ml VOA & AA & HCl at sampling	I

Analysis - Method	Field Results
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*** DEFAULT GENERAL ME

Diesel Range Organics - SW 846 8015

Gasoline Range Organics - SW 846 8015

General Method

Monitor Well Sampling - N/A

Unassigned

Sample Collection, Custom 3 - SL0015

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6122519-04	MW-14D		12/19/16 1255	DRC-STL	Non-potable	Grab	

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
1L GA	A	*** DEFAULT GENERAL ME Diesel Range Organics - SW 846 8015 Gasoline Range Organics - SW 846 8015 General Method Monitor Well Sampling - N/A Unassigned Sample Collection, Custom 3 - SL0015 Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
1L GA	B		
40ml VOA	C		
40ml VOA	D		
40ml VOA	E		
Field Services	F		
40ml VOA & AA & HCl at sampling	G		
40ml VOA & AA & HCl at sampling	H		
40ml VOA & AA & HCl at sampling	I		

6122519-05	OW-1		12/19/16 1110	DRC-STL	Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
1L GA	A	*** DEFAULT GENERAL ME Diesel Range Organics - SW 846 8015 Gasoline Range Organics - SW 846 8015 General Method Monitor Well Sampling - N/A Unassigned Sample Collection, Custom 3 - SL0015 Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
1L GA	B		
40ml VOA	C		
40ml VOA	D		
40ml VOA	E		
Field Services	F		
40ml VOA & AA & HCl at sampling	G		
40ml VOA & AA & HCl at sampling	H		
40ml VOA & AA & HCl at sampling	I		



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6122519-06	OW-2		12/19/16 1415	DR- STL	Non-potable	Grab	

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
1L GA	A	*** DEFAULT GENERAL ME Diesel Range Organics - SW 846 8015 Gasoline Range Organics - SW 846 8015 General Method Monitor Well Sampling - N/A Unassigned Sample Collection, Custom 3 - SL0015 Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
1L GA	B		
40ml VOA	C		
40ml VOA	D		
40ml VOA	E		
Field Services	F		
40ml VOA & AA & HCl at sampling	G		
40ml VOA & AA & HCl at sampling	H		
40ml VOA & AA & HCl at sampling	I		

MM-15

WKO TAT = 10

Cool Sample(s) to 6 C

Relinquished By:	Count	Date:	Temp (°C):	Sample Conditions Number of Containers \ Cooler received matches number on COC? ☒ Y / ☐ N Sample labels and COC free of discrepancies? ☒ Y / ☐ N All Containers Intact? ☒ Y / ☐ N VOC vials for VOA analysis free of headspace, if applicable? ☒ Y / ☐ N	Sample Type Key G = Grab 8HC = 8 Hr. Composite 24HC = 24 Hr. Composite D = Distribution E = Entry Point R = Raw C = Check S = Special M = Maximum Residence	Reporting Options ☐ SDWA Reporting ☐ PWSID ☐ Email ☐ Other _____
Received By:		Date:	Temp (°C):			
Relinquished By:	48	Date: 12/19/16	Temp (°C): 39			
		Time: 1545	Acceptable: ? ☒ Y / ☐ N			
Received in Lab By:	46	Date: 12/19/16	Temp (°C):			
		Time: 1545	Acceptable: ? ☒ Y / ☐ N			

Signing this form indicates your agreement with STL's Standard Terms and Conditions (www.suburbantestinglabs.com/resources/standard-terms-and-conditions.html) unless otherwise specified in writing.

Shaded areas are for STL use only



Results Report

Order ID: 6124064

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Project: Herr Foods - Limited GW Sampling Events (Dec 2016)

Attn: Ed Dziedzic

Regulatory ID:

Sample Number: 6124064-01
Collector: TBW-STL

Site: MW-4
Collect Date: 12/30/2016 10:30 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

C10-C44	9.0	mg/L	8015D	2.6	5	01/06/17	01/09/17 18:03	FPO
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: o-Terphenyl	0.023	mg/L	8015D	114%	5	34-158	01/09/17 18:03

Gasoline Range Organics (GRO) (GC)

Gasoline Range Organics (GRO) (GC)

GRO	26000	ug/L	8015D	2500	100	01/10/17	01/10/17 19:38	DAS
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: a,a,a-Trifluorotoluene	4600	ug/L	8015D	93%	100	79-140	01/10/17 19:38

General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A	1	12/30/16	RSM	12/30/16 10:30	TBW
Static Water Level (ft)	7.59	N/A	N/A	1	12/30/16	RSM	12/30/16 10:30	TBW
Total Volume Purged (gal)	4.70	N/A	N/A	1	12/30/16	RSM	12/30/16 10:30	TBW
Total Well Depth (ft)	19.00	N/A	N/A	1	12/30/16	RSM	12/30/16 10:30	TBW
Well Diameter (in)	2.00	N/A	N/A	1	12/30/16	RSM	12/30/16 10:30	TBW

Sample Number: 6124064-02
Collector: TBW-STL

Site: MW-5
Collect Date: 12/30/2016 2:55 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

C10-C44	< 0.52	mg/L	8015D	0.52	1	01/06/17	01/09/17 18:15	FPO
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: o-Terphenyl	0.024	mg/L	8015D	121%	1	34-158	01/09/17 18:15

Report Generated On: 01/17/2017 3:57 pm
STL_Results Revision #1.6

6124064
Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 6124064-02

Site: MW-5

Sample ID:

Collector: TBW-STL

Collect Date: 12/30/2016 2:55 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
<u>Gasoline Range Organics (GRO) (GC)</u>									
<i>Gasoline Range Organics (GRO) (GC)</i>									
GRO	230	ug/L	8015D	25	1	01/09/17		01/09/17 14:42	DAS
<i>Surrogate Recoveries</i>									
Surrogate: a,a,a-Trifluorotoluene	59	ug/L	8015D	118%	1	79-140		01/09/17 14:42	

General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	12/30/16	RSM	12/30/16 14:55	TBW
Static Water Level (ft)	6.17	N/A	N/A		1	12/30/16	RSM	12/30/16 14:55	TBW
Total Volume Purged (gal)	2.30	N/A	N/A		1	12/30/16	RSM	12/30/16 14:55	TBW
Total Well Depth (ft)	27.00	N/A	N/A		1	12/30/16	RSM	12/30/16 14:55	TBW
Well Diameter (in)	2.00	N/A	N/A		1	12/30/16	RSM	12/30/16 14:55	TBW

Sample Number: 6124064-03

Site: MW-14S

Sample ID:

Collector: TBW-STL

Collect Date: 12/30/2016 2:05 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
<u>Diesel Range Organics (DRO) (GC)</u>									
<i>Diesel Range Organics (DRO) (GC)</i>									
C10-C44	4.9	mg/L	8015D	0.52	1	01/06/17		01/09/17 18:27	FPO
<i>Surrogate Recoveries</i>									
Surrogate: o-Terphenyl	0.022	mg/L	8015D	111%	1	34-158		01/09/17 18:27	

Gasoline Range Organics (GRO) (GC)

Gasoline Range Organics (GRO) (GC)

GRO	41000	ug/L	8015D	2500	100	01/09/17		01/09/17 16:47	DAS
<i>Surrogate Recoveries</i>									
Surrogate: a,a,a-Trifluorotoluene	4900	ug/L	8015D	97%	100	79-140		01/09/17 16:47	

General Method

Monitor Well Sampling

Sampling Depth (ft)	8.00	N/A	N/A		1	12/30/16	RSM	12/30/16 14:05	TBW
Static Water Level (ft)	6.14	N/A	N/A		1	12/30/16	RSM	12/30/16 14:05	TBW
Total Volume Purged (gal)	2.20	N/A	N/A		1	12/30/16	RSM	12/30/16 14:05	TBW
Total Well Depth (ft)	10.00	N/A	N/A		1	12/30/16	RSM	12/30/16 14:05	TBW
Well Diameter (in)	2.00	N/A	N/A		1	12/30/16	RSM	12/30/16 14:05	TBW

Report Generated On: 01/17/2017 3:57 pm

6124064

STL_Results Revision #1.6

Effective: 07/09/2014

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SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

Sample Number: 6124064-04
Collector: TBW-STL

Site: MW-14D
Collect Date: 12/30/2016 1:20 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

C10-C44	1.2	mg/L	8015D	0.52	1	01/06/17		01/09/17 18:40	FPO
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: o-Terphenyl	0.023	mg/L	8015D	116%	1	34-158	01/09/17 18:40

Gasoline Range Organics (GRO) (GC)

Gasoline Range Organics (GRO) (GC)

GRO	1800	ug/L	8015D	130	5	01/09/17		01/09/17 15:57	DAS
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: a,a,a-Trifluorotoluene	210	ug/L	8015D	85%	5	79-140	01/09/17 15:57

General Method

Monitor Well Sampling

Sampling Depth (ft)	20.00	N/A	N/A		1	12/30/16	RSM	12/30/16 13:20	TBW
Static Water Level (ft)	6.17	N/A	N/A		1	12/30/16	RSM	12/30/16 13:20	TBW
Total Volume Purged (gal)	2.00	N/A	N/A		1	12/30/16	RSM	12/30/16 13:20	TBW
Total Well Depth (ft)	25.00	N/A	N/A		1	12/30/16	RSM	12/30/16 13:20	TBW
Well Diameter (in)	2.00	N/A	N/A		1	12/30/16	RSM	12/30/16 13:20	TBW

Sample Number: 6124064-05
Collector: TBW-STL

Site: OW-1
Collect Date: 12/30/2016 11:35 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

C10-C44	7.7	mg/L	8015D	2.6	5	01/06/17		01/10/17 9:38	FPO
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: o-Terphenyl	0.022	mg/L	8015D	112%	5	34-158	01/10/17 9:38

Gasoline Range Organics (GRO) (GC)

Gasoline Range Organics (GRO) (GC)

GRO	39000	ug/L	8015D	2500	100	01/09/17		01/09/17 16:22	DAS
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: a,a,a-Trifluorotoluene	4800	ug/L	8015D	97%	100	79-140	01/09/17 16:22

General Method

Report Generated On: 01/17/2017 3:57 pm
STL_Results Revision #1.6

6124064
Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 6124064-05
Collector: TBW-STL

Site: OW-1
Collect Date: 12/30/2016 11:35 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method (Continued)

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	12/30/16	RSM	12/30/16 11:35	TBW
Static Water Level (ft)	7.54	N/A	N/A		1	12/30/16	RSM	12/30/16 11:35	TBW
Total Volume Purged (gal)	3.50	N/A	N/A		1	12/30/16	RSM	12/30/16 11:35	TBW
Total Well Depth (ft)	15.00	N/A	N/A		1	12/30/16	RSM	12/30/16 11:35	TBW
Well Diameter (in)	2.00	N/A	N/A		1	12/30/16	RSM	12/30/16 11:35	TBW

Sample Number: 6124064-06
Collector: TBW-STL

Site: OW-2
Collect Date: 12/30/2016 12:35 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

C10-C44	3.2	mg/L	8015D	0.52	1	01/06/17		01/09/17 19:04	FPO
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: o-Terphenyl	0.022	mg/L	8015D	108%	1	34-158	01/09/17 19:04

Gasoline Range Organics (GRO) (GC)

Gasoline Range Organics (GRO) (GC)

GRO	57000	ug/L	8015D	5000	200	01/09/17		01/09/17 15:07	DAS
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Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: a,a,a-Trifluorotoluene	10000	ug/L	8015D	100%	200	79-140	01/09/17 15:07

General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	12/30/16	RSM	12/30/16 12:35	TBW
Static Water Level (ft)	6.76	N/A	N/A		1	12/30/16	RSM	12/30/16 12:35	TBW
Total Volume Purged (gal)	3.10	N/A	N/A		1	12/30/16	RSM	12/30/16 12:35	TBW
Total Well Depth (ft)	15.00	N/A	N/A		1	12/30/16	RSM	12/30/16 12:35	TBW
Well Diameter (in)	2.00	N/A	N/A		1	12/30/16	RSM	12/30/16 12:35	TBW

Sample Receipt Conditions:

All samples met the sample receipt requirements for the relevant analyses.

Work Order Memo

SUB: GRO & DRO performed by Lab ID# 68-00522.

Report Generated On: 01/17/2017 3:57 pm
STL_Results Revision #1.6

6124064
Effective: 07/09/2014





SUBURBAN
TESTING LABS

All results meet the requirements of STL's TNI (NELAC) Accredited Quality System unless otherwise noted. If your results contain any data qualifiers or comments, you should evaluate useability relative to your needs.

If collectors initials include "STL", samples have been collected in accordance with STL SOP SL0015.

All results reported on an As Received (Wet Weight) basis unless otherwise noted.

This laboratory report may not be reproduced, except in full, without the written approval of STL.

Results are considered Preliminary unless report is signed by authorized representative of STL.

Reviewed and Released By:

William Smith

Technical Director

Report Generated On: 01/17/2017 3:57 pm
STL_Results Revision #1.6

6124064
Effective: 07/09/2014





SUBURBAN TESTING LABS

Chain of Custody Record

1037F MacArthur Road, Reading, PA 19605
Phone: 610-375-8378 - Fax: 610-375-4090 - suburbantestinglabs.com

TAT (Circle One): Standard - 24hr - 48hr - 72hr - Other _____
(Additional charges may apply for rush TAT. If not specified, standard TAT will apply.)

ORDER ID: 6124064



Client Name / Address:

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Phone: (717) 394-1063
Fax:

Project Name / Address:

Herr Foods - Limited GW Sampling Events (Dec 2016)

Client Project Manager: Ed Dziedzic

Payment / P.O. Info:

Project Description:

Order Comments: Monitoring Well Collection = \$65/hour; Travel time to/from site = \$40/hour; Equipment Rental = \$115 flat fee per event;

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6124064-01	MW-4		12/30/16 1030	TBLW	STL Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
1L GA			A		*** DEFAULT GENERAL ME		
1L GA			B		Diesel Range Organics - SW 846 8015		
40ml VOA			C		Gasoline Range Organics - SW 846 8015		
40ml VOA			D		General Method		
40ml VOA			E		Monitor Well Sampling - N/A		
Field Services			F		Unassigned		
40ml VOA & AA & HCl at sampling			G		Sample Collection, Custom 3 - SL0015		
40ml VOA & AA & HCl at sampling			H		Volatiles		
40ml VOA & AA & HCl at sampling			I		VOA, 8260, USTUnleaded - SW 846 8260B		



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6124064-02	MW-5		12-30-16 1455	TBL	Non-potable	Grab	

Container Type / Preservation	Preservation Check
1L GA	A
1L GA	B
40ml VOA	C
40ml VOA	D
40ml VOA	E
Field Services	F
40ml VOA & AA & HCl at sampling	G
40ml VOA & AA & HCl at sampling	H
40ml VOA & AA & HCl at sampling	I

Analysis - Method	Field Results
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*** DEFAULT GENERAL ME

Diesel Range Organics - SW 846 8015

Gasoline Range Organics - SW 846 8015

General Method

Monitor Well Sampling - N/A

Unassigned

Sample Collection, Custom 3 - SL0015

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B

6124064-03	MW-14S		12-30-16 1405	TBL	Non-potable	Grab	
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Container Type / Preservation	Preservation Check
1L GA	A
1L GA	B
40ml VOA	C
40ml VOA	D
40ml VOA	E
Field Services	F
40ml VOA & AA & HCl at sampling	G
40ml VOA & AA & HCl at sampling	H
40ml VOA & AA & HCl at sampling	I

Analysis - Method	Field Results
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*** DEFAULT GENERAL ME

Diesel Range Organics - SW 846 8015

Gasoline Range Organics - SW 846 8015

General Method

Monitor Well Sampling - N/A

Unassigned

Sample Collection, Custom 3 - SL0015

Volatiles

VOA, 8260, USTUnleaded - SW 846 8260B



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6124064-04	MW-14D		12/30/16 1320	YBW	Non-potable	Grab	

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
1L GA	A	*** DEFAULT GENERAL ME Diesel Range Organics - SW 846 8015 Gasoline Range Organics - SW 846 8015	
1L GA	B	General Method Monitor Well Sampling - N/A	
40ml VOA	C	Unassigned Sample Collection, Custom 3 - SL0015	
40ml VOA	D	Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40ml VOA	E		
Field Services	F		
40ml VOA & AA & HCl at sampling	G		
40ml VOA & AA & HCl at sampling	H		
40ml VOA & AA & HCl at sampling	I		

6124064-05	OW-1		12-30-16 1135	YBW	Non-potable	Grab	
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Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
1L GA	A	*** DEFAULT GENERAL ME Diesel Range Organics - SW 846 8015 Gasoline Range Organics - SW 846 8015	
1L GA	B	General Method Monitor Well Sampling - N/A	
40ml VOA	C	Unassigned Sample Collection, Custom 3 - SL0015	
40ml VOA	D	Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40ml VOA	E		
Field Services	F		
40ml VOA & AA & HCl at sampling	G		
40ml VOA & AA & HCl at sampling	H		
40ml VOA & AA & HCl at sampling	I		



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
6124064-06	OW-2		12-30-16 1235	TBW	Non-potable	Grab	

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
1L GA	A	*** DEFAULT GENERAL ME Diesel Range Organics - SW 846 8015 Gasoline Range Organics - SW 846 8015 General Method Monitor Well Sampling - N/A Unassigned Sample Collection, Custom 3 - SL0015 Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
1L GA	B		
40ml VOA	C		
40ml VOA	D		
40ml VOA	E		
Field Services	F		
40ml VOA & AA & HCl at sampling	G		
40ml VOA & AA & HCl at sampling	H		
40ml VOA & AA & HCl at sampling	I		

mm-15

WKO TAT = 10

Cool Sample(s) to 6 C

Relinquished By:	Count	Date:	Temp (°C):	Sample Conditions Number of Containers \ Cooler received matches number on COC? ☒ Y ☐ N Sample labels and COC free of discrepancies? ☒ Y ☐ N All Containers Intact? ☒ Y ☐ N VOC vials for VOA analysis free of headspace, if applicable? ☐ Y ☐ N	Sample Type Key G = Grab 8HC = 8 Hr. Composite 24HC = 24 Hr. Composite D = Distribution E = Entry Point R = Raw C = Check S = Special M = Maximum Residence	Reporting Options ☐ SDWA Reporting PWSID ☐ Email ☐ Other _____
Received By:		Date:	Temp (°C):			
Relinquished By:	48	Date: 12-30-16	Temp (°C): 2.3°	Sample Conditions Number of Containers \ Cooler received matches number on COC? ☒ Y ☐ N Sample labels and COC free of discrepancies? ☒ Y ☐ N All Containers Intact? ☒ Y ☐ N VOC vials for VOA analysis free of headspace, if applicable? ☐ Y ☐ N	Sample Type Key G = Grab 8HC = 8 Hr. Composite 24HC = 24 Hr. Composite D = Distribution E = Entry Point R = Raw C = Check S = Special M = Maximum Residence	Reporting Options ☐ SDWA Reporting PWSID ☐ Email ☐ Other _____
Received in Lab By:	48	Date: 12-30-16	Temp (°C):			

Signing this form indicates your agreement with STL's Standard Terms and Conditions (www.suburbanestinglabs.com/resources/standard-terms-and-conditions.html) unless otherwise specified in writing.

Shaded areas are for STL use only



Results Report

Order ID: 7012602

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Project: Herr Foods - Quarterly MWs 2017

Attn: Ed Dziedzic

Regulatory ID:

Sample Number: 7012602-01

Site: MW-3

Sample ID:

Collector: DRC-STL

Collect Date: 01/18/2017 11:48 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	11.00	N/A	N/A		1	01/18/17	BAK	01/18/17 11:48	DRC
Static Water Level (ft)	6.45	N/A	N/A		1	01/18/17	BAK	01/18/17 11:48	DRC
Total Volume Purged (gal)	2.50	N/A	N/A		1	01/18/17	BAK	01/18/17 11:48	DRC
Total Well Depth (ft)	25.00	N/A	N/A		1	01/18/17	BAK	01/18/17 11:48	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/18/17	BAK	01/18/17 11:48	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	12.6	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Ethyl Benzene	82.0 M3	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Isopropylbenzene	8.2	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Naphthalene	11.5 B1	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Toluene	70.0 M3	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
1,3,5-Trimethylbenzene	7.4	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
1,2,4-Trimethylbenzene	32.6	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 18:10	CEM
Xylenes, Total	88.4	µg/L	SW 846 8260B	1.0	1	01/20/17	CEM	01/20/17 18:10	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	50.2	µg/L	SW 846 8260B	100%	1	72-136	01/20/17 18:10
Surrogate: 1,2-Dichloroethane-d4	48.8	µg/L	SW 846 8260B	98%	1	79-135	01/20/17 18:10
Surrogate: Toluene-d8	50.3	µg/L	SW 846 8260B	101%	1	88-112	01/20/17 18:10
Surrogate: Bromofluorobenzene	51.9	µg/L	SW 846 8260B	104%	1	75-117	01/20/17 18:10

Sample Number: 7012602-02

Site: MW-4

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 12:18 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/17/17	BAK	01/17/17 12:18	DRC
Static Water Level (ft)	7.67	N/A	N/A		1	01/17/17	BAK	01/17/17 12:18	DRC

Report Generated On: 02/01/2017 5:09 pm

7012602

STL_Results Revision #1.6

Effective: 07/09/2014



SUBURBAN TESTING LABS

Sample Number: 7012602-02
Collector: DRC-STL

Site: MW-4
Collect Date: 01/17/2017 12:18 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method (Continued)

Monitor Well Sampling (Continued)

Total Volume Purged (gal)	5.45	N/A	N/A		1	01/17/17	BAK	01/17/17 12:18	DRC
Total Well Depth (ft)	19.00	N/A	N/A		1	01/17/17	BAK	01/17/17 12:18	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 12:18	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	1180	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Ethyl Benzene	917	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Isopropylbenzene	54.8	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Methyl-t-butyl ether (MTBE)	< 10.0	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Naphthalene	229	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
1,3,5-Trimethylbenzene	147	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
1,2,4-Trimethylbenzene	1070	µg/L	SW 846 8260B	10.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Xylenes, Total	6430	µg/L	SW 846 8260B	20.0	20	01/18/17	CEM	01/18/17 17:21	CEM
Toluene	3240	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 21:06	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	46.9	µg/L	SW 846 8260B	94%	20	72-136	01/18/17 17:21
Surrogate: 1,2-Dichloroethane-d4	55.9	µg/L	SW 846 8260B	112%	20	79-135	01/18/17 17:21
Surrogate: Toluene-d8	46.3	µg/L	SW 846 8260B	93%	20	88-112	01/18/17 17:21
Surrogate: Bromofluorobenzene	47.4	µg/L	SW 846 8260B	95%	20	75-117	01/18/17 17:21
Surrogate: Dibromofluoromethane	55.2	µg/L	SW 846 8260B	110%	50	72-136	01/19/17 21:06
Surrogate: 1,2-Dichloroethane-d4	54.1	µg/L	SW 846 8260B	108%	50	79-135	01/19/17 21:06
Surrogate: Toluene-d8	49.1	µg/L	SW 846 8260B	98%	50	88-112	01/19/17 21:06
Surrogate: Bromofluorobenzene	50.3	µg/L	SW 846 8260B	101%	50	75-117	01/19/17 21:06

Sample Number: 7012602-03
Collector: DRC-STL

Site: MW-5
Collect Date: 01/17/2017 10:04 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/17/17	BAK	01/17/17 10:04	DRC
Static Water Level (ft)	6.07	N/A	N/A		1	01/17/17	BAK	01/17/17 10:04	DRC
Total Volume Purged (gal)	2.97	N/A	N/A		1	01/17/17	BAK	01/17/17 10:04	DRC
Total Well Depth (ft)	27.00	N/A	N/A		1	01/17/17	BAK	01/17/17 10:04	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 10:04	DRC

Volatiles

Report Generated On: 02/01/2017 5:09 pm
STL_Results Revision #1.6

7012602
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7012602-03
Collector: DRC-STL

Site: MW-5
Collect Date: 01/17/2017 10:04 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded

Benzene	10.7	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Ethyl Benzene	4.4	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Isopropylbenzene	3.0	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Naphthalene	5.7	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Toluene	1.4	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
1,3,5-Trimethylbenzene	2.6	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
1,2,4-Trimethylbenzene	10.6	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:31	CEM
Xylenes, Total	43.5	µg/L	SW 846 8260B	1.0	1	01/18/17	CEM	01/18/17 20:31	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	50.0	µg/L	SW 846 8260B	100%	1	72-136	01/18/17 20:31
Surrogate: 1,2-Dichloroethane-d4	58.6	µg/L	SW 846 8260B	117%	1	79-135	01/18/17 20:31
Surrogate: Toluene-d8	46.8	µg/L	SW 846 8260B	94%	1	88-112	01/18/17 20:31
Surrogate: Bromofluorobenzene	46.2	µg/L	SW 846 8260B	92%	1	75-117	01/18/17 20:31

Sample Number: 7012602-04
Collector: DRC-STL

Site: MW-7
Collect Date: 01/17/2017 9:14 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	8.00	N/A	N/A		1	01/17/17	BAK	01/17/17 9:14	DRC
Static Water Level (ft)	7.35	N/A	N/A		1	01/17/17	BAK	01/17/17 9:14	DRC
Total Volume Purged (gal)	2.77	N/A	N/A		1	01/17/17	BAK	01/17/17 9:14	DRC
Total Well Depth (ft)	20.00	N/A	N/A		1	01/17/17	BAK	01/17/17 9:14	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 9:14	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	510	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
Isopropylbenzene	57.2	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
Methyl-t-butyl ether (MTBE)	< 2.5	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
Naphthalene	222 B1	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
1,3,5-Trimethylbenzene	224	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
1,2,4-Trimethylbenzene	760	µg/L	SW 846 8260B	2.5	5	01/20/17	CEM	01/20/17 18:39	CEM
Ethyl Benzene	972	µg/L	SW 846 8260B	5.0	10	01/26/17	CEM	01/26/17 15:15	CEM
Toluene	897	µg/L	SW 846 8260B	5.0	10	01/26/17	CEM	01/26/17 15:15	CEM
Xylenes, Total	3210	µg/L	SW 846 8260B	10.0	10	01/26/17	CEM	01/26/17 15:15	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
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Report Generated On: 02/01/2017 5:09 pm
STL_Results Revision #1.6

7012602
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7012602-04
Collector: DRC-STL

Site: MW-7
Collect Date: 01/17/2017 9:14 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries (Continued)	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	50.9	µg/L	SW 846 8260B	102%	5	72-136	01/20/17 18:39
Surrogate: 1,2-Dichloroethane-d4	48.8	µg/L	SW 846 8260B	98%	5	79-135	01/20/17 18:39
Surrogate: Toluene-d8	50.7	µg/L	SW 846 8260B	101%	5	88-112	01/20/17 18:39
Surrogate: Bromofluorobenzene	52.6	µg/L	SW 846 8260B	105%	5	75-117	01/20/17 18:39
Surrogate: Dibromofluoromethane	48.6	µg/L	SW 846 8260B	97%	10	72-136	01/26/17 15:15
Surrogate: 1,2-Dichloroethane-d4	50.2	µg/L	SW 846 8260B	100%	10	79-135	01/26/17 15:15
Surrogate: Toluene-d8	48.1	µg/L	SW 846 8260B	96%	10	88-112	01/26/17 15:15
Surrogate: Bromofluorobenzene	53.2	µg/L	SW 846 8260B	106%	10	75-117	01/26/17 15:15

Sample Number: 7012602-05
Collector: DRC-STL

Site: MW-9
Collect Date: 01/16/2017 2:25 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/16/17	BAK	01/16/17 14:25	DRC
Static Water Level (ft)	5.25	N/A	N/A		1	01/16/17	BAK	01/16/17 14:25	DRC
Total Volume Purged (gal)	2.50	N/A	N/A		1	01/16/17	BAK	01/16/17 14:25	DRC
Total Well Depth (ft)	20.00	N/A	N/A		1	01/16/17	BAK	01/16/17 14:25	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/16/17	BAK	01/16/17 14:25	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	3.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
1,3,5-Trimethylbenzene	0.6	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 15:19	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/17/17	CEM	01/17/17 15:19	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	51.5	µg/L	SW 846 8260B	103%	1	72-136	01/17/17 15:19
Surrogate: 1,2-Dichloroethane-d4	59.8	µg/L	SW 846 8260B	120%	1	79-135	01/17/17 15:19
Surrogate: Toluene-d8	46.2	µg/L	SW 846 8260B	92%	1	88-112	01/17/17 15:19
Surrogate: Bromofluorobenzene	41.8	µg/L	SW 846 8260B	84%	1	75-117	01/17/17 15:19

Report Generated On: 02/01/2017 5:09 pm
STL_Results Revision #1.6

7012602
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7012602-06

Site: MW-10

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 1:49 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/16/17	BAK	01/16/17 13:49	DRC
Static Water Level (ft)	5.15	N/A	N/A		1	01/16/17	BAK	01/16/17 13:49	DRC
Total Volume Purged (gal)	2.97	N/A	N/A		1	01/16/17	BAK	01/16/17 13:49	DRC
Total Well Depth (ft)	20.00	N/A	N/A		1	01/16/17	BAK	01/16/17 13:49	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/16/17	BAK	01/16/17 13:49	DRC

Volatiles

VOA, 8260, USTUnleaded

Ethyl Benzene	96.4	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
Isopropylbenzene	28.9	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
Methyl-t-butyl ether (MTBE)	211	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
Naphthalene	101	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
Toluene	160	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
1,3,5-Trimethylbenzene	11.6	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
1,2,4-Trimethylbenzene	43.0	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:34	CEM
Xylenes, Total	372	µg/L	SW 846 8260B	1.0	1	01/17/17	CEM	01/17/17 17:34	CEM
Benzene	3030	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 16:54	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	44.3	µg/L	SW 846 8260B	89%	1	72-136	01/17/17 17:34
Surrogate: 1,2-Dichloroethane-d4	54.6	µg/L	SW 846 8260B	109%	1	79-135	01/17/17 17:34
Surrogate: Toluene-d8	48.6	µg/L	SW 846 8260B	97%	1	88-112	01/17/17 17:34
Surrogate: Bromofluorobenzene	46.4	µg/L	SW 846 8260B	93%	1	75-117	01/17/17 17:34
Surrogate: Dibromofluoromethane	50.6	µg/L	SW 846 8260B	101%	100	72-136	01/18/17 16:54
Surrogate: 1,2-Dichloroethane-d4	59.2	µg/L	SW 846 8260B	118%	100	79-135	01/18/17 16:54
Surrogate: Toluene-d8	43.7 V	µg/L	SW 846 8260B	87%	100	88-112	01/18/17 16:54
Surrogate: Bromofluorobenzene	42.1	µg/L	SW 846 8260B	84%	100	75-117	01/18/17 16:54

Sample Number: 7012602-07

Site: MW-11

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 1:04 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	11.50	N/A	N/A		1	01/16/17	BAK	01/16/17 13:04	DRC
Static Water Level (ft)	0.39	N/A	N/A		1	01/16/17	BAK	01/16/17 13:04	DRC
Total Volume Purged (gal)	2.97	N/A	N/A		1	01/16/17	BAK	01/16/17 13:04	DRC
Total Well Depth (ft)	12.50	N/A	N/A		1	01/16/17	BAK	01/16/17 13:04	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/16/17	BAK	01/16/17 13:04	DRC

Volatiles

Report Generated On: 02/01/2017 5:09 pm

7012602

STL_Results Revision #1.6

Effective: 07/09/2014

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SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

Sample Number: 7012602-07

Site: MW-11

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 1:04 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
<i>VOA, 8260, USTUnleaded</i>									
Benzene	46.8	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Isopropylbenzene	0.6	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Methyl-t-butyl ether (MTBE)	85.4	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Naphthalene	1.6	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 20:04	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/18/17	CEM	01/18/17 20:04	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	50.7	µg/L	SW 846 8260B	101%	1	72-136	01/18/17 20:04
Surrogate: 1,2-Dichloroethane-d4	58.9	µg/L	SW 846 8260B	118%	1	79-135	01/18/17 20:04
Surrogate: Toluene-d8	42.9 V	µg/L	SW 846 8260B	86%	1	88-112	01/18/17 20:04
Surrogate: Bromofluorobenzene	40.4	µg/L	SW 846 8260B	81%	1	75-117	01/18/17 20:04

Sample Number: 7012602-08

Site: MW-12

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 11:44 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
<i>General Method</i>									
<i>Monitor Well Sampling</i>									
Sampling Depth (ft)	9.00	N/A	N/A		1	01/16/17	BAK	01/16/17 11:44	DRC
Static Water Level (ft)	4.16	N/A	N/A		1	01/16/17	BAK	01/16/17 11:44	DRC
Total Volume Purged (gal)	2.47	N/A	N/A		1	01/16/17	BAK	01/16/17 11:44	DRC
Total Well Depth (ft)	12.00	N/A	N/A		1	01/16/17	BAK	01/16/17 11:44	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/16/17	BAK	01/16/17 11:44	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 16:40	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/17/17	CEM	01/17/17 16:40	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	56.2	µg/L	SW 846 8260B	112%	1	72-136	01/17/17 16:40
Surrogate: 1,2-Dichloroethane-d4	64.8	µg/L	SW 846 8260B	130%	1	79-135	01/17/17 16:40

Report Generated On: 02/01/2017 5:09 pm

7012602

STL_Results Revision #1.6

Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7012602-08

Site: MW-12

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 11:44 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries (Continued)	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Toluene-d8	45.6	µg/L	SW 846 8260B	91%	1	88-112	01/17/17 16:40
Surrogate: Bromofluorobenzene	39.2	µg/L	SW 846 8260B	78%	1	75-117	01/17/17 16:40

Sample Number: 7012602-09

Site: MW-13

Sample ID:

Collector: DRC-STL

Collect Date: 01/16/2017 12:19 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	9.00	N/A	N/A		1	01/16/17	BAK	01/16/17 12:19	DRC
Static Water Level (ft)	5.92	N/A	N/A		1	01/16/17	BAK	01/16/17 12:19	DRC
Total Volume Purged (gal)	1.98	N/A	N/A		1	01/16/17	BAK	01/16/17 12:19	DRC
Total Well Depth (ft)	12.00	N/A	N/A		1	01/16/17	BAK	01/16/17 12:19	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/16/17	BAK	01/16/17 12:19	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 17:07	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/17/17	CEM	01/17/17 17:07	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	55.8	µg/L	SW 846 8260B	112%	1	72-136	01/17/17 17:07
Surrogate: 1,2-Dichloroethane-d4	64.4	µg/L	SW 846 8260B	129%	1	79-135	01/17/17 17:07
Surrogate: Toluene-d8	45.9	µg/L	SW 846 8260B	92%	1	88-112	01/17/17 17:07
Surrogate: Bromofluorobenzene	38.9	µg/L	SW 846 8260B	78%	1	75-117	01/17/17 17:07

Sample Number: 7012602-10

Site: MW-14S

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 2:08 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Report Generated On: 02/01/2017 5:09 pm
STL_Results Revision #1.6

7012602
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7012602-10

Site: MW-14S

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 2:08 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	8.00	N/A	N/A		1	01/17/17	BAK	01/17/17 14:08	DRC
Static Water Level (ft)	6.16	N/A	N/A		1	01/17/17	BAK	01/17/17 14:08	DRC
Total Volume Purged (gal)	4.00	N/A	N/A		1	01/17/17	BAK	01/17/17 14:08	DRC
Total Well Depth (ft)	10.00	N/A	N/A		1	01/17/17	BAK	01/17/17 14:08	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 14:08	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	2570	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Ethyl Benzene	2060	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Isopropylbenzene	97.0	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Methyl-t-butyl ether (MTBE)	184	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Naphthalene	279	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Toluene	11900	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
1,3,5-Trimethylbenzene	337	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
1,2,4-Trimethylbenzene	1230	µg/L	SW 846 8260B	50.0	100	01/18/17	CEM	01/18/17 17:48	CEM
Xylenes, Total	12400	µg/L	SW 846 8260B	100	100	01/18/17	CEM	01/18/17 17:48	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	50.8	µg/L	SW 846 8260B	102%	100	72-136	01/18/17 17:48
Surrogate: 1,2-Dichloroethane-d4	58.8	µg/L	SW 846 8260B	118%	100	79-135	01/18/17 17:48
Surrogate: Toluene-d8	45.3	µg/L	SW 846 8260B	91%	100	88-112	01/18/17 17:48
Surrogate: Bromofluorobenzene	47.1	µg/L	SW 846 8260B	94%	100	75-117	01/18/17 17:48

Sample Number: 7012602-11

Site: MW-14D

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 1:14 pm

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	20.00	N/A	N/A		1	01/17/17	BAK	01/17/17 13:14	DRC
Static Water Level (ft)	6.36	N/A	N/A		1	01/17/17	BAK	01/17/17 13:14	DRC
Total Volume Purged (gal)	3.00	N/A	N/A		1	01/17/17	BAK	01/17/17 13:14	DRC
Total Well Depth (ft)	25.00	N/A	N/A		1	01/17/17	BAK	01/17/17 13:14	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 13:14	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	211	µg/L	SW 846 8260B	2.5	5	01/18/17	CEM	01/18/17 18:43	CEM
Ethyl Benzene	27.2	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
Isopropylbenzene	40.0	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM

Report Generated On: 02/01/2017 5:09 pm

7012602

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SUBURBAN TESTING LABS

Sample Number: 7012602-11
Collector: DRC-STL

Site: MW-14D
Collect Date: 01/17/2017 1:14 pm

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
Naphthalene	137	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
Toluene	5.8	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
1,3,5-Trimethylbenzene	2.8	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
1,2,4-Trimethylbenzene	4.7	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 22:47	CEM
Xylenes, Total	48.0	µg/L	SW 846 8260B	1.0	1	01/18/17	CEM	01/18/17 22:47	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	49.1	µg/L	SW 846 8260B	98%	5	72-136	01/18/17 18:43
Surrogate: 1,2-Dichloroethane-d4	58.1	µg/L	SW 846 8260B	116%	5	79-135	01/18/17 18:43
Surrogate: Toluene-d8	45.0	µg/L	SW 846 8260B	90%	5	88-112	01/18/17 18:43
Surrogate: Bromofluorobenzene	46.2	µg/L	SW 846 8260B	92%	5	75-117	01/18/17 18:43
Surrogate: Dibromofluoromethane	48.0	µg/L	SW 846 8260B	96%	1	72-136	01/18/17 22:47
Surrogate: 1,2-Dichloroethane-d4	56.4	µg/L	SW 846 8260B	113%	1	79-135	01/18/17 22:47
Surrogate: Toluene-d8	47.7	µg/L	SW 846 8260B	95%	1	88-112	01/18/17 22:47
Surrogate: Bromofluorobenzene	46.1	µg/L	SW 846 8260B	92%	1	75-117	01/18/17 22:47

Sample Number: 7012602-12
Collector: DRC-STL

Site: OW-1
Collect Date: 01/17/2017 11:09 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/17/17	BAK	01/17/17 11:09	DRC
Static Water Level (ft)	7.44	N/A	N/A		1	01/17/17	BAK	01/17/17 11:09	DRC
Total Volume Purged (gal)	4.60	N/A	N/A		1	01/17/17	BAK	01/17/17 11:09	DRC
Total Well Depth (ft)	15.00	N/A	N/A		1	01/17/17	BAK	01/17/17 11:09	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/17/17	BAK	01/17/17 11:09	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	3240	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Ethyl Benzene	369	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Isopropylbenzene	< 25.0	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Methyl-t-butyl ether (MTBE)	< 25.0	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Naphthalene	78.0	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Toluene	3020	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
1,3,5-Trimethylbenzene	< 25.0	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
1,2,4-Trimethylbenzene	48.0	µg/L	SW 846 8260B	25.0	50	01/19/17	CEM	01/19/17 22:03	CEM
Xylenes, Total	494	µg/L	SW 846 8260B	50.0	50	01/19/17	CEM	01/19/17 22:03	CEM

Report Generated On: 02/01/2017 5:09 pm
STL_Results Revision #1.6

7012602
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7012602-12

Site: OW-1

Sample ID:

Collector: DRC-STL

Collect Date: 01/17/2017 11:09 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	54.3	µg/L	SW 846 8260B	109%	50	72-136	01/19/17 22:03
Surrogate: 1,2-Dichloroethane-d4	54.0	µg/L	SW 846 8260B	108%	50	79-135	01/19/17 22:03
Surrogate: Toluene-d8	48.8	µg/L	SW 846 8260B	98%	50	88-112	01/19/17 22:03
Surrogate: Bromofluorobenzene	48.8	µg/L	SW 846 8260B	98%	50	75-117	01/19/17 22:03

Sample Number: 7012602-13

Site: OW-2

Sample ID:

Collector: DRC-STL

Collect Date: 01/18/2017 10:08 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	10.00	N/A	N/A		1	01/18/17	BAK	01/18/17 10:08	DRC
Static Water Level (ft)	6.70	N/A	N/A		1	01/18/17	BAK	01/18/17 10:08	DRC
Total Volume Purged (gal)	4.20	N/A	N/A		1	01/18/17	BAK	01/18/17 10:08	DRC
Total Well Depth (ft)	15.00	N/A	N/A		1	01/18/17	BAK	01/18/17 10:08	DRC
Well Diameter (in)	2.00	N/A	N/A		1	01/18/17	BAK	01/18/17 10:08	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	6470	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Ethyl Benzene	956	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Isopropylbenzene	61.0	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Methyl-t-butyl ether (MTBE)	124	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Naphthalene	241	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Toluene	10200	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
1,3,5-Trimethylbenzene	214	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
1,2,4-Trimethylbenzene	819	µg/L	SW 846 8260B	50.0	100	01/26/17	CEM	01/26/17 15:44	CEM
Xylenes, Total	6420	µg/L	SW 846 8260B	100	100	01/26/17	CEM	01/26/17 15:44	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	49.0	µg/L	SW 846 8260B	98%	100	72-136	01/26/17 15:44
Surrogate: 1,2-Dichloroethane-d4	53.0	µg/L	SW 846 8260B	106%	100	79-135	01/26/17 15:44
Surrogate: Toluene-d8	47.0	µg/L	SW 846 8260B	94%	100	88-112	01/26/17 15:44
Surrogate: Bromofluorobenzene	52.9	µg/L	SW 846 8260B	106%	100	75-117	01/26/17 15:44

Report Generated On: 02/01/2017 5:09 pm

7012602

STL_Results Revision #1.6

Effective: 07/09/2014

1037F MacArthur Road, Reading, PA 19605

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SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

Sample Number: 7012602-14
Collector: DRC-STL

Site: Former Supply Well
Collect Date: 01/18/2017 10:59 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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General Method

Monitor Well Sampling

Sampling Depth (ft)	18.00	N/A	N/A		1	01/18/17	BAK	01/18/17 10:59	DRC
Static Water Level (ft)	7.55	N/A	N/A		1	01/18/17	BAK	01/18/17 10:59	DRC
Total Volume Purged (gal)	3.20	N/A	N/A		1	01/18/17	BAK	01/18/17 10:59	DRC
Total Well Depth (ft)	210.0	N/A	N/A		1	01/18/17	BAK	01/18/17 10:59	DRC
Well Diameter (in)	6.00	N/A	N/A		1	01/18/17	BAK	01/18/17 10:59	DRC

Volatiles

VOA, 8260, USTUnleaded

Benzene	2.1	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Ethyl Benzene	0.6	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Naphthalene	< 0.5 B	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Toluene	2.7	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
1,2,4-Trimethylbenzene	0.6	µg/L	SW 846 8260B	0.5	1	01/20/17	CEM	01/20/17 20:05	CEM
Xylenes, Total	2.2	µg/L	SW 846 8260B	1.0	1	01/20/17	CEM	01/20/17 20:05	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	55.6	µg/L	SW 846 8260B	111%	1	72-136	01/20/17 20:05
Surrogate: 1,2-Dichloroethane-d4	52.7	µg/L	SW 846 8260B	105%	1	79-135	01/20/17 20:05
Surrogate: Toluene-d8	49.6	µg/L	SW 846 8260B	99%	1	88-112	01/20/17 20:05
Surrogate: Bromofluorobenzene	47.8	µg/L	SW 846 8260B	96%	1	75-117	01/20/17 20:05

Sample Number: 7012602-15
Collector:

Site: Trip Blank - Day 1
Collect Date: 01/16/2017 12:00 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/17/17	CEM	01/17/17 12:08	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/17/17	CEM	01/17/17 12:08	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
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Report Generated On: 02/01/2017 5:09 pm
STL_Results Revision #1.6

7012602
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7012602-15

Site: Trip Blank - Day 1

Sample ID:

Collector:

Collect Date: 01/16/2017 12:00 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Surrogate Recoveries (Continued)	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	52.5	µg/L	SW 846 8260B	105%	1	72-136	01/17/17 12:08
Surrogate: 1,2-Dichloroethane-d4	60.9	µg/L	SW 846 8260B	122%	1	79-135	01/17/17 12:08
Surrogate: Toluene-d8	45.6	µg/L	SW 846 8260B	91%	1	88-112	01/17/17 12:08
Surrogate: Bromofluorobenzene	41.3	µg/L	SW 846 8260B	83%	1	75-117	01/17/17 12:08

Sample Number: 7012602-16

Site: Trip Blank - Day 2

Sample ID:

Collector:

Collect Date: 01/17/2017 12:00 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
1,3,5-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/18/17	CEM	01/18/17 15:21	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/18/17	CEM	01/18/17 15:21	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	54.0	µg/L	SW 846 8260B	108%	1	72-136	01/18/17 15:21
Surrogate: 1,2-Dichloroethane-d4	62.4	µg/L	SW 846 8260B	125%	1	79-135	01/18/17 15:21
Surrogate: Toluene-d8	45.7	µg/L	SW 846 8260B	91%	1	88-112	01/18/17 15:21
Surrogate: Bromofluorobenzene	40.9	µg/L	SW 846 8260B	82%	1	75-117	01/18/17 15:21

Sample Number: 7012602-17

Site: Trip Blank - Day 3

Sample ID:

Collector:

Collect Date: 01/18/2017 12:00 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles

VOA, 8260, USTUnleaded

Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
Ethyl Benzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
Isopropylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
Methyl-t-butyl ether (MTBE)	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
Naphthalene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM

Report Generated On: 02/01/2017 5:09 pm

7012602

STL_Results Revision #1.6

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SUBURBAN TESTING LABS

Sample Number: 7012602-17

Site: Trip Blank - Day 3

Sample ID:

Collector:

Collect Date: 01/18/2017 12:00 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Volatiles (Continued)

VOA, 8260, USTUnleaded (Continued)

Toluene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
1,3,5-Trimethylbenzene	0.6	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
1,2,4-Trimethylbenzene	< 0.5	µg/L	SW 846 8260B	0.5	1	01/19/17	CEM	01/19/17 16:21	CEM
Xylenes, Total	< 1.0	µg/L	SW 846 8260B	1.0	1	01/19/17	CEM	01/19/17 16:21	CEM

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Dibromofluoromethane	55.1	µg/L	SW 846 8260B	110%	1	72-136	01/19/17 16:21
Surrogate: 1,2-Dichloroethane-d4	53.3	µg/L	SW 846 8260B	107%	1	79-135	01/19/17 16:21
Surrogate: Toluene-d8	50.0	µg/L	SW 846 8260B	100%	1	88-112	01/19/17 16:21
Surrogate: Bromofluorobenzene	49.1	µg/L	SW 846 8260B	98%	1	75-117	01/19/17 16:21

Data Qualifiers:

- B The target analyte was detected in the Method Blank, Dilution Water Blank, or Sterility Check at or above the method Reporting Limit or applicable method, client, or regulatory requirement.
- B1 The target analyte was detected in the Method Blank at or above the method Reporting Limit, however it was <10% the concentration detected in the sample. Data are reportable under the 2009 TNI Standard.
- M3 The Matrix Spike associated with this sample is above established acceptance criteria, indicating potential matrix interference. Results of this sample may be biased high.
- V The surrogate associated with this sample was not within the established acceptance criteria.

Sample Receipt Conditions:

All samples met the sample receipt requirements for the relevant analyses.

** This report has been Amended (Rev1) and replaces all previous reports for this order ID **

All results meet the requirements of STL's TNI (NELAC) Accredited Quality System unless otherwise noted. If your results contain any data qualifiers or comments, you should evaluate useability relative to your needs.

If collectors initials include "STL", samples have been collected in accordance with STL SOP SL0015.

All results reported on an As Received (Wet Weight) basis unless otherwise noted.

This laboratory report may not be reproduced, except in full, without the written approval of STL.

Results are considered Preliminary unless report is signed by authorized representative of STL.

Reviewed and Released By:

Alana Kopicz
Project Manager

Report Generated On: 02/01/2017 5:09 pm
STL_Results Revision #1.6

7012602
Effective: 07/09/2014

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SUBURBAN TESTING LABS



PADEP 06-00208



SUBURBAN TESTING LABS

Chain of Custody Record

1037F MacArthur Road, Reading, PA 19605
Phone: 610-375-8378 - Fax: 610-375-4090 - suburbantestinglabs.com

TAT (Circle One): Standard - 24hr - 48hr - 72hr - Other _____
(Additional charges may apply for rush TAT. If not specified, standard TAT will apply.)

ORDER ID: 7012602



Client Name / Address:

Rettew - Lancaster
3020 Columbia Avenue
Lancaster, PA 17603

Phone: (717) 394-1063
Fax:

Project Name / Address:

Herr Foods - Quarterly MWs 2017

Client Project Manager: Ed Dziedzic

Payment / P.O. Info:

Project Description:

Order Comments: Monitoring Well Collection = \$65/hour; Travel time to/from site = \$40/hour; Equipment Rental = \$115 flat fee per event;

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
7012602-01	MW-3		1-18-17 1148	DRC-STL	Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method			Field Results
40ml VOA & HCl		A		General Method			
40ml VOA & HCl		B		Monitor Well Sampling - N/A			
40ml VOA & HCl		C		Unassigned			
Field Services		D		Sample Collection, Custom 1 - SL0015			
				Sample Collection, Custom 3 - SL0015			
				Volatiles			
				VOA, 8260, USTUnleaded - SW 846 8260B			
7012602-02	MW-4		1-17-17 1215	DRC-STL	Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method			Field Results
40ml VOA & HCl		A		General Method			
40ml VOA & HCl		B		Monitor Well Sampling - N/A			
40ml VOA & HCl		C		Volatiles			
Field Services		D		VOA, 8260, USTUnleaded - SW 846 8260B			
7012602-03	MW-5		1-17-17 1004	DRC-STL	Non-potable	Grab	
Container Type / Preservation		Preservation Check		Analysis - Method			Field Results
40ml VOA & HCl		A		General Method			
40ml VOA & HCl		B		Monitor Well Sampling - N/A			
40ml VOA & HCl		C		Volatiles			
Field Services		D		VOA, 8260, USTUnleaded - SW 846 8260B			



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
7012602-04	MW-7		1-17-17 0914	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
40ml VOA & HCl			A		General Method		
40ml VOA & HCl			B		Monitor Well Sampling - N/A		
40ml VOA & HCl			C		Volatiles		
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B		
7012602-05	MW-9		1-16-17 1428	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
40ml VOA & HCl			A		General Method		
40ml VOA & HCl			B		Monitor Well Sampling - N/A		
40ml VOA & HCl			C		Volatiles		
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B		
7012602-06	MW-10		1-16-17 1349	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
40ml VOA & HCl			A		General Method		
40ml VOA & HCl			B		Monitor Well Sampling - N/A		
40ml VOA & HCl			C		Volatiles		
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B		
7012602-07	MW-11		1-16-17 1304	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results
40ml VOA & HCl			A		General Method		
40ml VOA & HCl			B		Monitor Well Sampling - N/A		
40ml VOA & HCl			C		Volatiles		
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B		



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	AI H-17 PRC	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
7012602-08	MW-12		1-16-17	1219	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method			Field Results
40ml VOA & HCl			A		General Method			
40ml VOA & HCl			B		Monitor Well Sampling - N/A			
40ml VOA & HCl			C		Volatiles			
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B			
7012602-09	MW-13		1-16-17	1219	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method			Field Results
40ml VOA & HCl			A		General Method			
40ml VOA & HCl			B		Monitor Well Sampling - N/A			
40ml VOA & HCl			C		Volatiles			
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B			
7012602-10	MW-14S		1-17-17	1408	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method			Field Results
40ml VOA & HCl			A		General Method			
40ml VOA & HCl			B		Monitor Well Sampling - N/A			
40ml VOA & HCl			C		Volatiles			
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B			
7012602-11	MW-14D		1-17-17	1304	PRC-STL	Non-potable	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method			Field Results
40ml VOA & HCl			A		General Method			
40ml VOA & HCl			B		Monitor Well Sampling - N/A			
40ml VOA & HCl			C		Volatiles			
Field Services			D		VOA, 8260, USTUnleaded - SW 846 8260B			



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
7012602-12	OW-1		1-17-17 1109	DRC-STL	Non-potable	Grab	

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
40ml VOA & HCl	A	General Method Monitor Well Sampling - N/A Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40ml VOA & HCl	B		
40ml VOA & HCl	C		
Field Services	D		

7012602-13	OW-2		1-18-17 1008	DRC-STL	Non-potable	Grab	
------------	------	--	--------------	---------	-------------	------	--

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
40ml VOA & HCl	A	General Method Monitor Well Sampling - N/A Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40ml VOA & HCl	B		
40ml VOA & HCl	C		
Field Services	D		

7012602-14	Former Supply Well		1-18-17 1059	DRC-STL	Non-potable	Grab	
------------	--------------------	--	--------------	---------	-------------	------	--

Container Type / Preservation	Preservation Check	Analysis - Method	Field Results
40ml VOA & HCl	A	General Method Monitor Well Sampling - N/A Volatiles VOA, 8260, USTUnleaded - SW 846 8260B	
40ml VOA & HCl	B		
40ml VOA & HCl	C		
Field Services	D		

Add Trip Blank for Day 1 1/16/17 0735 DRC

Add Trip Blank for Day 2 1/16/17 0735 DRC

Add Trip Blank for Day 3 1/17/17 1408 DRC

WKO TAT = 10

Cool Sample(s) to 6 C

Relinquished By:	Count	Date:	Temp (°C):
Received By:		Time:	
Relinquished By:	18	Date: 1-16-17	Temp (°C): 4.2
Received in Lab By:		Time: 1600	Acceptable: ? ☒ Y/N
		Date:	Temp (°C):
		Time:	Acceptable: ? Y/N

Sample Conditions
Number of Containers \ Cooler rece matches number on COC?
Sample labels and COC free of des
All Containers Intact?
VOC vials for VOA analysis free of if applicable?

Suburban Testing Labs

Lab Date/Time: 1/18/17 1330 Lab Temp: 3.8

Number of containers/coolers match number on COC? ☒ Y/N
Sample lables and COC are free of discrepancies? ☒ Y/N
All Containers in tact? ☒ Y/N
Received in lab within acceptable temperture limits? ☒ Y/N
40mL VOA vials free of headspace? ☒ Y/N

Relinquished by: DRC-STL (12)

Received in Lab by: BK Page 17 of 33

APPENDIX I
Updated Fate & Transport Model Outputs

NEW QUICK DOMENICO

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL																																																																																																																
Project:	Herr Foods, Inc.																																																																																																															
Date:	3/9/2017	Prepared by:	EGD																																																																																																													
		Contaminant:	Benzene Model 10 Update																																																																																																													
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	Time (days)																																																																																																									
CONC	(ft)	(ft)	(ft)		WIDTH	THICKNESS	(days)																																																																																																									
(MG/L)			>=.001	day-1	(ft)	(ft)																																																																																																										
	6.47	3.00E+00	3.00E-01	1.00E-03	0.00024	35	8	7173																																																																																																								
Hydraulic	Hydraulic		Soil Bulk		Frac.	Retard-	V																																																																																																									
Cond	Gradient	Porosity	Density	KOC	Org. Carb.	ation	(=K*i/n*R)																																																																																																									
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	2.80E+00	0.018	0.353	1.788	58	1.18E-02	4.466592635	0.031965352																																																																																																								
Point Concentration <table border="1"> <tr> <td>x(ft)</td> <td>y(ft)</td> <td>z(ft)</td> </tr> <tr> <td>100</td> <td>0</td> <td>0</td> </tr> <tr> <td colspan="3"> <table border="1"> <tr> <td></td> <td>x(ft)</td> <td>y(ft)</td> <td>z(ft)</td> </tr> <tr> <td>Conc. At</td> <td>100</td> <td>0</td> <td>0</td> </tr> <tr> <td>at</td> <td>7173</td> <td>days =</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>3.029</td> </tr> <tr> <td></td> <td></td> <td></td> <td>mg/l</td> </tr> </table> </td> </tr> </table> AREAL MODEL Length (ft) 255 Width (ft) 40 CALCULATION DOMAIN <table border="1" style="width: 100%; text-align: center;"> <tr> <td></td> <td>25.5</td> <td>51</td> <td>76.5</td> <td>102</td> <td>127.5</td> <td>153</td> <td>178.5</td> <td>204</td> <td>229.5</td> <td>255</td> </tr> <tr> <td>40</td> <td>0.000</td> <td>0.000</td> <td>0.002</td> <td>0.006</td> <td>0.013</td> <td>0.020</td> <td>0.025</td> <td>0.025</td> <td>0.020</td> <td>0.012</td> </tr> <tr> <td>20</td> <td>1.402</td> <td>1.449</td> <td>1.313</td> <td>1.146</td> <td>0.981</td> <td>0.827</td> <td>0.670</td> <td>0.492</td> <td>0.301</td> <td>0.140</td> </tr> <tr> <td>0</td> <td>5.365</td> <td>4.441</td> <td>3.652</td> <td>2.981</td> <td>2.418</td> <td>1.941</td> <td>1.505</td> <td>1.063</td> <td>0.627</td> <td>0.282</td> </tr> <tr> <td>-20</td> <td>1.402</td> <td>1.449</td> <td>1.313</td> <td>1.146</td> <td>0.981</td> <td>0.827</td> <td>0.670</td> <td>0.492</td> <td>0.301</td> <td>0.140</td> </tr> <tr> <td>-40</td> <td>0.000</td> <td>0.000</td> <td>0.002</td> <td>0.006</td> <td>0.013</td> <td>0.020</td> <td>0.025</td> <td>0.025</td> <td>0.020</td> <td>0.012</td> </tr> </table> Field Data: Centerline C Concentration <table border="1"> <tr> <td>Distance from Source</td> <td>6.47</td> <td>3.03</td> <td>0.047</td> </tr> <tr> <td></td> <td>0</td> <td>100</td> <td>255</td> </tr> </table>										x(ft)	y(ft)	z(ft)	100	0	0	<table border="1"> <tr> <td></td> <td>x(ft)</td> <td>y(ft)</td> <td>z(ft)</td> </tr> <tr> <td>Conc. At</td> <td>100</td> <td>0</td> <td>0</td> </tr> <tr> <td>at</td> <td>7173</td> <td>days =</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>3.029</td> </tr> <tr> <td></td> <td></td> <td></td> <td>mg/l</td> </tr> </table>				x(ft)	y(ft)	z(ft)	Conc. At	100	0	0	at	7173	days =					3.029				mg/l		25.5	51	76.5	102	127.5	153	178.5	204	229.5	255	40	0.000	0.000	0.002	0.006	0.013	0.020	0.025	0.025	0.020	0.012	20	1.402	1.449	1.313	1.146	0.981	0.827	0.670	0.492	0.301	0.140	0	5.365	4.441	3.652	2.981	2.418	1.941	1.505	1.063	0.627	0.282	-20	1.402	1.449	1.313	1.146	0.981	0.827	0.670	0.492	0.301	0.140	-40	0.000	0.000	0.002	0.006	0.013	0.020	0.025	0.025	0.020	0.012	Distance from Source	6.47	3.03	0.047		0	100	255
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NEW QUICK_DOMENICO.XLS

SPREADSHEET APPLICATION OF
"AN ANALYTICAL MODEL FOR
MULTIDIMENSIONAL TRANSPORT OF A
DECAYING CONTAMINANT SPECIES"
P.A. Domenico (1987)
Modified to Include Retardation

Centerline Plot (linear)

Centerline Plot (log)

METHOD FOR ESTIMATING FLOW, AVERAGE CONCENTRATION AND MASS LOADING TO SURFACE WATER FROM GROUNDWATER																
Project:	Herr Foods, Inc.										PA DEPARTMENT OF ENVIRONMENTAL PROTECTION SWLOAD5B.XLS A METHOD FOR ESTIMATING COMTAMINANT LOADING TO SURFACE WATER based on P.A. Domenico (1987) Modified to Include Retardation					
Date:	3/9/2018															
Contaminant:	Benzene Update			Prepared by:		EGD										
SOURCE																
CONC	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE										
(units)	(ft)	(ft)	(ft)		WIDTH	THICKNESS	Time									
ug/l	>.0001	>.0001	>=.0001	day-1	(ft)	(ft)	(days)									
6,470	3	0.3	1.00E-03	0.00024	35	8	1.00E+99									
Hydraulic	Hydraulic		Soil Bulk		Frac.	Retard-	V									
Cond	Gradient	Porosity	Density	KOC	Org. Carb.	ation	(=K*/i/n*R)									
(ft/day)	(ft/ft)	(dec. frac.)	(g/cm ³)			(R)	(ft/day)									
2.80E+00	0.018	0.353	1.788	58	1.18E-02	4.466593	0.0319654									
				-49.5	-39.6	-29.7	-19.8	-9.9	0	9.9	19.8	29.7	39.6	49.5		
Edge Criterion (ug/l)	5		0	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
Highest modeled conc.	837.734		-0.8	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
			-1.6	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
SURFACE WATER LOADING GRID			-2.4	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
Distance to Stream (ft)	255		-3.2	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
Plume View Width (ft)	99		-4	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
Plume View Depth (ft)	8		-4.8	4.810613	36.76718	160.935	422.37062	712.785058	837.731141	712.78506	422.37062	160.93502	36.76718	4.810613		
			-5.6	4.808761	36.753023	160.873	422.20798	712.5106	837.408572	712.5106	422.20798	160.87305	36.75302	4.808761		
			-6.4	4.750349	36.306588	158.9189	417.07947	703.855819	827.236672	703.85582	417.07947	158.91894	36.30659	4.750349		
PENTOX NEEDED			-7.2	4.178951	31.939432	139.8033	366.91086	619.192162	727.732085	619.19216	366.91086	139.8033	31.93943	4.178951		
			-8	2.405315	18.383658	80.46781	211.18609	356.393853	418.867127	356.39385	211.18609	80.467807	18.38366	2.405315		
				Average Groundwater Concentration				300.667 ug/l								
				Plume Flow				0.00046 cfs		0.0003 MGD						
				Mass Loading to Stream				339886.62 ug/day								

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
6840	1.44	495.00	0.04	0.00000	0.00	☒

Stream Data

LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	pH	Stream Hard	pH	Analysis Hard	pH
(cfs)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.1	0	0.00116	0	1.5	0	0	0	100	7	0	0	0
Qh		0	0.0083	0	3	0	0	0	100	7	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
GW Discharge	0.1	0.0003	0	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc	Trib Conc	Disc Daily CV	Disc Hourly CV	Steam Conc	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc
	(µg/L)	(µg/L)			(µg/L)					(µg/L)
BENZENE	300.667	0	0.5	0.5	0	0	0	0	1	0

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
6840	0.00	390.00	0.98	0.00000	0.00	☒

Stream Data

LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	pH	Stream Hard	pH	Analysis Hard	pH
(cfs)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.1	0	0.00592	0	3	0	0	0	100	7	0	0	0
Qh		0	0.29	0	6	0	0	0	100	7	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
		0	0	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc	Trib Conc	Disc Daily CV	Disc Hourly CV	Steam Conc	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc
	(µg/L)	(µg/L)			(µg/L)					(µg/L)
BENZENE	0	0	0.5	0.5	0	0	0	0	1	0

PENTOXSD Analysis Results

Hydrodynamics

<u>SWP Basin</u>		<u>Stream Code:</u>		<u>Stream Name:</u>							
07K		6840		NORTHEAST CREEK							
RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	CMT (min)
Q7-10 Hydrodynamics											
1.440	0.0012	0	0.0012	0.00046	0.0138	0.0851	1.5	17.624	0.0127	6.9176	.539
0.000	0.0059	0	0.0059	NA	0	0	0	0	0	0	NA
Qh Hydrodynamics											
1.440	0.0083	0	0.0083	0.00046	0.0138	0.0893	3	33.576	0.0327	2.6914	3.525
0.000	0.29	0	0.29	NA	0	0	0	0	0	0	NA

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number							
1.44	GW Discharge	0.1							
AFC									
Q7-10:	CCT (min)	0.539	PMF	1	Analysis pH	7	Analysis Hardness	100	
	Parameter		Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
	BENZENE		0	0	0	0	640	640	2239.655
CFC									
Q7-10:	CCT (min)	0.539	PMF	1	Analysis pH	7	Analysis Hardness	100	
	Parameter		Stream Conc. (µg/L)	Stream CV	Trib Conc. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
	BENZENE		0	0	0	0	130	130	454.93
THH									
Q7-10:	CCT (min)	0.539	PMF	NA	Analysis pH	NA	Analysis Hardness	NA	
	Parameter		Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
	BENZENE		0	0	0	0	NA	NA	NA
CRL									
Qh:	CCT (min)	3.525	PMF	1					
	Parameter		Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
	BENZENE		0	0	0	0	1.2	1.2	22.661

PENTOXSD Analysis Results

Recommended Effluent Limitations

<u>SWP Basin</u>	<u>Stream Code:</u>	<u>Stream Name:</u>			
07K	6840	NORTHEAST CREEK			
RMI	Name	Permit Number	Disc Flow (mgd)		
1.44	GW Discharge	0.1	0.0003		
Parameter		Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L) WQBEL Criterion
BENZENE		22.661	CRL	35.355	22.661 CRL

METHOD FOR ESTIMATING FLOW, AVERAGE CONCENTRATION AND MASS LOADING TO SURFACE WATER FROM GROUNDWATER															
Project:	Herr Foods, Inc.														
Date:	3/10/2017														
Contaminant:	Benzene Back Calculation			Prepared by:		EGD									
SOURCE				LAMBDA	SOURCE	SOURCE									
CONC (units)	Ax (ft)	Ay (ft)	Az (ft)		WIDTH (ft)	THICKNESS (ft)	Time (days)								
ug/l	>.0001	>.0001	>=.0001	day-1											
332	3	0.3	1.00E-03	0.00024	35	8	1.00E+99								
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm ³)	KOC	Frac. Org. Carb.	Retardation (R)	V (=K*/n*R) (ft/day)								
2.80E+00	0.018	0.353	1.788	58	1.18E-02	4.466593	0.0319654								
				-33.5	-26.8	-20.1	-13.4	-6.7	0	6.7	13.4	20.1	26.8	33.5	
Edge Criterion (ug/l)	5			0	4.99282	11.520972	21.19467	31.80482	39.9592196	42.9872909	39.95922	31.80482	21.19467	11.52097	4.99282
Highest modeled conc.	42.9873			-0.8	4.99282	11.520972	21.19467	31.80482	39.9592196	42.9872909	39.95922	31.80482	21.19467	11.52097	4.99282
				-1.6	4.99282	11.520972	21.19467	31.80482	39.9592196	42.9872909	39.95922	31.80482	21.19467	11.52097	4.99282
SURFACE WATER LOADING GRID				-2.4	4.99282	11.520972	21.19467	31.80482	39.9592196	42.9872909	39.95922	31.80482	21.19467	11.52097	4.99282
Distance to Stream (ft)	255			-3.2	4.99282	11.520972	21.19467	31.80482	39.9592196	42.9872909	39.95922	31.80482	21.19467	11.52097	4.99282
Plume View Width (ft)	67			-4	4.99282	11.520972	21.19467	31.80482	39.9592196	42.9872909	39.95922	31.80482	21.19467	11.52097	4.99282
Plume View Depth (ft)	8			-4.8	4.992802	11.520929	21.19459	31.804701	39.9590711	42.9871312	39.959071	31.804701	21.194591	11.52093	4.992802
				-5.6	4.990879	11.516493	21.18643	31.792455	39.9436849	42.970579	39.943685	31.792455	21.18643	11.51649	4.990879
				-6.4	4.930256	11.376604	20.92908	31.406276	39.4584938	42.4486206	39.458494	31.406276	20.929081	11.3766	4.930256
PENTOX NEEDED				-7.2	4.337217	10.008163	18.41162	27.628556	34.7122087	37.3426665	34.712209	27.628556	18.411616	10.00816	4.337217
				-8	2.49641	5.7604861	10.59734	15.90241	19.9796098	21.4936455	19.97961	15.90241	10.597335	5.760486	2.49641
				Average Groundwater Concentration				22.4174 ug/l							
				Plume Flow				0.00031 cfs		0.0002 MGD					
				Mass Loading to Stream				17150.41 ug/day							

NEW QUICK DOMENICO

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL																																																																																								
Project:	Herr Foods, Inc.																																																																																							
Date:	3/9/2017	Prepared by:	EGD																																																																																					
		Contaminant:	Benzene Model 10 Back Calculation																																																																																					
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	Time (days)																																																																																	
CONC	(ft)	(ft)	(ft)		WIDTH	THICKNESS	(days)																																																																																	
(MG/L)			>=.001	day-1	(ft)	(ft)																																																																																		
	0.332	3.00E+00	3.00E-01	1.00E-03	0.00024	35	8	7173																																																																																
Hydraulic	Hydraulic		Soil Bulk		Frac.	Retard-	V																																																																																	
Cond	Gradient	Porosity	Density	KOC	Org. Carb.	ation	(=K*i/n*R)																																																																																	
(ft/day)	(ft/ft)	(dec. frac.)	(g/cm ³)			(R)	(ft/day)																																																																																	
	2.80E+00	0.018	0.353	1.788	58	1.18E-02	4.466592635	0.031965352																																																																																
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Field Data:	Centerline C Concentration			0.332	0.155	0.014																																																																																		
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Centerline Plot (linear)

Centerline Plot (log)

NEW QUICK_DOMENICO.XLS

SPREADSHEET APPLICATION OF
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P.A. Domenico (1987)
Modified to Include Retardation

NEW QUICK DOMENICO

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P.A. Domenico (1987)
Modified to Include Retardation

METHOD FOR ESTIMATING FLOW, AVERAGE CONCENTRATION AND MASS LOADING TO SURFACE WATER FROM GROUNDWATER																
Project:	Herr Foods, Inc.										PA DEPARTMENT OF ENVIRONMENTAL PROTECTION SWLOAD5B.XLS A METHOD FOR ESTIMATING COMTAMINANT LOADING TO SURFACE WATER based on P.A. Domenico (1987) Modified to Include Retardation					
Date:	3/9/2018															
Contaminant:	Benzene Update			Prepared by:		EGD										
SOURCE																
CONC	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE										
(units)	(ft)	(ft)	(ft)		WIDTH	THICKNESS	Time									
ug/l	>.0001	>.0001	>=.0001	day-1	(ft)	(ft)	(days)									
6,470	3	0.3	1.00E-03	0.00024	35	8	1.00E+99									
Hydraulic	Hydraulic		Soil Bulk		Frac.	Retard-	V									
Cond	Gradient	Porosity	Density	KOC	Org. Carb.	ation	(=K*i/n*R)									
(ft/day)	(ft/ft)	(dec. frac.)	(g/cm ³)			(R)	(ft/day)									
2.80E+00	0.018	0.353	1.788	58	1.18E-02	4.466593	0.0319654									
				-49.5	-39.6	-29.7	-19.8	-9.9	0	9.9	19.8	29.7	39.6	49.5		
Edge Criterion (ug/l)	5		0	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
Highest modeled conc.	837.734		-0.8	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
			-1.6	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
SURFACE WATER LOADING GRID			-2.4	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
Distance to Stream (ft)	255		-3.2	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
Plume View Width (ft)	99		-4	4.810631	36.767316	160.9356	422.37219	712.787707	837.734254	712.78771	422.37219	160.93561	36.76732	4.810631		
Plume View Depth (ft)	8		-4.8	4.810613	36.76718	160.935	422.37062	712.785058	837.731141	712.78506	422.37062	160.93502	36.76718	4.810613		
			-5.6	4.808761	36.753023	160.873	422.20798	712.5106	837.408572	712.5106	422.20798	160.87305	36.75302	4.808761		
			-6.4	4.750349	36.306588	158.9189	417.07947	703.855819	827.236672	703.85582	417.07947	158.91894	36.30659	4.750349		
PENTOX NEEDED			-7.2	4.178951	31.939432	139.8033	366.91086	619.192162	727.732085	619.19216	366.91086	139.8033	31.93943	4.178951		
			-8	2.405315	18.383658	80.46781	211.18609	356.393853	418.867127	356.39385	211.18609	80.467807	18.38366	2.405315		
				Average Groundwater Concentration				300.667 ug/l								
				Plume Flow				0.00046 cfs		0.0003 MGD						
				Mass Loading to Stream				339886.62 ug/day								

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)				Apply FC					
6840	1.44	495.00	0.04	0.00000	0.00				☒					
Stream Data														
LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary		Stream		Analysis		
	(cfsm)	(cfs)	(cfs)	(ft)	(ft)	(fps)	(days)	Hard	pH	Hard	pH	Hard	pH	
Q7-10	0.1	0	0.00116	0	1.5	0	0	0	100	7	0	0	0	0
Qh		0	0.0083	0	3	0	0	0	100	7	0	0	0	0
Discharge Data														
Name	Permit Number	Existing	Permitted	Design	Reserve	AFC	CFC	THH	CRL	Disc	Disc			
		Disc Flow	Disc Flow	Disc Flow	Factor	PMF	PMF	PMF	PMF	Hard	pH			
		(mgd)	(mgd)	(mgd)								(mg/L)		
GW Discharge	0.1	0.00017	0	0	0	0	0	0	0	0	100	7		
Parameter Data														
Parameter Name	Disc Conc	Trib Conc	Disc Daily CV	Disc Hourly CV	Steam Conc	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc				
	(µg/L)	(µg/L)			(µg/L)					(µg/L)				
BENZENE	300.667	0	0.5	0.5	0	0	0	0	1	0				
MTBE*	51.0516	0	0.5	0.5	0	0	0	0	1	0				

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
6840	0.00	390.00	0.98	0.00000	0.00	☒

Stream Data													
LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary		Stream		Analysis	
	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	Hard	pH	Hard	pH	Hard	pH
								(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.1	0	0.00592	0	3	0	0	100	7	0	0	0	0
Qh		0	0.29	0	6	0	0	100	7	0	0	0	0

Discharge Data												
Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH	
		(mgd)	(mgd)	(mgd)						(mg/L)		
		0	0	0	0	0	0	0	0	100	7	

Parameter Data											
Parameter Name		Disc Conc	Trib Conc	Disc Daily CV	Disc Hourly CV	Stream Conc	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc
		(µg/L)	(µg/L)			(µg/L)					(µg/L)
BENZENE		0	0	0.5	0.5	0	0	0	0	1	0
MTBE*		0	0	0.5	0.5	0	0	0	0	1	0

PENTOXSD Analysis Results

Hydrodynamics

<u>SWP Basin</u>		<u>Stream Code:</u>		<u>Stream Name:</u>							
07K		6840		NORTHEAST CREEK							
RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	CMT (min)
Q7-10 Hydrodynamics											
1.440	0.0012	0	0.0012	0.00026	0.0138	0.0803	1.5	18.679	0.0118	7.4491	.766
0.000	0.0059	0	0.0059	NA	0	0	0	0	0	0	NA
Qh Hydrodynamics											
1.440	0.0083	0	0.0083	0.00026	0.0138	0.0884	3	33.921	0.0323	2.7266	3.749
0.000	0.29	0	0.29	NA	0	0	0	0	0	0	NA

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number							
1.44	GW Discharge	0.1							
AFC									
Q7-10:	CCT (min)	0.766	PMF	1	Analysis pH	7	Analysis Hardness	100	
	Parameter		Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
	MTBE*		0	0	0	0	NA	NA	NA
CFC									
Q7-10:	CCT (min)	0.766	PMF	1	Analysis pH	7	Analysis Hardness	100	
	Parameter		Stream Conc. (µg/L)	Stream CV	Trib Conc. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
	MTBE*		0	0	0	0	NA	NA	NA
THH									
Q7-10:	CCT (min)	0.766	PMF	1	Analysis pH	NA	Analysis Hardness	NA	
	Parameter		Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
	MTBE*		0	0	0	0	20	20	108.216
CRL									
Qh:	CCT (min)	3.749	PMF	1					
	Parameter		Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
	MTBE*		0	0	0	0	NA	NA	NA

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin

Stream Code:

Stream Name:

07K

6840

NORTHEAST CREEK

RMI	Name	Permit Number	Disc Flow (mgd)		
1.44	GW Discharge	0.1	0.0002		
Parameter		Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L) WQBEL Criterion
MTBE*		51.052	INPUT	79.649	108.216 THH

METHOD FOR ESTIMATING FLOW, AVERAGE CONCENTRATION AND MASS LOADING TO SURFACE WATER FROM GROUNDWATER																	
Project:	Herr Foods, Inc.									PA DEPARTMENT OF ENVIRONMENTAL PROTECTION SWLOAD5B.XLS A METHOD FOR ESTIMATING COMTAMINANT LOADING TO SURFACE WATER based on P.A. Domenico (1987) Modified to Include Retardation							
Date:	3/9/2017																
Contaminant:	MTBE Back Calculation			Prepared by:		EGD											
SOURCE																	
CONC	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE											
(units)	(ft)	(ft)	(ft)		WIDTH	THICKNESS	Time										
ug/l	>.0001	>.0001	>=.0001	day-1	(ft)	(ft)	(days)										
1,800	3	0.3	1.00E-03	0.00065	35	8	1.00E+99										
Hydraulic	Hydraulic		Soil Bulk		Frac.	Retard-	V										
Cond	Gradient	Porosity	Density	KOC	Org. Carb.	ation	(=K*/i/n*R)										
(ft/day)	(ft/ft)	(dec. frac.)	(g/cm ³)			(R)	(ft/day)										
2.80E+00	0.018	0.353	1.788	12	1.18E-02	1.717226	0.0831435										
				-35	-28	-21	-14	-7	0	7	14	21	28	35			
Edge Criterion (ug/l)	20			0	20.14012	50.728055	99.39493	155.35886	199.522721	216.100073	199.52272	155.35886	99.394929	50.72805	20.14012		
Highest modeled conc.	216.1			-0.8	20.14012	50.728055	99.39493	155.35886	199.522721	216.100073	199.52272	155.35886	99.394929	50.72805	20.14012		
				-1.6	20.14012	50.728055	99.39493	155.35886	199.522721	216.100073	199.52272	155.35886	99.394929	50.72805	20.14012		
SURFACE WATER LOADING GRID				-2.4	20.14012	50.728055	99.39493	155.35886	199.522721	216.100073	199.52272	155.35886	99.394929	50.72805	20.14012		
Distance to Stream (ft)	255			-3.2	20.14012	50.728055	99.39493	155.35886	199.522721	216.100073	199.52272	155.35886	99.394929	50.72805	20.14012		
Plume View Width (ft)	70			-4	20.14012	50.728055	99.39493	155.35886	199.522721	216.100073	199.52272	155.35886	99.394929	50.72805	20.14012		
Plume View Depth (ft)	8			-4.8	20.14004	50.727866	99.39456	155.35828	199.521979	216.09927	199.52198	155.35828	99.394559	50.72787	20.14004		
				-5.6	20.13229	50.708334	99.35629	155.29846	199.445153	216.016061	199.44515	155.29846	99.356287	50.70833	20.13229		
				-6.4	19.88774	50.092386	98.14942	153.41207	197.022517	213.39214	197.02252	153.41207	98.149418	50.09239	19.88774		
PENTOX NEEDED				-7.2	17.49554	44.066997	86.34347	134.95882	173.323563	187.724157	173.32356	134.95882	86.343465	44.067	17.49554		
				-8	10.07006	25.364027	49.69746	77.679429	99.7613603	108.050036	99.76136	77.679429	49.697464	25.36403	10.07006		
				Average Groundwater Concentration				108.384 ug/l									
				Plume Flow				0.00033 cfs		0.00021 MGD							
				Mass Loading to Stream				86631.53 ug/day									

NEW QUICK DOMENICO

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION, 1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL																																													
Project:	Herr Foods, Inc.																																												
Date:	3/9/2017	Prepared by:	EGD																																										
		Contaminant:	MTBE Model 10 Back Calculation																																										
SOURCE	Ax	Ay	Az	LAMBDA	SOURCE	SOURCE	Time (days)																																						
CONC	(ft)	(ft)	(ft)		WIDTH	THICKNESS	(days)																																						
(MG/L)			>=.001	day-1	(ft)	(ft)																																							
	1.8	3.00E+00	3.00E-01	1.00E-03	0.00065	35	8	7173																																					
Hydraulic	Hydraulic		Soil Bulk		Frac.	Retard-	V																																						
Cond	Gradient	Porosity	Density	KOC	Org. Carb.	ation	($=K*i/n*R$)																																						
(ft/day)	(ft/ft)	(dec. frac.)	(g/cm ³)			(R)	(ft/day)																																						
	2.80E+00	0.018	0.353	1.788	12	1.18E-02	1.717226062	0.083143511																																					
Point Concentration <table border="1"> <thead> <tr> <th>x(ft)</th> <th>y(ft)</th> <th>z(ft)</th> </tr> </thead> <tbody> <tr> <td>100</td> <td>0</td> <td>0</td> </tr> <tr> <td colspan="3">Conc. At 100 days = 0.818 mg/l</td> </tr> </tbody> </table> Centerline Plot (linear) Centerline Plot (log)										x(ft)	y(ft)	z(ft)	100	0	0	Conc. At 100 days = 0.818 mg/l																													
x(ft)	y(ft)	z(ft)																																											
100	0	0																																											
Conc. At 100 days = 0.818 mg/l																																													
<table border="1"> <thead> <tr> <th colspan="2">AREAL MODEL</th> <th colspan="2">CALCULATION DOMAIN</th> </tr> <tr> <th>Length (ft)</th> <th>Width (ft)</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>255</td> <td>40</td> <td></td> <td></td> </tr> <tr> <td>25.5</td> <td>51</td> <td>76.5</td> <td>102</td> </tr> <tr> <td>40</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> </tr> <tr> <td>20</td> <td>0.387</td> <td>0.397</td> <td>0.357</td> </tr> <tr> <td>0</td> <td>1.481</td> <td>1.217</td> <td>0.993</td> </tr> <tr> <td>-20</td> <td>0.387</td> <td>0.397</td> <td>0.357</td> </tr> <tr> <td>-40</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> </tr> </tbody> </table>										AREAL MODEL		CALCULATION DOMAIN		Length (ft)	Width (ft)			255	40			25.5	51	76.5	102	40	0.000	0.000	0.000	20	0.387	0.397	0.357	0	1.481	1.217	0.993	-20	0.387	0.397	0.357	-40	0.000	0.000	0.000
AREAL MODEL		CALCULATION DOMAIN																																											
Length (ft)	Width (ft)																																												
255	40																																												
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-20	0.387	0.397	0.357																																										
-40	0.000	0.000	0.000																																										
Field Data:	Centerline C Concentration			1.8	0.818	0.216																																							
	Distance from Source			0	100	255																																							

NEW QUICK_DOMENICO.XLS

SPREADSHEET APPLICATION OF
"AN ANALYTICAL MODEL FOR
MULTIDIMENSIONAL TRANSPORT OF A
DECAYING CONTAMINANT SPECIES"
P.A. Domenico (1987)
Modified to Include Retardation

APPENDIX J

Chemical Oxidation Product Description and MSDS



The Field Proven and Versatile ISCO Solution to Address Soil & Groundwater Contamination

Klozur® SP is the oxidant of choice for *in situ* chemical oxidation (ISCO), because of its proven ability to treat a wide range of contaminants including chlorinated solvents, petroleum and PAHs. Based upon an environmental grade of sodium persulfate (SP), Klozur SP is ideal for contaminated source zones and hot spots that require rapid treatment. When properly activated, Klozur SP provides an unmatched combination of oxidative power, versatility, and control that can be delivered both safely and cost effectively.

Successful field applications of Klozur activated persulfate have been performed globally. These applications demonstrate the ability of Klozur activated persulfate to treat diverse organic contaminants of concern including: chlorinated ethenes (TCE, PCE, DCE and vinyl chloride), chlorinated ethanes (TCA and DCA), chlorinated methanes (carbon tetrachloride and methylene chloride), BTEX, MTBE, polyaromatic hydrocarbons (PAHs), petroleum hydrocarbons (TPHs, GRO, DRO), 1,4-dioxane and pesticides.

The benefits of Klozur SP

When used with PeroxyChem's patented activation methods, Klozur SP produces the powerful oxidative ($\text{SO}_4^{\cdot-}$, $\text{OH}^{\cdot}$) and reductive ($\text{O}_2^{\cdot-}$) radicals creating a multi-radical attack for the rapid destruction of recalcitrant compounds.



Multiple activation options and methods of delivery provide for a flexible and custom solution based on site conditions. With a solubility limit of up to 40 wt%, Klozur SP can be applied as a fully soluble solution. Klozur SP is a stable oxidant given its high oxidation potential, with a typical active lifetime in the subsurface of weeks to months, providing an extended radius of influence. Klozur SP is safe to handle with PeroxyChem's recommended use guidelines and does not generate heat or gas.

Examples of Contaminants of Concern

CHLORINATED SOLVENTS
PCE, TCE, DCE, VC, TCA, DCA,
methylene chloride,
carbon tetrachloride,
chlorobenzene

PETROLEUM
TPH, BTEX, DRO, GRO

PAHs
creosote, MGP residuals
1,4-dioxane, MTBE, TBA,
energetics,
chlorinated pesticides

The sound science of Klozur Activated Persulfate

Klozur activated persulfate has a long history of documented success having been used at thousands of sites to remediate contaminants of concern around the world. The field application of Klozur activated persulfate has been scientifically validated in hundreds of independent peer-reviewed journal articles and conference presentations.

Applications methods

- Direct push injection
- Fixed well injection
- Soil blending

For more information and detailed case studies, please visit our website.



SAFETY DATA SHEET

Klozur® SP

SDS # : 7775-27-1-12
Revision date: 2016-08-01
Format: NA
Version 1.03



1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name Klozur® SP

Other means of identification

CAS-No 7775-27-1
Synonyms Sodium Persulfate; Sodium Peroxydisulfate; Disodium Peroxydisulfate; Peroxydisulfuric acid, disodium salt; Peroxydisulfuric acid, sodium salt

Alternate Commercial Name Klozur® Persulfate

Recommended use of the chemical and restrictions on use

Recommended Use: In situ and ex situ chemical oxidation of contaminants and compounds of concern for environmental remediation applications

Restrictions on Use: No uses to be advised against were identified.

Manufacturer/Supplier

PeroxyChem LLC
2005 Market Street
Suite 3200
Philadelphia, PA 19103
Phone: +1 267/ 422-2400 (General Information)
E-Mail: sdsinfo@peroxychem.com

Emergency telephone numbers

For leak, fire, spill or accident emergencies, call:
1 800 / 424 9300 (CHEMTREC - U.S.A.)
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)
1 303/ 389-1409 (Medical - U.S. - Call Collect)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2B
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 3
Oxidizing Solids	Category 3

GHS Label elements, including precautionary statements**EMERGENCY OVERVIEW****Danger****Hazard Statements**

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335 - May cause respiratory irritation
H320 - Causes eye irritation
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H302 - Harmful if swallowed
H272 - May intensify fire; oxidizer

**Precautionary Statements - Prevention**

P261 - Avoid breathing dust.
P285 - In case of inadequate ventilation wear respiratory protection
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves/ protective clothing
P264 - Wash face, hands and any exposed skin thoroughly after handling
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P220 - Keep/Store away from clothing/combustible materials
P221 - Take any precaution to avoid mixing with combustibles

Precautionary Statements - Response

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/ attention
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention
P304 + P341 - IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
P330 - Rinse mouth
P370 + P378 - In case of fire: Use water spray for extinction

Precautionary Statements - Storage

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

Hazards not otherwise classified (HNOC)

No hazards not otherwise classified were identified.

Other Information Risk of decomposition by heat or by contact with incompatible materials

Unknown acute toxicity

0% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTSFormula Na₂O₈S₂

Chemical name	CAS-No	Weight %
Sodium Persulfate	7775-27-1	> 99

4. FIRST AID MEASURES

General Advice	Remove from exposure, lie down. Show this material safety data sheet to the doctor in attendance.
Eye Contact	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids intermittently. Consult a physician. If symptoms persist, call a physician.
Skin Contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.
Inhalation	Remove from exposure, lie down. If breathing is irregular or stopped, administer artificial respiration. Call a physician immediately.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately. Rinse mouth. Drink 1 or 2 glasses of water.
Most important symptoms and effects, both acute and delayed	Itching; Redness; Coughing and/ or wheezing.
Indication of immediate medical attention and special treatment needed, if necessary	Treat symptomatically

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Water. Cool containers with flooding quantities of water until well after fire is out.
Unsuitable extinguishing media	Do not use carbon dioxide or other gas filled fire extinguishers; they will have little effect on decomposing persulfate.
Specific Hazards Arising from the Chemical	Decomposes under fire conditions to release oxygen that intensifies the fire.
Explosion data	
Sensitivity to Mechanical Impact	Not sensitive.
Sensitivity to Static Discharge	Not sensitive.
Protective equipment and precautions for firefighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Keep off any unprotected persons. Avoid contact with the skin and the eyes. Avoid breathing dust. Wear personal protective equipment.
Other	Never add other substances or combustible waste to product residues.
Environmental Precautions	Prevent material from entering into soil, ditches, sewers, waterways, and/or groundwater. See Section 12, Ecological Information for more detailed information.
Methods for Containment	Vacuum, shovel or pump waste into a drum and label contents for disposal. Avoid dust formation. Store in closed container.

Methods for cleaning up Clean up spill area and treat as special waste. Dispose of waste as indicated in Section 13.

7. HANDLING AND STORAGE

Handling Wear personal protective equipment. Use only in area provided with appropriate exhaust ventilation. Avoid dust formation. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Avoid contact with skin and eyes. Avoid breathing dust. Remove and wash contaminated clothing before re-use. Reference to other sections.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat. Do not store near combustible materials. Avoid contamination of opened product. Keep away from food, drink and animal feedingstuffs. Avoid formation and deposition of dust.

Incompatible products . Acids, alkalis, halides (fluorides, chlorides, bromides), combustible materials, reducing agents and organic compounds.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
Sodium Persulfate 7775-27-1	TWA: 0.1 mg/m ³	-	-	-
Chemical name	British Columbia	Quebec	Ontario TWAEV	Alberta
Sodium Persulfate 7775-27-1	TWA: 0.1 mg/m ³	-	TWA: 0.1 mg/m ³	TWA: 0.1 mg/m ³

Appropriate engineering controls

Engineering measures Provide local exhaust or general ventilation adequate to maintain exposures below permissible exposure limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Eye protection recommended. Chemical goggles consistent with EN 166 or equivalent.

Skin and Body Protection Wear long-sleeved shirt, long pants, socks, and shoes.

Hand Protection Protective gloves: Neoprene gloves, Polyvinylchloride, Natural Rubber.

Respiratory Protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn: particulate filtering facepiece respirators.

Hygiene measures Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Wash hands before breaks and after shifts. Keep work clothes separate, remove contaminated clothing - launder after open handling of product.

General information Protective engineering solutions should be implemented and in use before personal protective equipment is considered.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance Crystalline solid
Physical State Solid
Color White

Odor	odorless
Odor threshold	Not applicable
pH	6.0 (1% solution)
Melting point/freezing point	180 °C (Decomposes)
Boiling Point/Range	Decomposes upon heating
Flash point	Not flammable
Evaporation Rate	No information available
Flammability (solid, gas)	Not flammable
Flammability Limit in Air	Not applicable
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	6.07E-30 mm Hg at 25°C
Vapor density	No information available
Density	2.59 g/cm ³ (crystal density)
Specific gravity	No information available
Water solubility	575 g/l @ 25 °C
Solubility in other solvents	No information available
Partition coefficient	No information available (inorganic)
Autoignition temperature	No evidence of combustion up to 600°C
Decomposition temperature	> 100 °C (assume)
Viscosity, kinematic	No information available (Solid)
Viscosity, dynamic	No information available
Explosive properties	Not explosive
Oxidizing properties	oxidizer
Molecular weight	238.1
VOC content (%)	Not applicable
Bulk density	1.12 g/cm ³ (loose)

10. STABILITY AND REACTIVITY

Reactivity	Oxidizer. Contact with other material may cause fire
Chemical Stability	Stable.
Possibility of Hazardous Reactions	None under normal processing.
Hazardous polymerization	Hazardous polymerization does not occur.
Conditions to avoid	Heat. Moisture.
Incompatible materials	Acids, alkalis, halides (fluorides, chlorides, bromides), combustible materials, reducing agents and organic compounds. .
Hazardous Decomposition Products	Oxygen which supports combustion.

11. TOXICOLOGICAL INFORMATION

Product Information

Unknown acute toxicity	0% of the mixture consists of ingredient(s) of unknown toxicity
LD50 Oral	Sodium Persulfate: 895 mg/kg (rat)
LD50 Dermal	Sodium Persulfate: > 10 g/kg
LC50 Inhalation	Sodium Persulfate: >5.10 mg/L (4h) (rat)
Serious eye damage/eye irritation	Irritating to eyes.
Skin corrosion/irritation	Minimally irritating.
Sensitization	Sodium Persulfate: May cause sensitization by inhalation and skin contact.

Information on toxicological effects

Symptoms	Symptoms of allergic reaction may include rash, itching, swelling and trouble breathing.
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Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation corrosivity	Irritating to eyes, respiratory system and skin. None.
Carcinogenicity	Contains no ingredient listed as a carcinogen.
Mutagenicity	Did not show mutagenic effects in animal experiments
Neurological effects	Not neurotoxic
Reproductive toxicity Developmental toxicity Teratogenicity	This product is not recognized as reprotox by Research Agencies. None known. Not teratogenic in animal studies.
STOT - single exposure STOT - repeated exposure	May cause respiratory irritation. Not classified.
Target organ effects	Eyes, Lungs.
Aspiration hazard	No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects

Sodium Persulfate (7775-27-1)				
Active Ingredient(s)	Duration	Species	Value	Units
Sodium Persulfate	96 h LC50	Rainbow trout	163	mg/L
Sodium Persulfate	48 h LC50	Daphnia magna	133	mg/L
Sodium Persulfate	96 h LC50	Grass shrimp	519	mg/L
Sodium Persulfate	72 h EC50	Algae Selenastrum capricornutum	116	mg/L

Persistence and degradability	Biodegradability does not pertain to inorganic substances.
Bioaccumulation	Does not bioaccumulate.
Mobility	Dissociates into ions.
Other Adverse Effects	None known.

13. DISPOSAL CONSIDERATIONS

Waste disposal methods	This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.
Contaminated Packaging	Empty remaining contents. Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

DOT

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

TDG

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

MEX

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

ICAO/IATA

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

IMDG/IMO

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

ADR/RID

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

ADN

Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

15. REGULATORY INFORMATION

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic health hazard	No
Fire hazard	Yes
Sudden release of pressure hazard	No
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA/EPCRA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

U.S. State Right-to-Know Regulations

This product contains the following substances regulated under state Right-to-Know laws:

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sodium Persulfate		X			

California Proposition 65

This product does not contain any Proposition 65 chemicals

International Inventories

Component	TSCA (United States)	DSL (Canada)	EINECS/EL INCS (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)	NZIoC (New Zealand)
Sodium Persulfate 7775-27-1 (> 99)	X	X	X	X	X	X	X	X	X

Mexico

Mexico - Grade

Slight risk, Grade 1

16. OTHER INFORMATION

NFPA	Health Hazards 1	Flammability 0	Stability 1	Special Hazards OX
HMIS	Health Hazards 1	Flammability 0	Physical hazard 1	Special precautions J

NFPA/HMIS Ratings Legend

Special Hazards: OX = Oxidizer

Protection=J (Safety goggles, gloves, apron, combination dust and vapor respirator)

Revision date:

2016-08-01

Revision note

(M)SDS sections updated: 15

Disclaimer

PeroxyChem believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specified product designated and may not be applicable where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use are beyond the control of PeroxyChem, PeroxyChem expressly disclaims any and all liability as to any results obtained or arising from any use of the products or reliance on such information.

Prepared By:

PeroxyChem

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End of Safety Data Sheet

Univar USA Inc
845 Terrace Court
Saint Paul, MN 55130
PH. 651-774-9400
FAX 651-774-0850
www.univarusa.com

DATE: October 6, 2016

PRODUCT: Caustic soda 25%

PRODUCT GRADE: Technical

UNIVAR PRODUCT CODE: 605579

UNIVAR LOT NUMBER: ST106856764

<u>TEST</u>	<u>RESULTS</u>	<u>SPECIFICATIONS</u>
Specific gravity (25/15.6°C):	1.276	1.278 ± 0.008
NaOH, weight % (acid-base titration)	24.9%	25.0% ± 0.5%
pH (1:4 dilution)	13.7	>13
Color:	Pass	None to slight
Odor:	Pass	Typical
Appearance:	Pass	Clear, free of suspended matter

Univar USA Inc.
Steve Bjelke
Tank Farm Supervisor/Chemist

Notes: This material is made from caustic soda 50% and deionized water. Results are based on analysis of the bulk tank.

This certificate of analysis is produced electronically and is valid without a signature.

Please consult the SDS for further information.

Univar USA Inc. ("Univar") represents only that the Product shall meet the specifications herein. All transactions involving this Product are subject to Univar's standard Terms and Conditions, available at www.univarusa.com or upon request. Univar makes no additional representations or warranties, express or implied, as to the Product.

QA 6.20 x 1; 8/19/2015

Page 1



Univar USA Inc Safety Data Sheet

SDS No:

Version No:

Order No:

3075 Highland Pkwy, Ste 200, Downers Grove, IL 60515
(425) 889 3400

Emergency Assistance

For emergency assistance involving chemicals call
Chemtrec - (800) 424-9300



Univar
3075 Highland Pkwy STE 200
Downers Grove, IL 60515
425-889-3400

SAFETY DATA SHEET

1. Identification

Product identifier: CAUSTIC SODA 25 - 28%

Other means of identification

Synonyms: Sodium Hydroxide

SDS number: 000100000085

Recommended use and restriction on use

Recommended use: Not available.

Restrictions on use: Not known.

Emergency telephone number:For emergency assistance Involving chemicals

call CHEMTREC day or night at: 1-800-424-9300. CHEMTREC INTERNATIONAL Tel# 703-527-3887

2. Hazard(s) identification

Hazard classification

Health hazards

Acute toxicity (Oral) Category 4

Skin corrosion/irritation Category 1A

Serious eye damage/eye irritation Category 1

Environmental hazardsAcute hazards Category 3
to the aquatic environment

Label elements

Hazard symbol



Version: 1.0
Revision date: 04/28/2015



Signal word	Danger
Hazard statement	Corrosive. Harmful if swallowed. Causes severe skin burns and eye damage.
Precautionary statement	
Prevention	Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust or mists. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF INHALED: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF SWALLOWED: Call a POISON CENTER/doctor/ if you feel unwell. Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor. Specific treatment (see this label). Wash contaminated clothing before reuse.
Storage	Store in a closed container. Keep container tightly closed. Store in a well-ventilated place. Store in a dry place. Store locked up.
Disposal	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Other hazards which do not result in GHS classification	None.

Version: 1.0
Revision date: 04/28/2015



3. Composition/information on ingredients

Substances

Chemical identity	Common name and synonyms	CAS number	Content in percent (%)*
Sodium hydroxide		1310-73-2	25%
Water		7732-18-5	75%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information:	CAUTION! First aid personnel must be aware of own risk during rescue!
Ingestion:	Do NOT induce vomiting. Never give liquid to an unconscious person. Get medical attention immediately.
Inhalation:	Move to fresh air. If breathing is difficult, give oxygen. Perform artificial respiration if breathing has stopped. Get medical attention immediately.
Skin contact:	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Eye contact:	If in eyes, hold eyes open, flood with water for at least 15 minutes and see a doctor.
Most important symptoms/effects, acute and delayed	
Symptoms:	No data available.

Indication of immediate medical attention and special treatment needed

Treatment: No data available.

5. Fire-fighting measures

General fire hazards: No data available.
Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use: Powder. In case of fire in the surroundings: all extinguishing agents allowed.

Unsuitable extinguishing media: No data available.

Specific hazards arising from the chemical: No data available.

Version: 1.0
Revision date: 04/28/2015



Special protective equipment and precautions for firefighters

Special fire fighting procedures: No data available.

Special protective equipment for fire-fighters: No data available.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Keep unauthorized personnel away.

Methods and material for containment and cleaning up: Absorb spillage with non-combustible, absorbent material. Dike for later disposal.

7. Handling and storage

Precautions for safe handling: Use personal protective equipment as required. Use only with adequate ventilation. Container must be kept tightly closed.

Conditions for safe storage, including any incompatibilities: No data available.

Version: 1.0
Revision date: 04/28/2015



8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Chemical identity	Type	Exposure Limit values	Source
Sodium hydroxide	Ceiling	2 mg/m ³	US. ACGIH Threshold Limit Values (03 2013)
	Ceil_Tim e	2 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	PEL	2 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	Ceiling	2 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	Ceiling	2 mg/m ³	US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A (06 2008)
Sodium hydroxide - Particulate.	ST ESL	20 µg/m ³	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (02 2013)
	AN ESL	2 µg/m ³	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (02 2013)
Sodium hydroxide	Ceiling	2 mg/m ³	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (02 2012)

Appropriate engineering controls No data available.

Individual protection measures, such as personal protective equipment

General information:

Use personal protective equipment as required. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned. Practice good housekeeping.

Eye/face protection:

Use personal protective equipment as required. Wear goggles/face shield.

Skin protection

Hand protection:

No data available.

Other:

No data available.

Version: 1.0
Revision date: 04/28/2015



Respiratory protection: No data available.
Hygiene measures: No data available.

9. Physical and chemical properties

Physical state: Liquid
Form: No data available.
Color: No data available.
Odor: No data available.
Odor threshold: No data available.
pH: 14
Melting point/freezing point: -25 °C
Initial boiling point and boiling range: 116 °C
Flash Point: No data available.
Evaporation rate: No data available.
Flammability (solid, gas): No data available.
Upper/lower limit on flammability or explosive limits
Flammability limit - upper (%): No data available.
Flammability limit - lower (%): No data available.
Explosive limit - upper (%): No data available.
Explosive limit - lower (%): No data available.
Vapor pressure: No data available.
Vapor density: No data available.
Relative density: No data available.
Solubility(ies)
Solubility in water: No data available.
Solubility (other): No data available.
Partition coefficient (n-octanol/water): No data available.
Auto-ignition temperature: No data available.
Decomposition temperature: No data available.
Viscosity: No data available.

Version: 1.0
Revision date: 04/28/2015



10. Stability and reactivity

Reactivity:	No data available.
Chemical stability:	No data available.
Possibility of hazardous reactions:	No data available.
Conditions to avoid:	No data available.
Incompatible materials:	No data available.
Hazardous decomposition products:	No data available.

11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

Ingestion:	No data available.
Inhalation:	No data available.
Skin contact:	No data available.
Eye contact:	No data available.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product:	ATEmix (): 325 mg/kg
----------	----------------------

Dermal

Product:	No data available.
----------	--------------------

Inhalation

Product:	No data available.
----------	--------------------

Repeated dose toxicity

Product:	No data available.
----------	--------------------

Skin corrosion/irritation

Product:	No data available.
----------	--------------------

Serious eye damage/eye irritation

Product:	No data available.
----------	--------------------

Respiratory or skin sensitization

Product:	No data available.
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Carcinogenicity

Product:	No data available.
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Version: 1.0
Revision date: 04/28/2015



IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ cell mutagenicity

In vitro

Product: No data available.

In vivo

Product: No data available.

Reproductive toxicity

Product: No data available.

Specific target organ toxicity - single exposure

Product: No data available.

Specific target organ toxicity - repeated exposure

Product: No data available.

Aspiration hazard

Product: No data available.

Other effects: No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s):

Sodium hydroxide

LC 50 (Western mosquitofish (*Gambusia affinis*), 24 h): 125 mg/l Mortality
LC 50 (Guppy (*Poecilia reticulata*), 24 h): 145 mg/l Mortality LC 50 (Goldfish
(*Carassius auratus*), 24 h): 160 mg/l Mortality LC 50 (Bony fish superclass
(*Osteichthyes*), 48 h): 33 - 100 mg/l Mortality LC 50 (Western mosquitofish
(*Gambusia affinis*), 48 h): 125 mg/l Mortality

Aquatic invertebrates

Product: No data available.

Specified substance(s):

Sodium hydroxide

EC 50 (Water flea (*Ceriodaphnia dubia*), 48 h): 34.59 - 47.13 mg/l
Intoxication LC 50 (Common shrimp, sand shrimp (*Crangon crangon*), 48 h):
33 - 100 mg/l Mortality LC 50 (Cockle (*Cerastoderma edule*), 48 h): 330 -

Version: 1.0
Revision date: 04/28/2015



1,000 mg/l Mortality

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Persistence and degradability

Biodegradation

Product: No data available.

BOD/COD ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration factor (BCF)

Product: No data available.

Partition coefficient n-octanol / water (log Kow)

Product: No data available.

Mobility in soil: No data available.

Known or predicted distribution to environmental compartments

Sodium hydroxide No data available.

Water No data available.

Known or predicted distribution to environmental compartments

Water No data available.

13. Disposal considerations

Disposal instructions: No data available.

Contaminated packaging: No data available.

14. Transport information

DOT

UN number:	UN 1824
UN proper shipping name:	Sodium hydroxide solution
Transport hazard class(es)	
Class:	8
Label(s):	8
Packing group:	II
Marine Pollutant:	Not regulated.

Version: 1.0
Revision date: 04/28/2015



Special precautions for user:	—
IMDG	
UN number:	UN 1824
UN proper shipping name:	SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)	
Class:	8
Label(s):	8
EmS No.:	F-A, S-B
Packing group:	II
Marine Pollutant:	Not regulated.
Special precautions for user:	—
IATA	
UN number:	UN 1824
Proper Shipping Name:	Sodium hydroxide solution
Transport hazard class(es):	
Class:	8
Label(s):	8
Packing group:	II
Environmental hazards	Not regulated.
Special precautions for user:	—
Other information	
Passenger and cargo aircraft:	Allowed.
Cargo aircraft only:	Allowed.

15. Regulatory information

US federal regulationsUS. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Sodium hydroxide Reportable quantity: 1000 lbs.

Superfund amendments and reauthorization act of 1986 (SARA)

Hazard categories

Not listed.

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SARA 302 Extremely hazardous substance

None present or none present in regulated quantities.

SARA 304 Emergency release notification

Chemical identity	RQ
Sodium hydroxide	1000 lbs.

SARA 311/312 Hazardous chemical

Chemical identity	Threshold Planning Quantity
Sodium hydroxide	500 lbs

SARA 313 (TRI reporting)

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

Sodium hydroxide Reportable quantity: 1000 lbs.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US state regulations

US. California Proposition 65

No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act

Sodium hydroxide Listed

US. Massachusetts RTK - Substance List

Sodium hydroxide Listed

US. Pennsylvania RTK - Hazardous Substances

Sodium hydroxide Listed

US. Rhode Island RTK

Sodium hydroxide Listed

Version: 1.0
 Revision date: 04/28/2015



Inventory Status: Australia AICS:	Not in compliance with the inventory.
Canada DSL Inventory List:	Not in compliance with the inventory.
EU EINECS List:	On or in compliance with the inventory
EU ELINCS List:	Not in compliance with the inventory.
Japan (ENCS) List:	Not in compliance with the inventory.
EU No Longer Polymers List:	Not in compliance with the inventory.
China Inv. Existing Chemical Substances:	Not in compliance with the inventory.
Korea Existing Chemicals Inv. (KECI):	Not in compliance with the inventory.
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	Not in compliance with the inventory.
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	Not in compliance with the inventory.
Japan ISHL Listing:	Not in compliance with the inventory.
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.

16.Other information, including date of preparation or last revision

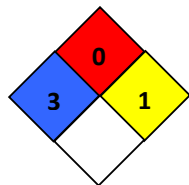
HMIS Hazard ID

Health	*	3
Flammability		0
Physical hazards		1
PERSONAL PROTECTION		B

B - Safety Glasses & Gloves

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; *Chronic health effect

NFPA Hazard ID



Red	Flammability
Blue	Health
Yellow	Reactivity
White	Special hazard.

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

Issue date: 04/28/2015
Revision date: No data available.
Version #: 1.0
Further information: No data available.

Version: 1.0
Revision date: 04/28/2015



Univar USA Inc Safety Data Sheet

For Additional Information contact SDS Coordinator during business hours, Pacific time: (425) 889-3400

Notice

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Do not use ingredient information and/or ingredient percentages in this SDS as a product specification. For product specification information refer to a product specification sheet and/or a certificate of analysis. These can be obtained from your local Univar sales office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein.

This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process

Activating Klozur® Persulfate with a 25% Sodium Hydroxide Solution

BACKGROUND

Alkaline activated Klozur® persulfate is a widely used powerful technology capable of remediating most common contaminants of concern. In addition to the oxidative radical species typically formed during the activation of persulfate, alkaline activated persulfate benefits from the formation of reductants and nucleophiles. These additional reactive species result in the treatment of chlorinated methanes, such as carbon tetrachloride, and chlorinated ethanes, such as 1,1,1-trichloroethane, in addition to many other compounds typically reactive with activated persulfate. Compounds alkaline activated Klozur persulfate has been shown to treat include chlorinated ethenes (TCE, PCE, DCE, and vinyl chloride), 1,4-dioxane, MTBE, TBA, petroleum hydrocarbons (BTEX, and PAHs) and many others. For a complete list, please contact your PeroxyChem technical representative or consult www.peroxychem.com/remediation.

DETERMINING THE AMOUNT OF ACTIVATOR NEEDED

For alkaline activation of Klozur persulfate, the pH of the soil and groundwater in contact with the persulfate will need to be maintained at greater than pH 10.5. Sodium Hydroxide (NaOH, caustic soda) can be used to achieve the pH target range. The quantity of NaOH to achieve and maintain a pH > 10.5 arises from two sources; 1) natural demand from soil and groundwater, and 2) the generation of acid during the decomposition of Klozur persulfate. The amount of the NaOH needed to raise soil and groundwater pH must be determined experimentally. The demand for NaOH can due to the generation of acid during the decomposition can be estimated as two moles of NaOH per mole of Klozur persulfate must. Thus, the Total NaOH Demand can be estimated as:

$$\text{Total NaOH Demand} = \text{NaOH needed to raise soil and groundwater to target pH >10.5} + 2 \text{ moles NaOH / mole Klozur persulfate applied}$$

SAFETY AND HANDLING

As the combination of NaOH with persulfate can initiate a reaction, PeroxyChem does not recommend combining NaOH with persulfate in the same batching tank.

PeroxyChem recommends the use of separate tanks to store the persulfate and NaOH solutions. Contact between the NaOH and persulfate prior to injection should be limited to prevent the initiation of the reaction. This is typically accomplished by mixing the reagents inline prior to the wellhead or injecting the reagents separately in a serial fashion in a manner that creates sufficiently alkaline conditions to activate the persulfate.

Sodium hydroxide is commonly delivered to a site in drums, totes, or in tankers. PeroxyChem recommends storing the sodium hydroxide in an area with chemically compatible secondary containment and a site specific spill prevention plan. Sodium Hydroxide is a corrosive chemical and can cause severe chemical burns to body tissue if mishandled. To help prevent potential issues, PeroxyChem recommends following the guidance provided in the Safety Data Sheet (SDS) including the use of appropriate Personal Protective Equipment (PPE). In addition, chemically compatible and appropriate equipment, procedures, and properly trained staff are required when handling and transferring NaOH.



Review the SDS with all workers prior to use.

Sodium Hydroxide is sold commercially in a variety of concentrations. Highly concentrated forms of NaOH (50 % or greater solutions and solid form NaOH) may generate extreme exothermic reactions upon dilution. In certain circumstances, sufficient heat may be liberated that it can boil the solution, generate steam eruptions, and damage to equipment.

To minimize potential risk, PeroxyChem recommends NaOH solutions of no more than 25% by weight be used to activate Klozur persulfate.

This will help to minimize the generation of heat upon mixing the NaOH with water. PeroxyChem does not permit use of NaOH concentrations greater than 25% in its Klozur mixing rental equipment.



APPENDIX K
EPA Underground Injection Control Authorization



3020 Columbia Avenue, Lancaster, PA 17603 • Phone: (717) 394-3721
E-mail: rettetw@rettetw.com • Web site: rettetw.com

We answer to you.

Engineers

Planners

Surveyors

Landscape

Architects

Environmental

Consultants

November 1, 2016

Mr. Mark Nelson
Class V Team Leader and Technical Representative
United States Environmental Protection Agency
1060 Chapline Street
Wheeling, West Virginia 26003-2995

RE: Underground Injection Control Permitting and Registration
 Notice for Class V Injection
 Herr Foods, Inc.
 273 Old Baltimore Pike
 West Nottingham Township, Chester County, Pennsylvania
 RETTEW Project No. 101722001

Dear Mr. Nelson:

RETTEW Associates, Inc. has prepared this notice on behalf of Herr Foods, Inc. (Herr's), for the proposed injection of chemical oxidants to remediate a release of petroleum to the subsurface from a regulated underground storage tank (UST) system at the referenced location. Remediation is proposed in accordance with the Pennsylvania Department of Environmental Protection (PADEP) corrective action process for regulated storage tank systems. A Remedial Action Plan (RAP) is currently being drafted that will propose the use of in-situ chemical oxidation (ISCO) as a remedial technology if the findings of a field pilot test verify that ISCO is a feasible remediation technology.

The ISCO pilot test will utilize a combination of fixed well and direct-push points for the injection of persulfate activated with sodium hydroxide to remediate the source area, which is present below the seasonally high water table in the zone of saturation and was delineated during previous phases of site characterization. Product specifications for the activated persulfate and sodium hydroxide are enclosed. The source is known to extend laterally 150 feet downgradient of the UST system, and has been detected at depths up to 13 feet below grade. The purpose of the ISCO pilot test is to confirm injection pressures and injection volumes. Soil and groundwater sampling will be performed before and after the pilot test to assess remedial effectiveness.

During the pilot test, one fixed injection well and two direct-push points will be used to inject activated persulfate to depths up to 15 feet below grade. The fixed injection well will be installed in an eight-inch diameter hole drilled with hollow-stem auger equipment and constructed with two-inch diameter wire-wrapped Schedule 80 PVC screen from approximately five to 12 feet below grade. The two direct-push injection points will be used for top-down injection at two-foot intervals, beginning at seven feet below grade up to 15 feet below grade. Approximately 900 gallons of activated persulfate will be injected in the eight to 12-foot intervals, and approximately 2,150 gallons will be injected in the seven to 15-foot intervals.

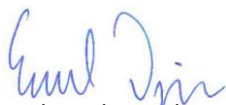


If the findings of the pilot test indicate that ISCO is an effective remedial technology, a full-scale ISCO injection design will be presented in the RAP. Conceptually, full-scale implementation of ISCO would involve the treatment of a 7,200 square-foot source area using approximately 25 direct-push injection points during three separate injection events. It is currently anticipated that the full-scale ISCO program would be implemented over a period of three to five years. The frequency of full-scale injection events will be determined after the pilot test results are reviewed. A conceptual schedule is provided below with anticipated milestones.

Completion Date	Task Description
December 2, 2016	Perform ISCO pilot testing using a combination of fixed injection points and direct push injection.
December 16, 2016	Receipt of post-pilot test laboratory analytical data.
January 13, 2017	Proposed RAP submittal date to PADEP.
April 13, 2017	PADEP review, comment and approval of RAP.
July 2017	Begin full-scale ISCO remediation of the source area (first of three applications).

If you have any questions regarding this injection notice, or if you require additional information regarding the proposed injection program, please contact me at (717) 205-2217.

Sincerely,



Edward Dziedzic, P.G.
Senior Geologist

Enclosure: Product Specifications (Persulfate and Sodium Hydroxide)

copy: Mr. Matthew Gojmerac - Herr's

H:\Projects\10172\101722001\GS\RAP\Ltr-EPA UIC-11-01-16.docx



Univar USA Inc
845 Terrace Court
Saint Paul, MN 55130
PH. 651-774-9400
FAX 651-774-0850
www.univarusa.com

DATE: October 6, 2016

PRODUCT: Caustic soda 25%

PRODUCT GRADE: Technical

UNIVAR PRODUCT CODE: 605579

UNIVAR LOT NUMBER: ST106856764

<u>TEST</u>	<u>RESULTS</u>	<u>SPECIFICATIONS</u>
Specific gravity (25/15.6°C):	1.276	1.278 ± 0.008
NaOH, weight % (acid-base titration)	24.9%	25.0% ± 0.5%
pH (1:4 dilution)	13.7	>13
Color:	Pass	None to slight
Odor:	Pass	Typical
Appearance:	Pass	Clear, free of suspended matter

Univar USA Inc.
Steve Bjelke
Tank Farm Supervisor/Chemist

Notes: This material is made from caustic soda 50% and deionized water. Results are based on analysis of the bulk tank.

This certificate of analysis is produced electronically and is valid without a signature.

Please consult the SDS for further information.

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QA 6.20 x 1; 8/19/2015

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SAFETY DATA SHEET

Klozur® SP

SDS # : 7775-27-1-12
Revision date: 2016-08-01
Format: NA
Version 1.03



1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name Klozur® SP

Other means of identification

CAS-No 7775-27-1
Synonyms Sodium Persulfate; Sodium Peroxydisulfate; Disodium Peroxydisulfate; Peroxydisulfuric acid, disodium salt; Peroxydisulfuric acid, sodium salt

Alternate Commercial Name Klozur® Persulfate

Recommended use of the chemical and restrictions on use

Recommended Use: In situ and ex situ chemical oxidation of contaminants and compounds of concern for environmental remediation applications

Restrictions on Use: No uses to be advised against were identified.

Manufacturer/Supplier

PeroxyChem LLC
2005 Market Street
Suite 3200
Philadelphia, PA 19103
Phone: +1 267/ 422-2400 (General Information)
E-Mail: sdsinfo@peroxychem.com

Emergency telephone numbers

For leak, fire, spill or accident emergencies, call:
1 800 / 424 9300 (CHEMTREC - U.S.A.)
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)
1 303/ 389-1409 (Medical - U.S. - Call Collect)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2B
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 3
Oxidizing Solids	Category 3

GHS Label elements, including precautionary statements**EMERGENCY OVERVIEW****Danger****Hazard Statements**

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335 - May cause respiratory irritation
H320 - Causes eye irritation
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H302 - Harmful if swallowed
H272 - May intensify fire; oxidizer

**Precautionary Statements - Prevention**

P261 - Avoid breathing dust.
P285 - In case of inadequate ventilation wear respiratory protection
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves/ protective clothing
P264 - Wash face, hands and any exposed skin thoroughly after handling
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P220 - Keep/Store away from clothing/combustible materials
P221 - Take any precaution to avoid mixing with combustibles

Precautionary Statements - Response

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/ attention
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention
P304 + P341 - IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
P330 - Rinse mouth
P370 + P378 - In case of fire: Use water spray for extinction

Precautionary Statements - Storage

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

Hazards not otherwise classified (HNOC)

No hazards not otherwise classified were identified.

Other Information Risk of decomposition by heat or by contact with incompatible materials

Unknown acute toxicity

0% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTSFormula Na₂O₈S₂

Chemical name	CAS-No	Weight %
Sodium Persulfate	7775-27-1	> 99

4. FIRST AID MEASURES

General Advice	Remove from exposure, lie down. Show this material safety data sheet to the doctor in attendance.
Eye Contact	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids intermittently. Consult a physician. If symptoms persist, call a physician.
Skin Contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.
Inhalation	Remove from exposure, lie down. If breathing is irregular or stopped, administer artificial respiration. Call a physician immediately.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately. Rinse mouth. Drink 1 or 2 glasses of water.
Most important symptoms and effects, both acute and delayed	Itching; Redness; Coughing and/ or wheezing.
Indication of immediate medical attention and special treatment needed, if necessary	Treat symptomatically

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Water. Cool containers with flooding quantities of water until well after fire is out.
Unsuitable extinguishing media	Do not use carbon dioxide or other gas filled fire extinguishers; they will have little effect on decomposing persulfate.
Specific Hazards Arising from the Chemical	Decomposes under fire conditions to release oxygen that intensifies the fire.
Explosion data	
Sensitivity to Mechanical Impact	Not sensitive.
Sensitivity to Static Discharge	Not sensitive.
Protective equipment and precautions for firefighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Keep off any unprotected persons. Avoid contact with the skin and the eyes. Avoid breathing dust. Wear personal protective equipment.
Other	Never add other substances or combustible waste to product residues.
Environmental Precautions	Prevent material from entering into soil, ditches, sewers, waterways, and/or groundwater. See Section 12, Ecological Information for more detailed information.
Methods for Containment	Vacuum, shovel or pump waste into a drum and label contents for disposal. Avoid dust formation. Store in closed container.

Methods for cleaning up Clean up spill area and treat as special waste. Dispose of waste as indicated in Section 13.

7. HANDLING AND STORAGE

Handling Wear personal protective equipment. Use only in area provided with appropriate exhaust ventilation. Avoid dust formation. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Avoid contact with skin and eyes. Avoid breathing dust. Remove and wash contaminated clothing before re-use. Reference to other sections.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat. Do not store near combustible materials. Avoid contamination of opened product. Keep away from food, drink and animal feedingstuffs. Avoid formation and deposition of dust.

Incompatible products . Acids, alkalis, halides (fluorides, chlorides, bromides), combustible materials, reducing agents and organic compounds.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
Sodium Persulfate 7775-27-1	TWA: 0.1 mg/m ³	-	-	-
Chemical name	British Columbia	Quebec	Ontario TWAEV	Alberta
Sodium Persulfate 7775-27-1	TWA: 0.1 mg/m ³	-	TWA: 0.1 mg/m ³	TWA: 0.1 mg/m ³

Appropriate engineering controls

Engineering measures Provide local exhaust or general ventilation adequate to maintain exposures below permissible exposure limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Eye protection recommended. Chemical goggles consistent with EN 166 or equivalent.

Skin and Body Protection Wear long-sleeved shirt, long pants, socks, and shoes.

Hand Protection Protective gloves: Neoprene gloves, Polyvinylchloride, Natural Rubber.

Respiratory Protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn: particulate filtering facepiece respirators.

Hygiene measures Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Wash hands before breaks and after shifts. Keep work clothes separate, remove contaminated clothing - launder after open handling of product.

General information Protective engineering solutions should be implemented and in use before personal protective equipment is considered.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance Crystalline solid
Physical State Solid
Color White

Odor	odorless
Odor threshold	Not applicable
pH	6.0 (1% solution)
Melting point/freezing point	180 °C (Decomposes)
Boiling Point/Range	Decomposes upon heating
Flash point	Not flammable
Evaporation Rate	No information available
Flammability (solid, gas)	Not flammable
Flammability Limit in Air	Not applicable
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	6.07E-30 mm Hg at 25°C
Vapor density	No information available
Density	2.59 g/cm ³ (crystal density)
Specific gravity	No information available
Water solubility	575 g/l @ 25 °C
Solubility in other solvents	No information available
Partition coefficient	No information available (inorganic)
Autoignition temperature	No evidence of combustion up to 600°C
Decomposition temperature	> 100 °C (assume)
Viscosity, kinematic	No information available (Solid)
Viscosity, dynamic	No information available
Explosive properties	Not explosive
Oxidizing properties	oxidizer
Molecular weight	238.1
VOC content (%)	Not applicable
Bulk density	1.12 g/cm ³ (loose)

10. STABILITY AND REACTIVITY

Reactivity	Oxidizer. Contact with other material may cause fire
Chemical Stability	Stable.
Possibility of Hazardous Reactions	None under normal processing.
Hazardous polymerization	Hazardous polymerization does not occur.
Conditions to avoid	Heat. Moisture.
Incompatible materials	Acids, alkalis, halides (fluorides, chlorides, bromides), combustible materials, reducing agents and organic compounds. .
Hazardous Decomposition Products	Oxygen which supports combustion.

11. TOXICOLOGICAL INFORMATION

Product Information

Unknown acute toxicity	0% of the mixture consists of ingredient(s) of unknown toxicity
LD50 Oral	Sodium Persulfate: 895 mg/kg (rat)
LD50 Dermal	Sodium Persulfate: > 10 g/kg
LC50 Inhalation	Sodium Persulfate: >5.10 mg/L (4h) (rat)
Serious eye damage/eye irritation	Irritating to eyes.
Skin corrosion/irritation	Minimally irritating.
Sensitization	Sodium Persulfate: May cause sensitization by inhalation and skin contact.

Information on toxicological effects

Symptoms	Symptoms of allergic reaction may include rash, itching, swelling and trouble breathing.
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Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation corrosivity	Irritating to eyes, respiratory system and skin. None.
Carcinogenicity	Contains no ingredient listed as a carcinogen.
Mutagenicity	Did not show mutagenic effects in animal experiments
Neurological effects	Not neurotoxic
Reproductive toxicity Developmental toxicity Teratogenicity	This product is not recognized as reprotox by Research Agencies. None known. Not teratogenic in animal studies.
STOT - single exposure STOT - repeated exposure	May cause respiratory irritation. Not classified.
Target organ effects	Eyes, Lungs.
Aspiration hazard	No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects

Sodium Persulfate (7775-27-1)				
Active Ingredient(s)	Duration	Species	Value	Units
Sodium Persulfate	96 h LC50	Rainbow trout	163	mg/L
Sodium Persulfate	48 h LC50	Daphnia magna	133	mg/L
Sodium Persulfate	96 h LC50	Grass shrimp	519	mg/L
Sodium Persulfate	72 h EC50	Algae Selenastrum capricornutum	116	mg/L

Persistence and degradability	Biodegradability does not pertain to inorganic substances.
Bioaccumulation	Does not bioaccumulate.
Mobility	Dissociates into ions.
Other Adverse Effects	None known.

13. DISPOSAL CONSIDERATIONS

Waste disposal methods	This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.
Contaminated Packaging	Empty remaining contents. Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

DOT

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

TDG

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

MEX

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

ICAO/IATA

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

IMDG/IMO

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

ADR/RID

UN/ID no	UN 1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

ADN

Proper Shipping Name	SODIUM PERSULFATE
Hazard class	5.1
Packing Group	III

15. REGULATORY INFORMATION

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic health hazard	No
Fire hazard	Yes
Sudden release of pressure hazard	No
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA/EPCRA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

U.S. State Right-to-Know Regulations

This product contains the following substances regulated under state Right-to-Know laws:

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sodium Persulfate		X			

California Proposition 65

This product does not contain any Proposition 65 chemicals

International Inventories

Component	TSCA (United States)	DSL (Canada)	EINECS/EL INCS (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)	NZIoC (New Zealand)
Sodium Persulfate 7775-27-1 (> 99)	X	X	X	X	X	X	X	X	X

Mexico

Mexico - Grade

Slight risk, Grade 1

16. OTHER INFORMATION

NFPA	Health Hazards 1	Flammability 0	Stability 1	Special Hazards OX
HMIS	Health Hazards 1	Flammability 0	Physical hazard 1	Special precautions J

NFPA/HMIS Ratings Legend

Special Hazards: OX = Oxidizer

Protection=J (Safety goggles, gloves, apron, combination dust and vapor respirator)

Revision date:

2016-08-01

Revision note

(M)SDS sections updated: 15

Disclaimer

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Prepared By:

PeroxyChem

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End of Safety Data Sheet



The Field Proven and Versatile ISCO Solution to Address Soil & Groundwater Contamination

Klozur® SP is the oxidant of choice for *in situ* chemical oxidation (ISCO), because of its proven ability to treat a wide range of contaminants including chlorinated solvents, petroleum and PAHs. Based upon an environmental grade of sodium persulfate (SP), Klozur SP is ideal for contaminated source zones and hot spots that require rapid treatment. When properly activated, Klozur SP provides an unmatched combination of oxidative power, versatility, and control that can be delivered both safely and cost effectively.

Successful field applications of Klozur activated persulfate have been performed globally. These applications demonstrate the ability of Klozur activated persulfate to treat diverse organic contaminants of concern including: chlorinated ethenes (TCE, PCE, DCE and vinyl chloride), chlorinated ethanes (TCA and DCA), chlorinated methanes (carbon tetrachloride and methylene chloride), BTEX, MTBE, polyaromatic hydrocarbons (PAHs), petroleum hydrocarbons (TPHs, GRO, DRO), 1,4-dioxane and pesticides.

The benefits of Klozur SP

When used with PeroxyChem's patented activation methods, Klozur SP produces the powerful oxidative ($\text{SO}_4^{\cdot-}$, $\text{OH}^{\cdot}$) and reductive ($\text{O}_2^{\cdot-}$) radicals creating a multi-radical attack for the rapid destruction of recalcitrant compounds.



Multiple activation options and methods of delivery provide for a flexible and custom solution based on site conditions. With a solubility limit of up to 40 wt%, Klozur SP can be applied as a fully soluble solution. Klozur SP is a stable oxidant given its high oxidation potential, with a typical active lifetime in the subsurface of weeks to months, providing an extended radius of influence. Klozur SP is safe to handle with PeroxyChem's recommended use guidelines and does not generate heat or gas.

Examples of Contaminants of Concern

CHLORINATED SOLVENTS
PCE, TCE, DCE, VC, TCA, DCA,
methylene chloride,
carbon tetrachloride,
chlorobenzene

PETROLEUM
TPH, BTEX, DRO, GRO

PAHs
creosote, MGP residuals
1,4-dioxane, MTBE, TBA,
energetics,
chlorinated pesticides

The sound science of Klozur Activated Persulfate

Klozur activated persulfate has a long history of documented success having been used at thousands of sites to remediate contaminants of concern around the world. The field application of Klozur activated persulfate has been scientifically validated in hundreds of independent peer-reviewed journal articles and conference presentations.

Applications methods

- Direct push injection
- Fixed well injection
- Soil blending

For more information and detailed case studies, please visit our website.





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Wheeling Field Office
1060 Chapline Street
Wheeling, West Virginia 26003

November 3, 2016

Mr. Edward Dziedzic, P.G., Senior Geologist
RETTEW Associates, Inc.
3020 Columbia Avenue
Lancaster, Pennsylvania 17603

Re: Herr Foods, Inc.
273 Old Baltimore Pike
West Nottingham Twp., Chester County, PA

Dear Mr. Dziedzic:

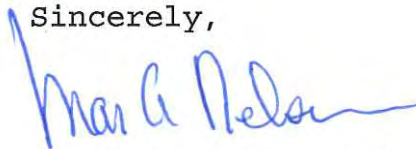
We have received correspondence from you dated November 1, 2016 describing soil and ground water remediation plans at the above referenced location. We understand that you intend to utilize in-situ chemical oxidation processes, involving shallow injection wells, to reduce petroleum hydrocarbon contamination. **The subsurface emplacement of fluids through injection wells as part of an aquifer cleanup project is subject to the ground water protection requirements of the Underground Injection Control (UIC) program.** The UIC program is administered by the Environmental Protection Agency (EPA) in the Commonwealth of Pennsylvania.

Based upon our understanding of aquifer remediation of contaminated soil and ground water in general and the proposed subsurface emplacement of a sodium persulfate solution specifically, we believe that the injection wells pose minimal potential to adversely impact ground water. For these reasons you may proceed with plans to construct and operate aquifer remediation related injection wells and you will not be required to obtain an Underground Injection Control (UIC) program permit.

The above referenced facility has been added to our inventory of shallow injection wells. The UIC program prohibits the subsurface emplacement of fluids which have the potential to adversely impact underground sources of drinking water.

EPA approval or "rule authorization" of the injection wells is contingent upon operator compliance with all applicable state and local requirements. We appreciate your cooperation in these matters and the opportunity to address these issues with you. Please contact me at (304) 234-0286 if you have any questions.

Sincerely,



Mark A. Nelson, Hydrologist
Water Protection Division



APPENDIX L
Remediation Design Calculations

Remediation Area 1 - ISCO Injection Design Calculations
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

shading = input value

shading = calculated value

Conversions	
ft ³ to gal = ft ³ x	7.4805
L to gal = L x	3.785
lb to g = lb /	453.59
g to mg = g/	1000
lb to kg = lb x	0.4536
mg/l to lb/gal = mg/l x	8.35E-06
mg to lb = mg x	2.20E-06
g to lb = g x	0.00220462
kg to lb = kg x	2.20462

Given	
Soil density (p lbs/ft ³) =	111.6
Porosity (unitless n) =	0.47
Base Buffering Capacity (Alkaline Activation only) (g 25% NaOH / kg soil) =	3
Persulfate solution density (lb/gal)	9.3

Area and Volume Calculations	
Area of Treatment (ft ²) =	1,035.0
Treatment zone Thickness (ft) =	7.0
Treatment volume (ft ³) =	7,245.0
Porosity (unitless n) =	0.47
Treatment groundwater volume (gal) =	25,470.5
Soil mass (lb) =	808,542.0
Fraction of mass contacted (%) =	100%

COC Mass Calculations				
Constituent	GW (mg/l)	Soil (mg/kg)	NAPL (lbs)	Total COC Mass (lb)
Benzene	2.00	25.00	0.0	20.6
Ethylbenzene	0.75	60.00	0.0	48.7
Toluene	2.50	200.00	0.0	162.2
Trimethylbenzene	1.60	85.00	0.0	69.1
MTBE	0.03	0.50	0.0	0.4
GRO	20.00	2,500.00	0.0	2,025.6
DRO	3.00	600.00	0.0	485.8

Remedial Goals and Target Mass Reductions		100%	75%			
Constituent	GW (mg/l)	Soil (mg/kg)	NAPL (lbs)	Total COC Mass Remaining (lb)	Total Targeted COC Mass (lb)	
Benzene	0.0	6.3	0.0	5.1	15.6	
Ethylbenzene	0.0	15.0	0.0	12.1	36.5	
Toluene	0.0	50.0	0.0	40.4	121.8	
Trimethylbenzene	0.0	21.3	0.0	17.2	51.9	
MTBE	0.0	0.1	0.0	0.1	0.3	
GRO	0.0	625.0	0.0	505.3	1,520.2	
DRO	0.0	150.0	0.0	121.3	364.5	
Total Targeted COC Mass (lbs) =	2,110.9					

Remediation Area 1 - ISCO Injection Design Calculations
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

Persulfate Demand Calculation			
Persulfate dosage (lb persulfate / lb COC mass) =	20.0		
	Sodium Persulfate Demand	Safety Factor	Sodium Persulfate Demand w/ Factor
Persulfate Demand from COCs (lb) =	42,217.1	1.1	46,438.8
Persulfate Demand from SOD (lb) =	808.5	1.1	889.4
Total Persulfate Demand (lb) =			47,328.2

Injection Point Calculations	Proposed Option (7.5' ROI)	Alternative Check (10' ROI)	
Target Zone Radius (ft) =	7.5	10.0	0.0
Height (H ft) =	7.0	5.0	0.0
Area (A ft ²) = 3.14 x r ²	176.7	314.2	0.0
Volume (V ft ³) = A x H	1,237.0	1,570.8	0.0
GW Volume (gal) = V x n x (ft ³ -gal conv)	4,349.1	5,522.7	0.0
Soil Mass (lbs) = p x V	138,049.3	175,300.7	0.0
# of injection points =	6.0	3.0	0.0
# of injection events =	3.0	3.0	
lbs persulfate / injection point (lbs) =	2,629.3	5,258.7	
% of porespace	30%	25%	
Mass of persulfate needed (lb) =	2,629.3	5,258.7	
Solution density (lb/gal)	9.0	9.0	
Solution volume (% x GW volume) (gal) =	1,304.7	1,380.7	
Mass of solution (solution density x treatment volume) (lb) =	11,771.0	12,456.1	
Persulfate concentration (%)	22%	42%	

Back Calculation / QC Check	
	Proposed Option
% of porespace	30%
Persulfate concentration	23%
Solution density	9.0
Solution volume (% x GW volume) (gal) =	1,304.7
Mass of solution (solution density x treatment volume) (lb) =	11,771.0
Mass of persulfate needed (mass of solution x concentration) (lb) =	2,707.3

Activation Chemistries	Proposed Option
NaOH demand for HSO ₄ neutralization (% of sulfate load) =	33.6%
NaOH demand for HSO ₄ neutralization (lb) =	15,901.8
NaOH density (lb/gal) =	10.6
NaOH demand for HSO ₄ neutralization (25 wt%) (lb) =	63,607.2
Soil Buffering Amount (3 g 25% NaOH/kg soil) (lb) =	2,425.6
Amount of NaOH 25wt% solution needed (lb) =	66,032.8
Amount of NaOH 25wt% solution needed (gal) =	6,229.5
Amount of NaOH 25wt% solution needed per injection point per event (gal) =	346.1

2 moles of NaOH to 1 mole of persulfate

Remediation Area 2 - ISCO Injection Design Calculations
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

shading = input value

shading = calculated value

Conversions

ft ³ to gal = ft ³ x	7.4805
L to gal = L x	3.785
lb to g = lb /	453.59
g to mg = g/	1000
lb to kg = lb x	0.4536
mg/l to lb/gal = mg/l x	8.35E-06
mg to lb = mg x	2.20E-06
g to lb = g x	0.00220462
kg to lb = kg x	2.20462

Given

Soil density (p lbs/ft ³) =	111.6
Porosity (unitless n) =	0.47
Base Buffering Capacity (Alkaline Activation only) (g 25% NaOH / kg soil) =	3
Persulfate solution density (lb/gal)	9.3

Area and Volume Calculations

Area of Treatment (ft ²) =	3,802.0
Treatment zone Thickness (ft) =	5.0
Treatment volume (ft ³) =	19,010.0
Porosity (unitless n) =	0.47
Treatment groundwater volume (gal) =	66,831.6
Soil mass (lb) =	2,121,516.0
Fraction of mass contacted (%) =	100%

COC Mass Calculations

Constituent	GW (mg/l)	Soil (mg/kg)	NAPL (lbs)	Total COC Mass (lb)
Benzene	3.00	1.00	0.00	3.8
Ethylbenzene	0.90	23.00	0.00	49.3
Toluene	5.70	30.00	0.00	66.8
Trimethylbenzene	1.20	30.00	0.00	64.3
MTBE	0.12	0.00	0.00	0.1
GRO	26.00	57.00	0.00	135.4
DRO	2.50	50.00	0.00	107.5

Remedial Goals and Target Mass Reductions

	100%	100%			
Constituent	GW (mg/l)	Soil (mg/kg)	NAPL (lbs)	Total COC Mass Remaining (lb)	Total Targeted COC Mass (lb)
Benzene	0.0	0.0	0.0	0.0	3.8
Ethylbenzene	0.0	0.0	0.0	0.0	49.3
Toluene	0.0	0.0	0.0	0.0	66.8
Trimethylbenzene	0.0	0.0	0.0	0.0	64.3
MTBE	0.0	0.0	0.0	0.0	0.1
GRO	0.0	0.0	0.0	0.0	135.4
DRO	0.0	0.0	0.0	0.0	107.5
Total Targeted COC Mass (lbs) =	427.2				

Remediation Area 2 - ISCO Injection Design Calculations
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

Persulfate Demand Calculation			
Persulfate dosage (lb persulfate / lb COC mass) =	20.0		
	Sodium Persulfate Demand	Safety Factor	Sodium Persulfate Demand w/ Factor
Persulfate Demand from COCs (lb) =	8,543.8	1.6	13,670.1
Persulfate Demand from SOD (lb) =	2,121.5	1.6	3,394.4
Total Persulfate Demand (lb) =			17,064.5

Injection Point Calculations	Alternative Check (7.5' ROI)	Proposed Option (10' ROI)	
Target Zone Radius (ft) =	7.5	10.0	0.0
Height (H ft) =	5.0	5.0	0.0
Area (A ft2) = 3.14 x r^2	176.7	314.2	0.0
Area minus overlap (assume 15%) (ft2) =	150.2	267.0	
Volume (V ft3) = A x H	883.6	1,570.8	0.0
GW Volume (gal) = V x n x (ft3-gal conv)	3,106.5	5,522.7	0.0
Soil Mass (lbs) = p x V	98,606.7	175,300.7	0.0
# of injection points =	22.0	14.0	0.0
# of injection events =	1.0	1.0	
lbs persulfate / injection point (lbs) =	775.7	1,218.9	
% of porespace	25%	20%	
Mass of persulfate needed (lb) =	775.7	1,218.9	
Solution density (lb/gal)	9.0	9.0	
Solution volume (% x GW volume) (gal) =	776.6	1,104.5	
Mass of solution (solution density x treatment volume) (lb) =	7,006.5	9,964.9	
Persulfate concentration (%)	11.1%	12.2%	

Back Calculation / QC Check	
	Proposed Option
% of porespace	20%
Persulfate concentration	12.2%
Solution density	9.0
Solution volume (% x GW volume) (gal) =	1,104.5
Mass of solution (solution density x treatment volume) (lb) =	9,964.9
Mass of persulfate needed (mass of solution x concentration) (lb) =	1,215.7

Activation Chemistries	Proposed Option
NaOH demand for HSO4 neutralization (% of sulfate load) =	33.6%
NaOH demand for HSO4 neutralization (lb) =	5,733.5
NaOH density (lb/gal) =	10.6
NaOH demand for HSO4 neutralization (25 wt%) (lb) =	22,934.0
Soil Buffering Amount (3 g 25% NaOH/kg soil) (lb) =	6,364.5
Amount of NaOH 25wt% solution needed (lb) =	29,298.5
Amount of NaOH 25wt% solution needed (gal) =	2,764.0
Amount of NaOH 25wt% solution needed per injection point per event (gal) =	197.4

2 moles of NaOH to 1 mole of persulfate

Remediation Area 3 - ISCO Injection Design Calculations
Herr Foods, Inc. Nottingham Plant
RETTEW Project No. 101722001

shading = input value

shading = calculated value

Conversions

ft ³ to gal = ft ³ x	7.4805
L to gal = L x	3.785
lb to g = lb /	453.59
g to mg = g/	1000
lb to kg = lb x	0.4536
mg/l to lb/gal = mg/l x	8.35E-06
mg to lb = mg x	2.20E-06
g to lb = g x	0.00220462
kg to lb = kg x	2.20462

Given

Soil density (p lbs/ft ³) =	111.6
Porosity (unitless n) =	0.47
Base Buffering Capacity (Alkaline Activation only) (g 25% NaOH / kg soil) =	3
Persulfate solution density (lb/gal)	9.3

Area and Volume Calculations

Area of Treatment (ft ²) =	2,312.0
Treatment zone Thickness (ft) =	4.0
Treatment volume (ft ³) =	9,248.0
Porosity (unitless n) =	0.47
Treatment groundwater volume (gal) =	32,512.3
Soil mass (lb) =	1,032,076.8
Fraction of mass contacted (%) =	100%

COC Mass Calculations

Constituent	GW (mg/l)	Soil (mg/kg)	NAPL (lbs)	Total COC Mass (lb)
Benzene	3.00	0.50	0.00	1.3
Ethylbenzene	1.00	11.50	0.00	12.1
Toluene	6.00	15.00	0.00	17.1
Trimethylbenzene	0.50	15.00	0.00	15.6
MTBE	0.10	0.00	0.00	0.0
GRO	6.00	28.50	0.00	31.0
DRO	8.80	25.00	0.00	28.2

Remedial Goals and Target Mass Reductions

	100%	100%			
Constituent	GW (mg/l)	Soil (mg/kg)	NAPL (lbs)	Total COC Mass Remaining (lb)	Total Targeted COC Mass (lb)
Benzene	0.0	0.0	0.0	0.0	1.3
Ethylbenzene	0.0	0.0	0.0	0.0	12.1
Toluene	0.0	0.0	0.0	0.0	17.1
Trimethylbenzene	0.0	0.0	0.0	0.0	15.6
MTBE	0.0	0.0	0.0	0.0	0.0
GRO	0.0	0.0	0.0	0.0	31.0
DRO	0.0	0.0	0.0	0.0	28.2
Total Targeted COC Mass (lbs) =	105.5				

Remediation Area 3 - ISCO Injection Design Calculations
Herr Foods, Inc. Nottingham Plant
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Persulfate Demand Calculation			
Persulfate dosage (lb persulfate / lb COC mass) =	20.0		
	Sodium Persulfate Demand	Safety Factor	Sodium Persulfate Demand w/ Factor
Persulfate Demand from COCs (lb) =	2,109.1	2.1	4,429.0
Persulfate Demand from SOD (lb) =	1,032.1	2.1	2,167.4
Total Persulfate Demand (lb) =			6,596.4

Injection Point Calculations	Alternative Check (7.5' ROI)	Proposed Option (10' ROI)	
Target Zone Radius (ft) =	7.5	10.0	0.0
Height (H ft) =	4.0	4.0	0.0
Area (A ft2) = 3.14 x r^2	176.7	314.2	0.0
Area minus overlap (assume 10%) (ft2) =	159.0	282.7	
Volume (V ft3) = A x H	706.9	1,256.6	0.0
GW Volume (gal) = V x n x (ft3-gal conv)	2,485.2	4,418.1	0.0
Soil Mass (lbs) = p x V	78,885.3	140,240.6	0.0
# of injection points =	13.0	8.0	0.0
# of injection events =	1.0	1.0	
lbs persulfate / injection point (lbs) =	507.4	824.6	
% of porespace	25%	20%	
Mass of persulfate needed (lb) =	507.4	824.6	
Solution density (lb/gal)	9.0	9.0	
Solution volume (% x GW volume) (gal) =	621.3	883.6	
Mass of solution (solution density x treatment volume) (lb) =	5,605.2	7,971.9	
Persulfate concentration (%)	9.1%	10.3%	

Back Calculation / QC Check	
	Proposed Option
% of porespace	20%
Persulfate concentration	13.2%
Solution density	9.0
Solution volume (% x GW volume) (gal) =	883.6
Mass of solution (solution density x treatment volume) (lb) =	7,971.9
Mass of persulfate needed (mass of solution x concentration) (lb) =	1,052.3

Activation Chemistries	Proposed Option
NaOH demand for HSO4 neutralization (% of sulfate load) =	33.6%
NaOH demand for HSO4 neutralization (lb) =	2,216.3
NaOH density (lb/gal) =	10.6
NaOH demand for HSO4 neutralization (25 wt%) (lb) =	8,865.3
Soil Buffering Amount (3 g 25% NaOH/kg soil) (lb) =	3,096.2
Amount of NaOH 25wt% solution needed (lb) =	11,961.5
Amount of NaOH 25wt% solution needed (gal) =	1,128.4
Amount of NaOH 25wt% solution needed per injection point per event (gal) =	141.1

2 moles of NaOH to 1 mole of persulfate